

# **BULK WEBSITE DEPLOYMENT TOOL**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfillment for the degree of  
**Bachelors's in Computer Application (BCA)**

By

<b>Badal Singh</b>	<b>66220UT20071</b>
<b>Nirlipta Jena</b>	<b>66220UT20037</b>
<b>Subhasis Barada</b>	<b>66220UT20090</b>
<b>N. Somya Ranjan</b>	<b>66220UT20074</b>
<b>Omm Prakash Rout</b>	<b>66220UT20073</b>

Under the guidance of  
**Ms.Subhashree Barik (Assistant. Prof. Dept. Of BCA)**



**MITS School of Biotechnology**  
**2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India**  
**MAY 2023**





# LPG GAS LEAKAGE NOTIFIER

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfillment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

Nikhil Pradhan (6622OUT20044)

Sriram Sekhar Dash (6622OUT20022)

Chiranjeev Mallick (6622OUT20086)

Snehashis Jena (6622OUT20093)

Sibananda Sahoo (6622OUT20049)

*Under the guidance of*

**Mr. RashmiRanjan Behera**

(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India

[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "LPG GAS LEAKAGE NOTIFIER" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20044	NIKHIL PRADHAN
2	66220UT20022	SRIRAM SEKHAR DASH
3	66220UT20093	SNEHASHIS JENA
4	66220UT20086	CHIRANJEEV MALLICK
5	66220UT20049	SIBANANDA SAHOO

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



**GUIDE**

*M. Nayak*  
HOD

*G.K. Panda*  
Prof.(Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



# ONLINE MCQ TEST

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

SUNIL KUMAR SWAIN	66220UT20025
PRASANTA SATAPATHY	66220UT20035
AMAN KUNJILWAR	66220UT20081
MONALISA SAMANTARAY	66220UT20033
SUBHAM PADHI	66220UT20087

*under the guidance of*  
**Mr. Rashmi Ranjan Behera**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "ONLINE MCQ TEST" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20025	SUNIL KUMAR SWAIN
2	66220UT20035	PRASANTA SATAPATHY
3	66220UT20081	AMAN KUNJILWAR
4	66220UT20033	MONALISA SAMANTARAY
5	66220UT20087	SUBHAM PADHI

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



**[ GUIDE ]**

**HOD**

Prof. (Dr.) G.K. Panda

DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# STUDENT SUPPORT SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfillment for the degree of  
**Bachelor of Computer Application (BCA)**

By

<b>Aishwarya Das</b>	<b>660UT20088</b>
<b>Tehrim Siddiqa</b>	<b>660UT20029</b>
<b>Anuska Anurita</b>	<b>660UT20003</b>
<b>Hrushikesh Behera</b>	<b>660UT20080</b>
<b>Suwendu Das</b>	<b>660UT20082</b>

under the guidance of  
**Miss ANKITA SAMANTARA**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ ADM/ 23140

Dated: 24.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Student Support System" from February to May, 2023. Throughout this period, they received guidance from Miss Ankita Samantara, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20088	AISHWARYA DAS
2	66220UT20029	TEHRIM SIDDIQA
3	66220UT20003	ANUSKA ANURITA
4	66220UT20080	HRUSHIKESH BEHERA
5	66220UT20082	SUVENDU DAS

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*Ankita Samantara*  
GUIDE

*M. Nayak*  
HOD

*G.K. Panda*

Prof.(Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



# INTEGRATED LIBRARY SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

Monalisha Sahoo	66220UT20059
Priyanka Priyadarsini Mishra	66220UT20060
Subhasmita Dash	66220UT20068
Suchismita Dash	66220UT20091
Sidhanta Swain	66220UT20096

*under the guidance of*  
**Mr. Rashmi Ranjan Behera**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिदस जैव प्रौद्योगिकी संस्थान

## MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

### TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Integrated Library System" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20059	MONALISHA SAHOO
2	66220UT20060	PRIYANKA PRIYADARSHINI MISHRA
3	66220UT20068	SUBHASHMITA DASH
4	66220UT20091	SUCHISMITA DASH
5	66220UT20096	SIDHANTA SWAIN

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



**GUIDE**

*Rashmi Ranjan Behera*  
HOD

*G.K. Panda*  
Prof.(Dr.) G.K.Panda

DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DIIE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# **GSM BASED FIRE ALARM SYSTEM USING ARDUINO UNO**

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for degree of  
Bachelor of Computer Application (BCA)

*By*

**PALLAVI PRIYADARSHINI MAHALA, Roll No-6622OUT20083**

**KRUTIRANI MISHRA, Roll No-6622OUT20095**

**ANANYA ROUTRAY, Roll No-6622OUT20036**

**SAGAR BEHERA, Roll No-6622OUT20028**

**AMAN KUMAR BADI, Roll No-6622OUT20012**

*Under the guidance of*

**Er. BIBHUDATTA TRIPATHY**

(Asst. Prof. Dept. Of Computer Science)



**MITS School of Biotechnology**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "GSM BASED FIRE ALARM SYSTEM USING ARDUINO UNO" from February to May, 2023. Throughout this period, they received guidance from Er. Bibhudatta Tripathy, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20083	PALLIVI PRIYADARSHINI MAHALA
2	66220UT20095	KRUTIRANI MISHRA
3	66220UT20036	ANANYA ROURAY
4	66220UT20028	SAGAR BEHERA
5	66220UT20012	AMAN KUMAR BADI

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



GUIDE

HOD

Prof.(Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



# ONLINE RESOURCE INTRA SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfillment for the degree of  
**Bachelor's in computer application (BCA)**

By

<b>Ashish Kumar Sahoo</b>	<b>66220UT20048</b>
<b>Binaya Kumar Bhuyan</b>	<b>66220UT20007</b>
<b>Sudhanshu Kumar Sahoo</b>	<b>66220UT20018</b>
<b>Ayush Mallick</b>	<b>66220UT20015</b>
<b>Sandeep Beshra</b>	<b>66220UT20073</b>

Under the guidance of  
**Ms.Subhashree Barik (Assistant. Prof. Dept. Of BCA)**



**MITS School of Biotechnology**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India  
**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No: MSB/ ADM/ 23132

Dated: 24.05.2023

## TO WHOM IT MAY CONCERN

It is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Online Resource Intra System". According to the guidelines set by Utkal University, they have successfully completed her BCA project work from February to May 2023. Throughout this period, they received guidance from Ms. Subhashree Barik , who is associated with this institute.

SN	Univ.Roll No	Name
1	(66220UT20048)	Ashish Kumar Sahoo
2	(66220UT20018)	Sudhanshu Kumar Sahoo
3	(66220UT20015)	Ayush Mallick
4	(66220UT20073)	Sandeep Beshra
5	(66220UT20007)	Binaya Kumar Bhuyan

Based on the recommendations of both the guide and the Head of the Department, their project meets the requirements for submission and evaluation as per the CBCS pattern regulations.



**GUIDE**

**HOD**

Prof. (Dr.) G.K. Panda  
**DIRECTOR**

Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, patia, Bhubaneswar  
Pin-751024(Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)

Email: [principal@msb.in](mailto:principal@msb.in)

APPROVED BY DHE, GOVT OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# E-LEARNING TEACHING PLATFORM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*By*

Ashish Kumar Sahoo	66220UT20021
Sonali Routray	66220UT20016
Diksha Choudhary	66220UT20052
Madhu Mala Ghosh	66220UT20057
Pragati Bhakat	66220UT20061

*under the guidance of*

**Mr. Rashmikiranjan Behera**

(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "E-LEARNING TEACHING PLATFORM" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.

SN	Univ. Roll No.	Name of the Student
1	66220UT20016	SONALI ROUTRAY
2	66220UT20021	ASHISH KUMAR SAHOO
3	66220UT20052	DIKSHA CHOUDHARY
4	66220UT20057	MADHU MALA GHOSH
5	66220UT20061	PRAGATI BHAKAT



*Rashmi*  
**GUIDE**

*Y. M.*  
**HOD**

*G.K. Panda*  
Prof.(Dr.) G.K. Panda  
DIRECTOR  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin - 751021 (Odisha), INDIA

Website: www.msb.ac.in  
Email: principal@msb.ac.in

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# ONLINE MARKET PLACE

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

Praojita Mohanty	66220UT20010
Preetismita Swain	66220UT20038
Pratish Kumar Sahoo	66220UT20040
Prabhu Prasad Prusty	66220UT20042
Yajnaseni Das	66220UT20070

*under the guidance of*  
**Mr. Santosh Kumar Nayak**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 24.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Online Market Place" from February to May, 2023. Throughout this period, they received guidance from Mr. Santosh Kumar Nayak, who is associated with this institute.

SN.	Univ. Roll No.	Name of the Student
1.	6622OUT20010	PRAJOJITA MOHANTY
2.	6622OUT20038	PREETISMITA SWAIN
3.	6622OUT20040	PRATISH KUMAR SAHOO
4.	6622OUT20042	PRABHU PRASAD PRUSTY
5.	6622OUT20070	YAJNASENI DAS

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



**[ GUIDE**

**[ HOD**

**Prof.(Dr.) G.K. Panda  
DIRECTOR.**

Director  
**MITS School of Biotechnology  
Bhubaneswar**



# QR ATTENDANCE MANAGEMENT SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**  
*by*

Ashutosh Pradhan	66220UT20026
Subrat Kumar Sahoo	66220UT20045
Sonali Dash	66220UT20094
Sangram Swin	66220UT20039
Satyam Das	66220UT20066

*under the guidance of*  
**Mrs. Bijayalaxmi Parida**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "QR Attendance Management System" from February to May, 2023. Throughout this period, they received guidance from Mrs. Bijayalaxmi Parida, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20026	ASUTOSH PRADHAN
2	66220UT20045	SUBRAT KUMAR SAHOO
3	66220UT20094	SONALI DASH
4	66220UT20039	SANGRAM SWAIN
5	66220UT20066	SATYAM KUMAR DAS

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*B. Parida*  
[GUIDE]

*M. Nayak*  
[HOD]

*G.K. Panda*  
Prof.(Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



# LOAN MANAGEMENT SYSTEM

Project Report Submitted to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

**by**

Sohan Dash	66220UT20047
Sidharth Kumar Dash	66220UT20054
Ankit Raj Sahu	66220UT20013
Sampad Kumar Mohapatra	66220UT20014

under the guidance of

**Miss Ankita Samantara**

(Asst. Prof., Dept. of Computer Science)

**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India

[www.msb.ac.in](http://www.msb.ac.in)

May 2023



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ ADM/ 23140

Dated: 26.05.2023


## TO WHOM IT MAY CONCERN

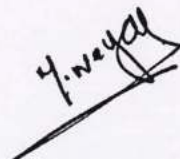
This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Loan Management System" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

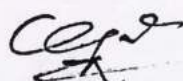
SN	Univ. Roll No.	Name of the Student
1	66220UT20047	Sohan Dash
2	66220UT20054	Sidharth Kumar Dash
3	66220UT20013	Ankit Raj Sahu
4	66220UT20014	Sampad Kumar Mohapatra

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



  
GUIDE

  
HOD

  
Prof. (Dr.) G.K. Panda  
DIRECTOR  
Director  
MITS School of Biotechnology  
Bhubaneswar



# RENTAL MANAGEMENT SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

Rajesh Kumar Behera	(66220UT20017)
Anil Kumar Madala	(66220UT20032)
Jyoti Ranjan Jena	(66220UT20050)
Chinmay Das	(66220UT20051)
Prabhakar Choudhury	(66220UT20019)

*under the guidance of*  
**Mr. Rashmi Ranjan Behera**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India

[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Rental Management System" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20017	RAJESH KUMAR BEHERA
2	66220UT20032	ANIL KUMAR MADALA
3	66220UT20050	JYOTI RANJAN JENA
4	66220UT20051	CHINMAY DAS
5	66220UT20019	PRABHAKAR CHOUDHURY

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*Ry*  
**GUIDE**

*M. Ranjan*  
**HOD**

*G.K. Panda*  
**Prof.(Dr.) G.K.Panda**

**DIRECTOR**

Director  
MITS School of Biotechnology  
Bhubaneswar

(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# IT RESOURCE MANAGEMENT

Project Report Submitted to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

by

SUMIT OJHA	(6622OUT20008)
SANATAN PARIDA	(6622OUT20055)
RUCHISMITA SAHOO	(6622OUT0062)
ANNAPURNA PATRA	(6622OUT0078)
SALONI PARIDA	(6622OUT0084)

under the guidance of

**Mr. Rashmikiranjan Behera**

(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ ADM/ 23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "IT Resource Management" from February to May, 2023. Throughout this period, they received guidance from Mr. Rashmi Ranjan Behera, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20008	SUMIT OJHA
2	66220UT20055	SANATAN PARIDA
3	66220UT20062	RUCHISMITA SAHOO
4	66220UT20078	ANNAPURNA PATRA
5	66220UT20084	SALONI PARIDA

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*Rashmi Ranjan Behera*  
[GUIDE]

*M. Nayak*  
[HOD]

*G.K. Panda*  
Prof.(Dr.) G.K. Panda  
DIRECTOR  
Director  
MITS School of Biotechnology  
Bhubaneswar



# **MESS MANAGEMENT SYSTEM**

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*By*

**RUDRA PRASAD ROU TRAY**(Roll No-66220UT20020)

**ANKITA PATRA**(Roll No-66220UT20077)

**PRANAYA KUMAR SWAIN**(Roll No-66220UT20011)

**ASHUTOSH PARIDA**(Roll No-66220UT20004)

*under the guidance of*  
**ER. BIBHUDATTA TRIPATHY**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) INFOCITY, PATIA, BHUBANESWAR, ODISHA-751024, INDIA

[WWW.MSB.AC.IN](http://WWW.MSB.AC.IN)

**MAY 2023**



# मिदस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Mess Management System" from February to May, 2023. Throughout this period, they received guidance from **ER. Bibhudatta Tripathy**, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20020	RUDRA PRASAD ROUTRAY
2	66220UT20077	ANKITA PATRA
3	66220UT20011	PRANAYA KUMAR SWAIN
4	66220UT20004	ASHUTOSH PARIDA

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



GUIDE

*[Handwritten signature]*

HOD

*[Handwritten signature]*  
Prof.(Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



# LEGAL MANAGEMENT SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

Ashutosh Samal	66220UT20065
Soubhagya Kumar Das	66220UT20058
Biswojit Nayak	66220UT20067
Pritiranjana Mallick	66220UT20046
Arpan Nayak	66220UT20031

*under the guidance of*  
**Mrs. Bijayalaxmi Parida**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India

[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ADM/23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Legal Management System" from February to May, 2023. Throughout this period, they received guidance from Mrs. Bijayalaxmi Parida, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20065	ASHUTOSH SAMAL
2	66220UT20058	SOUBHAGYA KUMAR DAS
3	66220UT20067	BISWOJIT NAYAK
4	66220UT20046	PRITIRANJAN MALLICK
5	66220UT20031	ARPAN NAYAK

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*B. Parida*

**GUIDE**

*M.W.*

**HOD**

*G.K. Panda*

Prof. (Dr.) G.K.Panda

Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# PERSONAL FINANCE MANAGEMENT SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

**By**

<b>Bibhu Prasad Mohapatra</b>	<b>(66220UT20076)</b>
<b>Akash Kumar Choudhari</b>	<b>(66220UT20006)</b>
<b>Suraj Mandal</b>	<b>(66220UT20023)</b>
<b>Rahul Kumar Das</b>	<b>(66220UT20063)</b>
<b>B.D Chandrasekhar Mohanta</b>	<b>(66220UT20043)</b>

Under the guidance of

**Mr. Chhabi Sethi**  
(Asst. Prof. Dept. Of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No: MSB/ ADM/ 23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "PERSONAL FINANCE MANAGEMENT SYSTEM" from February to May, 2023. Throughout this period, they received guidance from Mr. Chhabi Sethi, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20076	BIBHU PRASAD MOHAPATRA
2	66220UT20006	AKASH KUMAR CHOUDHARI
3	66220UT20023	SURAJ MANDAL
4	66220UT20063	RAHUL KUMAR DAS
5	66220UT20043	B.D CHANDRASEKHAR MOHANTA

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation in Utkal University's regulations.



*C. Sethi*  
**GUIDE**

*M. Nayak*  
**HOD**

*G.K. Panda*  
Prof.(Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



**STOCK AND INVOICING SYSTEM**  
(SOFTWARE AS A SERVICE)

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Bachelor in Computer Application(BCA)**

*By*

***Bishal Sahoo*** (Roll No-66220UT20072)

***SibrajRosanPalai***(Roll No-66220UT20079)

***Soumya Ranjan Dash***(Roll No-66220UT20041)

***Asutosh Nayak***(Roll No-66220UT20030)

*Under the guidance of*  
**Er Bibhudatta Tripathy**  
(Assistant Professor)



**MITS School of Biotechnology**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India  
**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Dated: 27.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Stock and Invoicing System" from February to May, 2023. Throughout this period, they received guidance from Er Bibhudatta Tripathy, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20072	BISHAL SAHOO
2	66220UT20079	SIBRAJ ROSAN PALAI
3	66220UT20041	SOUMYA RANJAN DASH
4	66220UT20030	ASUTOSH NAYAK

Based on the recommendations of both the guide and the Head of the Department, their project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



GUIDE

*[Signature]*  
HOD

*[Signature]*  
Prof.(Dr.) G.K.

Panda

DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar

(P), Infocity, Patia, Bhubaneswar  
in-751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# INTRUSION DETECTION SYSTEM

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*By*

Sisir Kanta Behera (Roll No-66220UT20097)  
Sambit Kumar Parida (Roll No-66220UT20034)  
Lokanath Moharana (Roll No-66220UT20098)  
Debashis Parida (Roll No-66220UT20056)

*under the guidance of*

**Mr. Chhabi Sethi**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ ADM/ 23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Intrusion Detecting System" from February to May, 2023. Throughout this period, they received guidance from Mr. Chhabi Sethi, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20097	Sisir Kanta Behera
2	66220UT20034	Sambit Kumar Parida
3	66220UT20098	Lokanath Moharana
4	66220UT20056	Debashis Parida

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*Chhabi Sethi*

*Manojan*

HOD

*G.K. Panda*  
Prof. (Dr.) G.K. Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar

GUIDE

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY



# CHATBOT APPLICATION

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfillment for the degree of  
**Bachelor of Computer Application (BCA)**

*by*

Aurosmarana Mohapatra  
Mahesh Sahoo  
Nirupama Swain  
Manoj kumar Jena  
Subhadarshini Sahoo

66220UT20009  
66220UT20024  
66220UT20053  
66220UT20064  
66220UT20069

*under the guidance of*  
**Mr. Santosh Kumar Nayak**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India

[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ ADM/ 23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "CHATBOT APPLICATION " from February to May, 2023. Throughout this period, they received guidance from Mr. Santosh Kumar Nayak, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20009	AUROS MARANA MOHAPATRA
2	66220UT20024	MAHESH SAHOO
3	66220UT20053	NIRUPAMA SWAIN
4	66220UT20064	MANOJ KUMAR JENA
5	66220UT20069	SUBHADARSHINI SAHOO

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*[Handwritten Signature]*

GUIDE

*[Handwritten Signature]*  
HOD

*[Handwritten Signature]*  
Prof.(Dr.) G.K. Panda

DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar



# WEBSITE ANALYSIS TOOL

Project Report Submitted to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**Bachelor of Computer Application (BCA)**

*By*

Deepak Kumar Sahu (Roll No: 66220UT20005)  
Bibakananda Panigrahi (Roll No: 66220UT20027)  
Karunasankar Naik (Roll No: 66220UT20001)  
Manas Kumar Senapati (Roll No: 66220UT20075)  
Manmay Naik (Roll No: 66220UT20089)

*under the guidance of*

**Mr. Chhabi Sethi**  
(Asst. Prof., Dept. of Computer Science)



**MITS SCHOOL OF BIOTECHNOLOGY**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751024, India  
[www.msb.ac.in](http://www.msb.ac.in)

**MAY 2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No: MSB/ ADM/ 23140

Dated: 26.05.2023

## TO WHOM IT MAY CONCERN

This is to certify that the following students of BCA-6<sup>th</sup> Semester carried out their final semester project work on "Website Analysis Tool" from February to May, 2023. Throughout this period, they received guidance from Mr. Chhabi Sethi, who is associated with this institute.

SN	Univ. Roll No.	Name of the Student
1	66220UT20005	DEEPAK KUMAR SAHU
2	66220UT20027	BIBAKANANDA PANIGRAHI
3	66220UT20001	KARUNASANKAR NAIK
4	66220UT20075	MANAS KUMAR SENAPTI
5	66220UT20089	MANMAY NAIK

Based on the recommendations of both the guide and the Head of the Department, this project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*C. Sethi*  
GUIDE

*H. Nayak*  
HOD

*G.K. Panda*  
Prof.(Dr.) G.K. Panda  
DIRECTOR  
Director  
MITS School of Biotechnology  
Bhubaneswar



**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**ADITYA NARAYAN SAHOO**

Roll no-2002010190490003

Under Supervision of

**Dr. Smaranika Sahu**

Asst. Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Evaluated*

*Signature*



**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

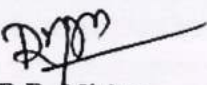
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

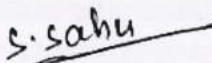
**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that **MR. ADITYA NARAYAN SAHOO** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490003. He has carried out his dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

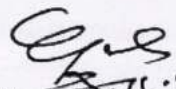
**MR. ADITYA** is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

**HOD**<sup>1</sup>

  
**Dr. G.K. Panda**

**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024



**EXPRESSION OF RYRI GENE IN THE PECTORALIS MUSCLE OF  
QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
AISWARYA SAHOO  
Roll no-2002010190490004**

**Under Supervision of  
Dr. Rashmi Ranjan Mishra  
(Head of the department)  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Enclaved*  
*Signature*



## MIT S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 15.05.2023

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

### TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. AISWARYA SAHOO is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490004. She has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Aiswarya Sahoo is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R.R. Mishra

Head of the Department

[ HOD ]

[ GUIDE ]

Dr. G.K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

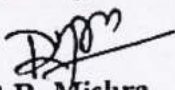
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

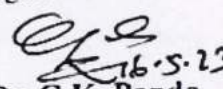
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. AISWARYA SWAIN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490005. She has carried out her dissertation work under the direct supervision of Mr. Sidharth Parida . Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Aiswarya Swain is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

  
**[GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P).Infocity, Patia, Chandaka Industrial Estate.  
Bhubaneswar-751024



**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**ALOK KUMAR BEHERA**  
Roll no-2002010190490006

Under Supervision of  
**Dr. Smaranika Sahu**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Behera*

*S. Sahu*





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

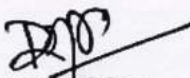
**MITS SCHOOL OF BIOTECHNOLOGY**

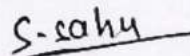
**BHUBANESWAR – 751024, ODISHA**


**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that **MR. ALOK KUMAR BEHERA** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490006. He has carried out his dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**MR. ALOK** is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**S. Sahu**  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

# **A COMPARATIVE STUDY OF SERCA1 EXPRESSION BETWEEN GCN AND PECTORALIS OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
AMISHA SAHU  
Roll no. - 2002010190490007  
Under Supervision of  
Dr. Dipti Sethi  
Asst. Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Amisha Sahu*  
*Dipti Sethi*





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No/

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**


**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

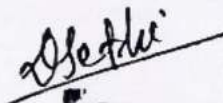
**TO WHOME SOEVER IT MAY CONCERN**


This is to certify that Miss Amisha Sahu is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490007. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Amisha Sahu is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
-Head of the Department

**HOD**

  
**GUIDE**

  
26.5.23  
Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**ANINDYA MONDAL**

**ROLL NO-- 2002010190490008**

Under Supervision of

**Dr. MOUSUMI MISHRA**

**Asst. Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Handwritten signatures and marks at the bottom of the page.*





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

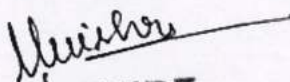
## TO WHOM SO EVER IT MAY CONCERN

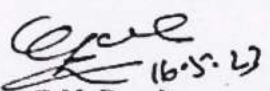
This is to certify that MR. ANINDYA MONDAL is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490008. He has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MR. ANINDYA is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department  
HOD

  
GUIDE

  
Dr. G.K. Panda

Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

# **EXPRESSION OF RYR1 GENE IN THE PECTORIALIS MUSCLE OF QUAIL**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Bachelor of Science (B.Sc.) in Biotechnology**

*by*

**ANJANEYA SAMANTARAY**

Roll No-2002010190490009

*Under the guidance of*

**Dr. Satyananda Patel**

(Assoc. Prof., Dept. Of Biotechnology)



**MITS School of Biotechnology**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**



Ref.No: MSB/ ADM/ 23132

Dated: 16.05.2023

## TO WHOM IT MAY CONCERN

It is to certify that Anjaneya Samantaray, enrolled with Roll No.2002010190490009, is a student of this institution pursuing B.Sc. degree in Biotechnology. She is currently in her 6th Semester. According to the guidelines set by Utkal University, he has successfully completed her B.Sc. project work from February to May 2023. Throughout this period, he received guidance from Dr. Satyananda Patel, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, his project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*D.P.M.*  
HOD

*Satya*  
GUIDE

*G.K.P.*  
Prof.(Dr.)G.K.Panda  
DIRECTOR  
Director  
MITS School of Biotechnology  
Bhubaneswar

# **THE COMPARTIVE STUDY OF SERCAI BETWEEN GCN AND PECTORIAL MUSCLE OF CHIKEN**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Bachelor of Science (B.Sc.) in Biotechnology**

*by*

**ANKITA GIRI**

Roll No-2002010190490010

*Under the guidance of*

**Dr. Dipti Priya Sethi**

(Asst. Prof., Dept. Of Biotechnology)



**MITS School of Biotechnology**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**



Ref.No: MSB/ADM/ 23132

Dated: 16.05.2023

## TO WHOM IT MAY CONCERN

It is to certify that Ankita Giri, enrolled with Roll No. 2002010190490010, is a student of this institution pursuing B.Sc. degree in Biotechnology. She is currently in her 6th Semester. According to the guidelines set by Utkal University, she has successfully completed her B.Sc. project work from February to May 2023. Throughout this period, she received guidance from Dr. Dipti Priya Sethi, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, her project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*DPM*  
HOD

*Dipti Priya Sethi*  
GUIDE

*G.K. Panda*  
Prof.(Dr.)G.K.Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
ANKITA PRUSTY  
Roll no-2002010190490011**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*For - Ananta*  
*Relig*





MIT S SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

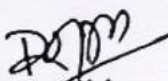
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

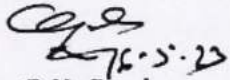
**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that Miss ANKITA PRUSTY is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490011. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. ANKITA PRUSTY is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of department  
**HOD**

  
15/05/23  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar

# **THE RELATIVE EXPRESSION OF RYR1 GENE IN GASTROCNEMIUS MUSCLE OF CHICKEN AND QUAIL**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Bachelor of Science (B.Sc.) in Biotechnology**

*by*

**ARCHANA KUMARI**

Roll No-2002010190490013

*Under the guidance of*

**Dr. Manisha Pattnaik**

(Asst. Prof., Dept. Of Biotechnology)



**MITS School of Biotechnology**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**



Ref.No: MSB/ ADM/ 23132

Dated: 16.05.2023

## TO WHOM IT MAY CONCERN

It is to certify that Archana Kumari, enrolled with Roll No. 22002010190490013, is a student of this institution pursuing B.Sc. degree in Biotechnology. She is currently in her 6th Semester. According to the guidelines set by Utkal University, she has successfully completed her B.Sc. project work from February to May 2023. Throughout this period, she received guidance from Dr. Manisha Pattnaik, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, her project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*Dr. M*  
HOD

*AZ*  
GUIDE

*G.K.Panda*  
Prof.(Dr.)G.K.Panda  
DIRECTOR.

Director  
MITS School of Biotechnology  
Bhubaneswar

# **A RELATIVE EXPRESSION OF SERCA1 GENE IN GASTROCNEMIUS(GCN) MUSCLE IN CHIKEN AND QUAIL**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Bachelor of Science (B.Sc.) in Biotechnology**

*by*

**BABITA MOHANTA**

Roll No-2002010190490016

*Under the guidance of*

**Dr. Sidharth Parida**

(Assoc. Prof., Dept. Of Biotechnology)



**MITS School of Biotechnology**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**



Ref.No: MSB/ADM/23132

Dated: 16.05.2023

## TO WHOM IT MAY CONCERN

It is to certify that Babita Mohanta, enrolled with Roll No. 2002010190490016, is a student of this institution pursuing B.Sc. degree in Biotechnology. She is currently in her 6th Semester. According to the guidelines set by Utkal University, she has successfully completed her B.Sc. project work from February to May 2023. Throughout this period, she received guidance from Dr. Sidharth Parida, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, her project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



  
HOD

  
GUIDE

  
Prof.(Dr.)G.K.Panda  
DIRECTOR

Director  
MITS School of Biotechnology  
Bhubaneswar

# **THE RELATIVE EXPRESSION OF RYR1 GENE IN GASTROCNEMIUS MUSCLE OF CHICKEN AND QUAIL**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Bachelor of Science (B.Sc.) in Biotechnology**

*by*

**BHAGYODEV MALLIK**

Roll No-2002010190490018

*Under the guidance of*

**Dr. Satyananda Patel**

(Assoc. Prof., Dept. Of Biotechnology)



**MITS School of Biotechnology**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**



Ref.No: MSB/ ADM/ 23132

Dated: 16.05.2023

## TO WHOM IT MAY CONCERN

It is to certify that Bhagyodev Mallik, enrolled with Roll No. 2002010190490018, is a student of this institution pursuing B.Sc. degree in Biotechnology. He is currently in her 6th Semester. According to the guidelines set by Utkal University, he has successfully completed her B.Sc. project work from February to May 2023. Throughout this period, he received guidance from Dr. Satyananda Patel, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, his project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*[Signature]*  
HOD

*[Signature]*  
GUIDE

*[Signature]*  
Prof.(Dr.)G.K.Panda  
DIRECTOR  
Director  
MITS School of Biotechnology  
Bhubaneswar

**A COMPARATIVE STUDY OF SERCA1 EXPRESSION  
BETWEEN GCN AND PECTORALIS OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to**

**UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By**

**BIJAYALAXMI ROUT**

**Roll no. - 2002010190490020**

**Under Supervision of**

**Dr. Dipti Sethi**

**Asst. Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*For release  
Kajal*





## **MIT S SCHOOL OF BIOTECHNOLOGY**

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

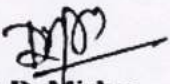
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**


### **TO WHOME SOEVER IT MAY CONCERN**

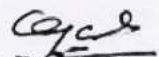
This is to certify that Miss/Mrs.Bijayalaxmi Rout is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490020. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss/Mrs.Bijayalaxmi Rout is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda Head of the  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**EXPRESSION OF RYRI GENE IN THE PECTORALIS MUSCLE OF QUAIL**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



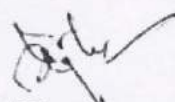
For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**BISWAJIT MANTRI**  
Roll no-2002010190490021

Under Supervision of  
**Dr. Rashmi Ranjan Mishra**  
Head of the department  
**DEPARTMENT OF BIOTECHNOLOGY**



*Submitted*







## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

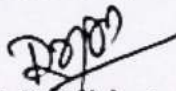
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

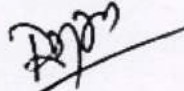
### TO WHOME SOEVER IT MAY CONCERN

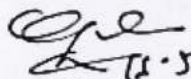
This is to certify that Mr. BISWAJIT MANTRI is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490021. He has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Biswajit Mantri is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

HOD

  
GUIDE

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

**A RELATIVE EXPRESSION OF SERCA1 GENE IN GASTROCNEMIUS (GCN)  
MUSCLE IN CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
DEBASMITA SWAIN  
Roll no-2002010190490022**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**







**MITS SCHOOL OF BIOTECHNOLOGY**  
**(Affiliated to UTKAL UNIVERSITY)**

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

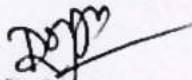
MITS SCHOOL OF BIOTECHNOLOGY


BHUBANESWAR – 751024, ODISHA

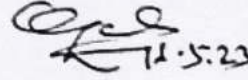
**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Miss DEBASMITA SWAIN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490022. She has carried out her dissertation work under the direct supervision of Dr. Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Debasmita Swain is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
[ HOD ]

  
[ GUIDE ]

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estat, Bhubaneswar-751024

# A COMPARATIVE STUDY OF SERCA1 EXPRESSION BETWEEN GCN AND PECTORALIS OF QUAIL

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By  
**DIBYANSHU KANUNGO**  
Roll no. - 2002010190490023  
Under Supervision of  
**Dr. Dipti Sethi**  
Asst. Professor  
DEPARTMENT OF BIOTECHNOLOGY



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Dibyanshu Kanungo*      *Dipti Sethi*





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

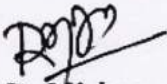
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

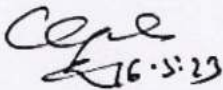
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Master Dibyanshu Kanungo is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490023. He has carried out his dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Master Dibyanshu is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**[GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
GAYATRI SWAIN  
Roll no-2002010190490026**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*Evaluated*

*Signi*





MITS SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

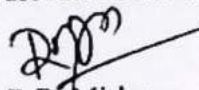
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

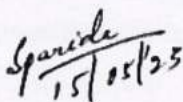
**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that Miss GAYATRI SWAIN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490026. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

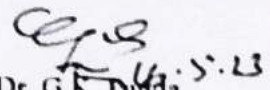
Miss. GAYATRI SWAIN is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of department

HOD

  
15/05/23

GUIDE

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

# **EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



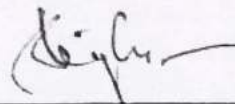
For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**JAGAT YADAV**  
Roll no. - 2002010190490029  
Under Supervision of  
**Dr. Bhabtosh Mitra**  
Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Evaluated*







**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

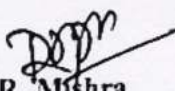
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Master Jagat Yadav is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490029. He has carried out his dissertation work under the direct supervision of Dr. Bhabtosh Mitra, Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

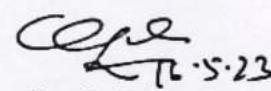
Master Jagat is fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD**



**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**EXPRESSION OF MYR1 GENE IN THE PECTORALIS MUSCLE OF QUAIL.**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
JAYASMIN PATRA  
Roll no-2002010190490032**

**Under Supervision of  
Dr. Rashmi Ranjan Mishra  
Head of the department  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patta, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Rashmi Mishra*

*Jayasmin Patra*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No/

DATE: 15.05.23

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

### TO WHOME SOEVER IT MAY CONCERN

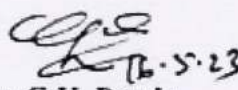
This is to certify that MISS.JAYASMIN PATRA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490032. He has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss.Jayasmin Patra is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

[ HOD ]

  
Dr. G.K. Panda

Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

  
[ GUIDE ]



**MIT SCHOOL OF BIOTECHNOLOGY**  
**(Affiliated to UTKAL UNIVERSITY)**

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

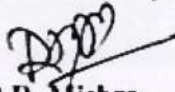
**MIT SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

**TO WHOME SOEVER IT MAY CONCERN**

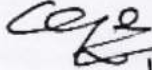
This is to certify that Mr. KESHAB TRIPATHY is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490034. He has carried out his dissertation work under the direct supervision of Mr. Sidharth Parida, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Keshab Tripathy is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

  
**GUIDE**

  
Dr. G.K. Panda

16.5.23  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MIT School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024



**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
**MIT SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**KRISHNA SAHOO**  
Roll no-2002010190490035

Under Supervision of  
**Dr. Smaranika Sahu**  
Asst. Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MIT School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha

*Evaluation*  
*Kj*



## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 12.05.23

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**


MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

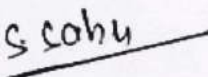
### TO WHOM SO EVER IT MAY CONCERN

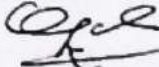
This is to certify that **MISS. KRISHINA SAHOO** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490035. She has carried out her dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MISS. KRISHNA is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

**HOD**

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**A COMPARATIVE STUDY OF SERCA1 EXPRESSION  
BETWEEN GCN AND PECTORALIS OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
LALITA SWAIN  
Roll no. – 2002010190490038**

**Under Supervision of  
Dr. Dipti Sethi  
Asst. Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Erabaw*

*Lalita Swain*



**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

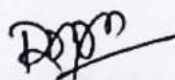
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOME SOEVER IT MAY CONCERN**

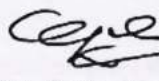
This is to certify that Miss Lalita Swain is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490038. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Lalita is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda

Director  
**Director, MSB**  
MIT S School of Biotechnology  
Bhubaneswar

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**LIPSA RANI PRADHAN**

ROLL NO-- 2002010190490039

Under Supervision of

**Dr. MOUSUMI MISHRA**

Asst. Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Dr. Musumi Mishra*  
*Lipsa Rani Pradhan*



# MIT'S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

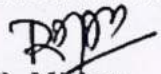
MIT'S SCHOOL OF BIOTECHNOLOGY

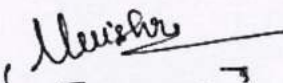
BHUBANESWAR – 751024, ODISHA

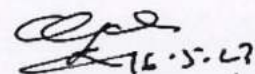
### TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. LIPSA RANI PRADHAN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490039. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

LIPSA RANI is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
HOD

  
[GUIDE]

  
Dr. G.K. Panda  
Director, MSB  
MIT'S School of Biotechnology  
Bhubaneswar

MIT'S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024



**A RELATIVE EXPRESSION OF SERCA1 GENE IN GASTROCNEMIUS (GCN)  
MUSCLE IN CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
MANAS NIRMALYA SAHOO  
Roll no-2002010190490042**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*For evaluation*  
*Manisha Pattnaik*



**MIT SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR


MIT SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

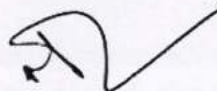
**TO WHOMSOEVER IT MAY CONCERN**

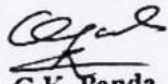
This is to certify that Mr MANAS NIRMALYA SAHOO is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490042. He has carried out his dissertation work under the direct supervision of Dr. Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr MANAS NIRMALYA SAHOO is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MIT School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estat, Bhubaneswar-751024



**EXPRESSION OF RYR1 GENE IN THE PECTORALIS MUSCLE OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
MANASWINI DAS  
Roll no-2002010190490043**

**Under Supervision of  
Dr. Rashmi Ranjan Mishra  
Head of the department  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Manaswini Das*  
*Rashmi Mishra*



## MIT S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 15/5/23

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

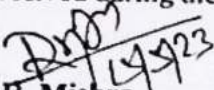
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

### TO WHOME SOEVER IT MAY CONCERN

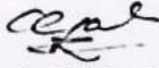
This is to certify that Ms. MANASWINI DAS is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490043. She has carried out her dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. MANASWINI DAS is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD ]**

  
[ **GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar



**THE RELATIVE EXPRESSION OF MYR1 GENE IN  
GASTROCNEMIUS MUSCLE OF CHICKEN AND QUAIL.**

A Project Report Submitted to *UTKAL UNIVERSITY*  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**MARMASPARSHI DAS**  
Roll no-2002010190490044

Under Supervision of  
**Dr. Satyananda Patel**  
Associate Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Evaluated*  
*Shy*



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No./

DATE: 16 May 2023

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

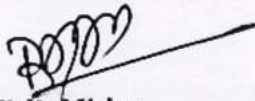
**BHUBANESWAR – 751024, ODISHA**

## TO WHOMSOEVER IT MAY CONCERN


This is to certify that Miss. MARMASPARSHI DAS is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490044. She has carried out her project work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

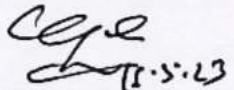
Miss. Marmasparshi is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

31

  
Dr. R.R. Mishra  
Head of the Department

OD

  
GUIDE

  
Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar



**EXPRESSION OF RYRI IN THE PECTORALIS MUSCLE OF  
CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**MD AAMIR KHAN**

Roll no.2002010190490045

Under Supervision of

**Dr. Bhabtosh Mittra**

Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Evaluated*  
*Signature*



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

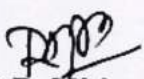
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOME SOEVER IT MAY CONCERN**

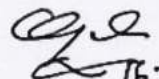
This is to certify that Mr.Md Aamir Khan is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490045. He has carried out his dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Md Aamir Khan is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD**

  
[ **GUIDE** ]

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar 751024



# EXPRESSION OF RYR1 GENE IN THE PECTORALIS MUSCLE OF QUAIL

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**MEGHNA PATTANAİK**  
Roll no-2002010190490046

Under Supervision of  
**Dr. Rashmi Ranjan Mishra**  
Head of the department  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Evaluated*

*degi*



## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

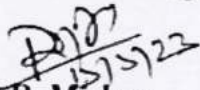
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

### TO WHOME SOEVER IT MAY CONCERN

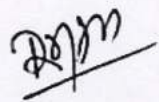
This is to certify that Ms.MEGHNA PATTNAIK is a bonafide student of B.Sc. Biotechnology (Sixth Semester). MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490046. She has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

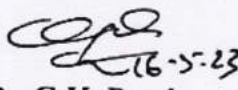
Ms. MEGHNA PATTANAIK is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda

Director, MSB

MITS School of Biotechnology  
Bhubaneswar



**A COMPARATIVE STUDY OF SERCA1 EXPRESSION  
BETWEEN GCN AND PECTORALIS OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
MITALI MADHUSMITA SWAIN  
Roll no. - 2002010190490047  
Under Supervision of  
Dr. Dipti Sethi  
Asst. Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Enrolled*



**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

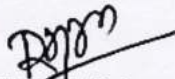
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**


**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Master Mitali Madhusmita Swain is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490047. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Master Dibyanshu is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
HOD

  
GUIDE

  
Dr. G.K. Panda  
Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**EXPRESSION OF RYR1 GENE IN THE PECTORALIS MUSCLE OF QUAIL**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**MONALISA BEHERA**  
Roll no-2002010190490050

Under Supervision of  
**Dr. Rashmi Ranjan Mishra**  
Head of the department  
**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia , Chandaka  
Industrial Estate, Bhubaneswar, 751024, Odisha

*Embezzled*  
*J.C.*



# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 15.05.2023

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR


MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

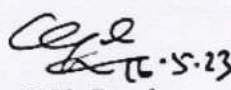
This is to certify that MISS.MONALISA BEHERA is a bonafide student of B.Sc. Biotechnology (Sixth Semester). MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490050. He has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss.Monalisa Behera is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

HOD

  
[GUIDE]

  
Dr. G.K. Panda

Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar



**A COMPARATIVE STUDY OF SERCA1 EXPRESSION  
BETWEEN GCN AND PECTORALIS OF QUAIL**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**MUSKAN PARWEEN**  
Roll no. - 2002010190490052  
Under Supervision of  
**Dr. Dipti Sethi**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Emulated*



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

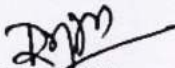
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

**TO WHOME SOEVER IT MAY CONCERN**


This is to certify that Miss Muskan Parveen is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490052. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Muskan is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

UDF

  
+ GUIDE

  
Dr. G.K. Panda  
Director, MSB

MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**NAMRADIPA JENA**

**ROLL NO- 2002010190490054**

Under Supervision of

**Dr. MOUSUMI MISHRA**

**Asst. Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*For student*  
*Mishra*



# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

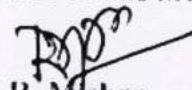
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

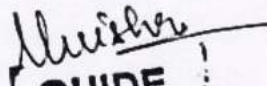
## TO WHOM SO EVER IT MAY CONCERN

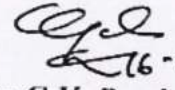
This is to certify that **Miss. NAMRADIPA JENA** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490054. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**NAMRADIPA** is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024



**A RELATIVE EXPRESSION OF *SERCA1* GENE IN GASTROCNEMIUS  
(GCN) MUSCLE IN CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
NANDINI CHAUHAN  
Roll No. - 2002010190490055**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Miss **NANDINI CHAUHAN** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490055. She has carried out her dissertation work under the direct supervision of **Dr. Manisha Pattnaik**, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Nandini Chauhan is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

**Dr. R.R. Mishra**  
Head of the Department

**HOD**

  
**GUIDE**

**Dr. G.K. Panda**  
Director

**Director, MSB**  
MITS School of Biotechnology  
Bhubaneswar



**A COMPARATIVE STUDY OF RYR1 EXPRESSION IN  
PECTORALIS SKELETAL MUSCLE BETWEEN CHICKEN  
AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
NEHA NAYAK  
Roll no-2002010190490057**

**Under Supervision of  
Dr. Satyananda Patel  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*For. Submitted  
By*



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

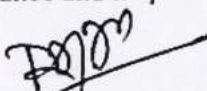
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

**TO WHOM SOEVER IT MAY CONCERN**


This is to certify that Miss. NEHA NAYAK is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490057. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Neha is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
MSB

40D

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director,  
Director  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
NIBEDITA NANDY  
Roll no-2002010190490058**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Submitted* *By*



MITS SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that Miss NIBEDITA NANDY is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490058. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. NIBEDITA NANDY is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R.R. Mishra

Head of department

HOD ]

*Sparida*  
15/05/23  
GUIDE

Dr. G.K. Panda

Director, MSB  
Director

MITS School of Biotechnology  
Bhubaneswar



**EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF  
CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By **NITISH KUMAR SAHOO**

Roll no-2002010190490060

Under Supervision of  
**Dr. Bhabtosh Mittra**

**Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Bhabtosh Mittra*

*Nitish Kumar Sahoo*



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

*FROM*

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

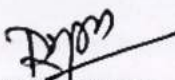
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

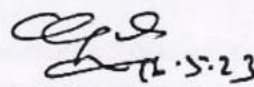
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Mr Nitish Kumar Sahoo is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490060. He has carried out his dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr Nitish is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024



**A COMPARATIVE STUDY OF RYR1 EXPRESSION IN  
PECTORALIS SKELETAL MUSCLE BETWEEN CHICKEN  
AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to**

**UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By**

**PARIDHI AGRAWAL**

**Roll no-2002010190490061**

**Under Supervision of**

**Dr. Satyananda Patel**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Evaluated  
Kishor*



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No./

DATE: 16 May 2023

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

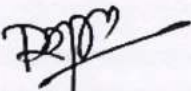
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

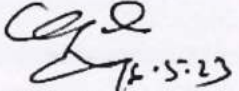
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. PARIDHI AGRAWAL is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490061. She has carried out her project under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Paridhi is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar



# **EXPRESSION OF SERCA1 IN THE PECTORALIS MUSCLES OF CHICKEN**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
POOJA PRIYADARSINI BEHERA  
Roll no-2002010190490062**

**Under Supervision of  
Mr. Sidharth Parida  
Associate Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS SCHOOL OF BIOTECHNOLOGY**

**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial**

*Pr. Parida*

*Abhishek*

Estate, Bhubaneswar, 751024, Odisha



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

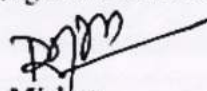
MITS SCHOOL OF BIOTECHNOLOGY


BHUBANESWAR – 751024, ODISHA

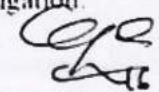
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. POOJA PRIYADARSINI BEHERA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490062. She has carried out her dissertation work under the direct supervision of Mr. Sidharth Parida , Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Pooja Priyadarsini Behera is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

  
[ GUIDE

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024



# A COMPARATIVE STUDY OF SERCA1 EXPRESSION BETWEEN GCN AND PECTORALIS OF QUAIL

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
Prachurya Mishra  
Roll no. - 2002010190490063  
Under Supervision of  
**Dr. Dipti Sethi**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Prachurya Mishra*  
*[Signature]*



**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

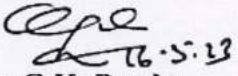
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Master Prachurya Mishra is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490063. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Prachurya is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**PRADYUMNA DAS**  
Roll no-2002010190490065

Under Supervision of  
**Dr. Smaranika Sahu**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Evaluation of*

*Majhi*



## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

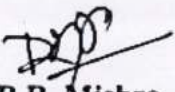
MITS SCHOOL OF BIOTECHNOLOGY

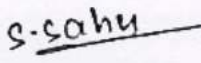
BHUBANESWAR - 751024, ODISHA

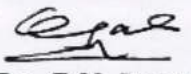
### TO WHOM SO EVER IT MAY CONCERN

This is to certify that MR. PRADYUMNA DAS is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490065. He has carried out his dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MR. PRADYUMNA is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

  
S. Sahu  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By  
PRAGNYA PRIYADARSANI KHETI

ROLL NO-- 2002010190490066

Under Supervision of

Dr. MOUSUMI MISHRA

Asst. Professor

DEPARTMENT OF BIOTECHNOLOGY



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Evaluated  
Kegha*



## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

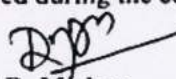
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

### TO WHOM SO EVER IT MAY CONCERN

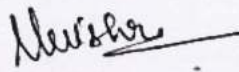
This is to certify that Miss. PRAGNYA PRIYADARSANI KHETI is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490066. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

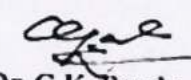
PRAGNYA PRIYADARSANI is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

**HOD**

  
[GUIDE]

  
Dr. G.K. Panda

Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

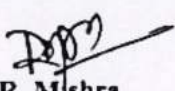
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

**TO WHOMSOEVER IT MAY CONCERN**

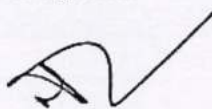
This is to certify that Miss PRATISHRUTI PRADHAN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490069 . She has carried out her dissertation work under the direct supervision of Dr.Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Pratishruti Pradhan is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

**HOD**



**GUIDE**

  
Dr. G.K. Panda

Director, MSB

Director

MIT S School of Biotechnology  
Bhubaneswar

---

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estat , Bhubaneswar-751024

# A COMPARATIVE STUDY OF SERCA1 IN SKELETAL MUSCLES OF CHICKEN AND QUAIL

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By  
PRITY SAMAL  
Roll no-2002010190490070

Under Supervision of  
Dr. Satyananda Patel (ASSOCIATE PROFESSOR)  
DEPARTMENT OF BIOTECHNOLOGY



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Satyananda Patel*  
*Prity Samal*





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

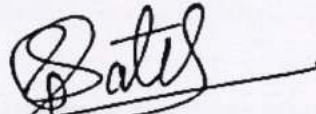
**BHUBANESWAR – 751024, ODISHA**

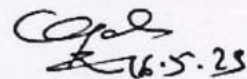
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. PRITY SAMAL is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll no-2002010190490070. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss.Prity Samal is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
PRIYADARSHINEE SWAIN  
Roll no-2002010190490071**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*For student*  
*Signature*





MITS SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

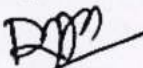
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that Miss PRIYADARSHINEE SWAIN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490071. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. PRIYADARSHINEE SWAIN is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of department

HOD

*Sparida*  
*15/05/23*

GUIDE

  
Dr. G.K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

# EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF CHICKEN

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to

UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By

Priyanka Mohapatra

Roll no-2002010190490072

Under Supervision of

Dr. Bhabtosh Mittra

Professor

DEPARTMENT OF BIOTECHNOLOGY



MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Dr. Bhabtosh Mittra*  
*Signature*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

*FROM*

PROF. (DR.) G.K. PANDA

DIRECTOR

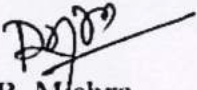
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

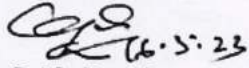
### TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. Priyanka Mohapatra is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490072. She has carried out her dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Priyanka Mohapatra is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024



MITS SCHOOL OF BIOTECHNOLOGY, BBSR

Approved by Govt of Odisha, Affiliated to UTKAL UNIVERSITY

Dr. Bhabtosh Mitra

**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**PURBI RAY**

ROLL NO-- 2002010190490073

Under Supervision of

**Dr. MOUSUMI MISHRA**

Asst. Professor

**DEPARTMENT OF BIOTECHNOLOGY**



*Kuldeep Mishra*

MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

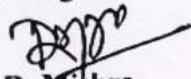
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **PURBI RAY** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490073. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**PURBI** is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda

16.5.23  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF  
CHICKEN**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**RAJLAXMI ROUT**

Roll no-2002010190490074

Under Supervision of  
**Dr. Bhabtosh Mitra**

Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Submitted*

*Rajlaxmi Rout*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

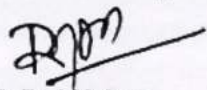
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

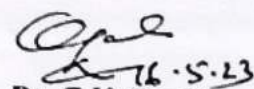
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. Rajlaxmi Rout is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490074. She has carried out her dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Rajlaxmi is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**A COMPARATIVE STUDY OF SERCA1 EXPRESSION  
BETWEEN GCN AND PECTORALIS OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
RANI GOCHHAYAT  
Roll no. - 2002010190490077  
Under Supervision of  
Dr. Dipti Sethi  
Asst. Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Evaluated  
Dipti Sethi*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

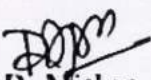
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

**TO WHOME SOEVER IT MAY CONCERN**

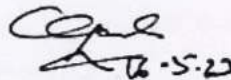
This is to certify that Miss Rani Gochhayat is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490077. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Rani is fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

HOD

  
GUIDE

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**A COMPARATIVE STUDY OF SERCA1 EXPRESSION  
BETWEEN GCN AND PECTORALIS OF QUAIL**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**RITUPARNA KHDIA**

Roll no. - 2002010190490080

Under Supervision of

**Dr. Dipti Sethi**

Asst. Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Frame  
12/1/2022*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

*FROM*

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

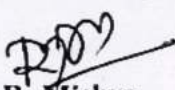
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

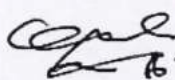
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Master RITUPARNA KHADIA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No2002010190490080. She has carried out her dissertation work under the direct supervision of Dr. Dipti Sethi, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Master Dibyanshu is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SAIJYOTI SAHOO  
Roll no-2002010190490081**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*Kannu*

*18/5/2022*





MITS SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR


MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss SAIJYOTI SAHOO is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490081. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. SAIJYOTI SAHOO is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

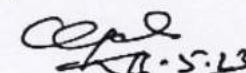
  
Dr. R.R. Mishra

Head of department

HOD

*Sparida*  
15/05/23

[GUIDE



Dr. G.K. Panda

Director, MSB

MITS School of Biotechnology  
Bhubaneswar

**A COMPARATIVE STUDY OF RYR1 EXPRESSION IN  
PECTORALIS SKELETAL MUSCLE BETWEEN CHICKEN  
AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SANDIP SUBHANKAR NAYAK  
Roll no-2002010190490083**

**Under Supervision of  
Dr. Satyananda Patel  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Finalized  
Sajit*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**


**MIT S SCHOOL OF BIOTECHNOLOGY**


**BHUBANESWAR – 751024, ODISHA**

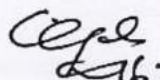
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that Mr. SANDIP SUBHANKAR NAYAK is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490083. He has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Sandeep is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**GUDE**

  
**Dr. G.K. Panda**  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SANGITA SAHOO  
Roll no-2002010190490084**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*Evaluation*

*Sangita*





MITS SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

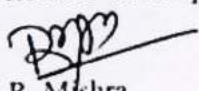
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss SANGITA SAHOO is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490084. She has carried out her dissertation work under the direct supervision of MR. SABYASACHIY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. SANGITA SAHOO is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of department

HOD

*Sparish*  
15/05/23

GUIDE

  
Dr. G.K. Panda

Director, MSB

Director

MITS School of Biotechnology  
Bhubaneswar

**EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF  
CHICKEN**

A Project Report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**SHRABANI DASH**

Roll no-2002010190490087

Under Supervision of

**Dr. Bhabtosh Mitra**

Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MIT S School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Evaluated*

*[Signature]*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

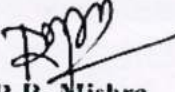
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

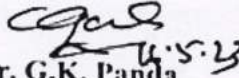
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. Shrabani Dash is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490087. She has carried out her dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Shrabani is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department  
**HOD**

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**EXPRESSION OF RYRI GENE IN THE PECTORALIS MUSCLE OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SHRUTI SWEETY GURIA  
Roll no-2002010190490088**

**Under Supervision of  
Dr. Rashmi Ranjan Mishra  
Head of the department  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*For control  
Raj*





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

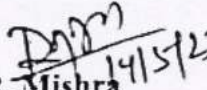
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

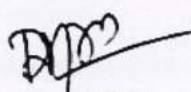
This is to certify that Ms. SHRUTI SWEETY GURIA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490088. He has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

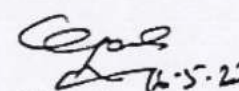
Ms. ShrutiSweetyGuria is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

[ HOD ]

  
[ GUIDE ]

  
Dr. G.K. Panda

Director, MSB

MITS School of Biotechnology  
Bhubaneswar

# **EXPRESSION OF SERCA1 IN THE PECTORALIS MUSCLES OF CHICKEN**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SHRUTILIPI DAS  
Roll no-2002010190490089**

**Under Supervision of  
Mr. Sidharth Parida  
Associate Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS SCHOOL OF BIOTECHNOLOGY**

**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Evaluated*  
*[Signature]*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

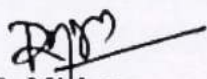
**MIT S SCHOOL OF BIOTECHNOLOGY**


**BHUBANESWAR - 751024, ODISHA**

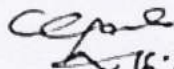
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. Shrutilipi Das is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490089. She has carried out her dissertation work under the direct supervision of Mr. Sidharth Parida , Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Shrutilipi Das is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

  
[GUIDE

  
Dr. G.K. Panda  
Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar

**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**SHWETA DAS**  
Roll no-2002010190490090

Under Supervision of  
**Dr. Smaranika Sahu**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*For student*

*[Signature]*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

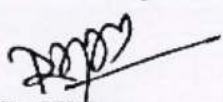
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

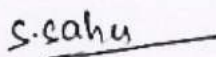
### TO WHOM SO EVER IT MAY CONCERN

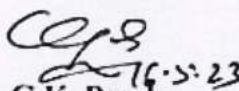
This is to certify that **MS. SHWETA DAS** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490090. She has carried out her dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MS. Shweta is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD ]**

  
S. Sahu  
**[GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF  
CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**SIDHI SIDHESWAR SAHOO**  
Roll no-2002010190490091

Under Supervision of  
**Dr. Bhabtosh Mitra**  
Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Examined*  
*[Signature]*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

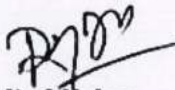
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

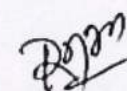
**TO WHOME SOEVER IT MAY CONCERN**

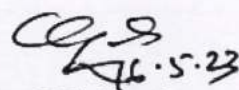
This is to certify that Mr. Sidhi sidheswar sahuo is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490091. He has carried out his dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Sidhi sidheswar is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**SMRUTISHREE ROUTRAY**

**ROLL NO-- 2002010190490093**

Under Supervision of

**Dr. MOUSUMI MISHRA**

**Asst. Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Evaluation  
Sign*





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

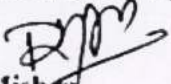
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

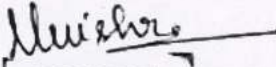
## TO WHOM SO EVER IT MAY CONCERN

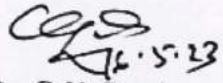
This is to certify that **Miss. SMRUTISHREE ROUTRAY** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490093. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**SMRUTISHREE** is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**A RELATIVE EXPRESSION OF SERCA 1 GENE IN GASTROCNEMIUS (GCN)  
MUSCLE IN CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SONALI PARIDA  
Roll no-2002010190490094**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Miss SONALI PARIDA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490094 . She has carried out her dissertation work under the direct supervision of Dr.Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Sonali parida is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R.R. Mishra  
Head of the Department  
HOD ]

GUIDE

Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

**THE RELATIVE EXPRESSION OF RYR1 GENE IN  
GASTROCNEMIUS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By SONIA SOREN  
Roll no- 2002010190490095**

**Under Supervision of  
Dr. Satyananda Patel  
Associate Professor  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*For + level + final*

*S. J. G.*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

*FROM*

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**


**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

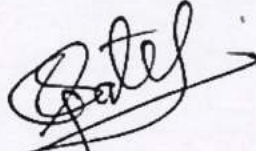
### TO WHOME SOEVER IT MAY CONCERN


This is to certify that Miss. SONIA SOREN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490095. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Sonia is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

**HOD ]**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SOUMYA RANJAN SWAIN  
Roll no-2002010190490096**

**Under Supervision of:  
MR. SABYASACHIY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*Supervised*

*Signature*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

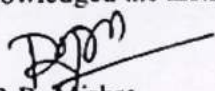
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that MR.SOUMYA RANJAN SWAIN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490096. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MR. SOUMYA RANJAN SWAIN is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of department

**HOD ]**

  
S. Parida  
15/5/23  
**GUIDE**

  
Dr. G.K. Panda

Director, MSB  
Director  
MIT S School of Biotechnology  
Bhubaneswar

**EXPRESSION OF RYR1 IN THE PECTORALIS MUSCLE OF  
CHICKEN**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to**

**UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By**

**SRIMAN BRAJESWAR KHUNTIA**

**Roll no-2002010190490097**

**Under Supervision of**

**Dr. Bhabtosh Mitra**

**Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia , Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha**

*Entered*

*Signature*





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

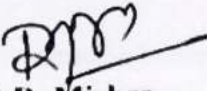
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

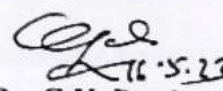
## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Mr Sriman Brajeswar Khuntia is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490097. He has carried out her dissertation work under the direct supervision of Dr. Bhabtosh Mitra Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr Sriman Brajeswar Khuntia is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
HOD

  
GUIDE

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**EXPRESSION OF RYR1 GENE IN THE PECTORALIS MUSCLE OF QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SUBHADRA MOHANTY  
Roll no-2002010190490100**

**Under Supervision of  
Dr. Rashmi Ranjan Mishra  
Head of the department  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Subhadra Mohanty*  
*Rashmi Mishra*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 15.09.23

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

### TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. SUBHADRA MOHANTY is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490100. She has carried out her dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Subhadra Mohanty is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R.R. Mishra

*R.R.M.*  
15/9/23

Head of the Department

MOD

*R.R.M.*  
GUIDE

Dr. G.K. Panda

*G.K.P.*  
15.9.23

Director, MSB

MITS School of Biotechnology  
Bhubaneswar

# EXPRESSION OF SERCA1 IN THE PECTORALIS MUSCLES OF CHICKEN

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By  
SUBHASHREE MOHAPATRA  
Roll no-2002010190490101

Under Supervision of  
Mr. Sidharth Parida  
Associate Professor  
DEPARTMENT OF BIOTECHNOLOGY



MITS SCHOOL OF BIOTECHNOLOGY

MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial

*Evaluated*

*Seighi*



Estate, Bhubaneswar, 751024, Odisha



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

*FROM*

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

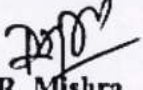
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

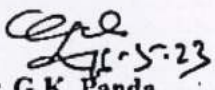
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. SUBHASHREE MOHAPATRA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490101. She has carried out her dissertation work under the direct supervision of Mr. Sidharth Parida , Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Subhashree Mohapatra is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

  
**GUIDE**

  
**Dr. G.K. Panda**  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**THE EXPRESSION STUDY OF SERCA IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**SUBHASHREE PADHY**  
Roll no-2002010190490102

Under Supervision of  
**Dr. Smaranika Sahu**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Finalized*

*Dr. S. Sahu*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

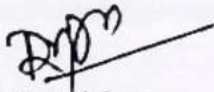
**MITS SCHOOL OF BIOTECHNOLOGY**

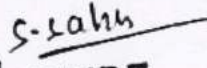
**BHUBANESWAR – 751024, ODISHA**

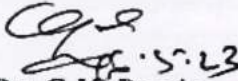
### TO WHOM SO EVER IT MAY CONCERN

This is to certify that MISS. SUBHASHREE PADHY is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490102. He has carried out his dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MISS. SUBHASHREE PADHY is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
HOD

  
S. Sahu  
GUIDE

  
Dr. G.K. Panda  
Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

# EXPRESSION OF SERCA1 IN THE PECTORALIS MUSCLES OF CHICKEN

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By  
SUBHASHREE PRIYADARSINE MANDHATA  
Roll no-2002010190490103

Under Supervision of  
Mr. Sidharth Parida  
Associate Professor  
DEPARTMENT OF BIOTECHNOLOGY



MITS SCHOOL OF BIOTECHNOLOGY

MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka  
Industrial Estate, Bhubaneswar 751024, Odisha

*Examined*  
*[Signature]*  
18/5/2022





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**


**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

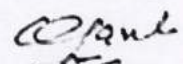
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. SUBHASHREE PRIYADARSINE MANDHATA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490103. She has carried out her dissertation work under the direct supervision of Mr. Sidharth Parida , Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Subhashree PRIYAPRIYADARSINE MANDHATA is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly necknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

  
[ GUIDE ]

  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

---

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**SUBHASHMITA DASH**  
ROLL NO-- 2002010190490104

Under Supervision of  
**Dr. MOUSUMI MISHRA**  
Asst. Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Examined*  
*allg*  
18/5/2022





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**


**MITS SCHOOL OF BIOTECHNOLOGY**


**BHUBANESWAR - 751024, ODISHA**

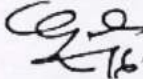
## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. SUBHASMITA DASHI is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490104. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

SUBHASMITA is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
HOD

  
[ GUIDE ]

  
26.5.23  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**A RELATIVE EXPRESSION OF SERCA 1 GENE IN GASTROCNEMIUS (GCN)  
MUSCLE IN CHICKEN AND QUAIL.**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SUCHISMITA MALLICK  
Roll no-2002010190490105**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**





MIT S SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Miss SUCHISMITA MALLICK is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490105 . She has carried out her dissertation work under the direct supervision of Dr.Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Tapaswini Pradhan is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R.R. Mishra

Head of the Department

**HOD**

Dr. G.K. Panda

Director, MSB

MIT S School of Biotechnology  
Bhubaneswar

**GUIDE**

# **A COMPARATIVE STUDY OF SERCAI IN SKELETAL MUSCLES OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**SUMIT MONDAL**

Roll no-2002010190490106

Under Supervision of

**Dr. Satyananda Patel (ASSOCIATE PROFESSOR)  
DEPARTMENT OF BIOTECHNOLOGY**



Mits School Of Biotechnology , 2(P), Infocity , Patia , Chandaka Industrial Estate , Bhubaneswar ,  
751224, Odisha

*Scanned by*  
*18/5/2022*





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

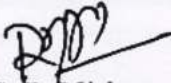
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR – 751024, ODISHA**

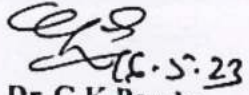
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Mr. SUMIT MONDAL is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll no- 2002010190490106. He has carried out his dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. SUMIT is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

**A COMPARATIVE GENE EXPRESSION STUDY OF SERCA-1 IN THE  
PECTORALIS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SUNITA RANI MOHAPATRA  
Roll no-2002010190490107**

**Under Supervision of:  
MR. SABYASACHY PARIDA  
ASSISTANT PROFESSOR**

**DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*Found*

*18/5/2023*





MIT S SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

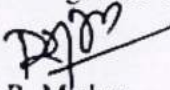
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss SUNITA RANI MOHAPATRA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490107. She has carried out her dissertation work under the direct supervision of MR. SABYASACHY PARIDA Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.


Miss. SUNITA RANI MOHAPATRA is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of department

**HOD**

  
15/05/23

**GUIDE**

  
24-5-23  
Dr. G.K. Panda

Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**SUSIL BARAL**  
Roll no-2002010190490109

Under Supervision of  
**Dr. Rashmi Ranjan Mishra**  
Head of the department  
**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Rashmi Mishra*  
*Susil Baral*





## MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

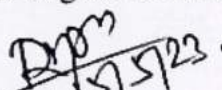
BHUBANESWAR - 751024, ODISHA

### TO WHOME SOEVER IT MAY CONCERN

This is to certify that Mr. SUSIL BARAL is a bonafide

student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490109. He has carried out his dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Head of Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. SUSIL BARAL is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

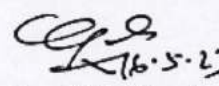
  
Dr. R.R. Mishra

Head of the Department

HOD



GUIDE

  
(6.5.23)

Dr. G.K. Panda

Director, MSB

MITS School of Biotechnology  
Bhubaneswar

# A COMPARATIVE STUDY OF SERCA1 IN SKELETAL MUSCLES OF CHICKEN AND QUAIL

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

By  
SUSHREE NOOPUR SAHOO  
Roll no-2002010190490108

Under Supervision of  
Dr. Satyananda Patel (ASSOCIATE PROFESSOR)  
DEPARTMENT OF BIOTECHNOLOGY



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

Evaluator

*[Handwritten signature]*





**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

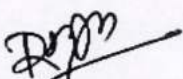
**MITS SCHOOL OF BIOTECHNOLOGY**


**BHUBANESWAR - 751024, ODISHA**

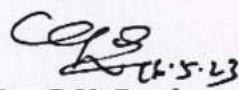
**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. SUSHREE NOOPUR SAHOO is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll no- 2002010190490108. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. SUSHREE NOOPUR SAHOO is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**THE RELATIVE EXPRESSION OF RYRI GENE IN  
GASTROCNEMIUS MUSCLE OF CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
SUSMITA GHOSH  
Roll no-2002010190490110  
Under Supervision of  
Dr. Satyananda Patel  
Associate Professor  
DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Susmita Ghosh*





## MIT S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR


MIT S SCHOOL OF BIOTECHNOLOGY

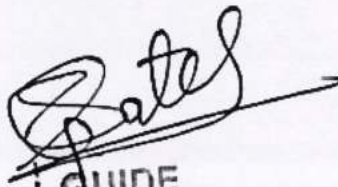
BHUBANESWAR - 751024, ODISHA


### TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. SUSMITA GHOSH is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490110. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Susmita is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department  
HOD

  
GUIDE

  
26.5.23  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
PECTORALIS MUSCLE**

A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**SUVENDU NAYAK**

Roll no-2002010190490111

Under Supervision of  
**Dr. Smaranika Sahu**  
Asst. Professor

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial  
Estate, Bhubaneswar, 751024, Odisha

*Evaluated and*

*Signature*





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

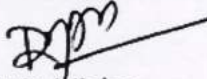
**MIT S SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**

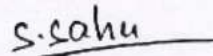
**TO WHOM SO EVER IT MAY CONCERN**

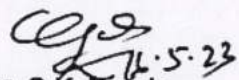
This is to certify that **MR.SUVENDU NAYAK** is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490111. He has carried out his dissertation work under the direct supervision of Dr. Smaranika Sahu, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

MR.Suvendu is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

**[ HOD ]**

  
**[ GUIDE ]**

  
**Dr. G.K. Panda**  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MIT S School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,

**EXPRESSION OF SERCA1 IN THE PECTORALIS  
MUSCLES OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By  
**Tanavi Singh**  
Roll no-2002010190490112

Under Supervision of  
**Mr. Sidharth Parida**  
Associate Professor  
**DEPARTMENT OF BIOTECHNOLOGY**



**MITS SCHOOL OF BIOTECHNOLOGY**

MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial

*Kalpana*  
*Devi*



Estate, Bhubaneswar, 751024, Odisha



**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

**PROF. (DR.) G.K. PANDA**

**DIRECTOR**

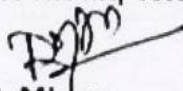
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR - 751024, ODISHA**


**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. TANAVI SINGH is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490142. She has carried out her dissertation work under the direct supervision of Mr. Sidharth Parida , Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Tanavi Singh is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R.R. Mishra**  
Head of the Department

  
**GUIDE**

  
**Dr. G.K. Panda** 5.23  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

---

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024

**A RELATIVE EXPRESSION OF SERCA1 GENE IN GASTROCNEMIUS (GCN)  
MUSCLE IN CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
TANMESH PANDA  
Roll no-2002010190490113**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**

*Evaluated  
by*





**MIT SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MIT SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Miss TANMESHA PANDA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490113. She has carried out her dissertation work under the direct supervision of Dr. Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Tanmesha panda is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R.R. Mishra  
Head of the Department

HOD

Dr. G.K. Panda

Director, MSB

MIT School of Biotechnology  
Bhubaneswar

GUIDE

**A RELATIVE EXPRESSION OF SERCA 1 GENE IN GASTROCNEMIUS (GCN)  
MUSCLE IN CHICKEN AND QUAIL**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

**By  
TAPASWINI PRADHAN  
Roll no-2002010190490114**

**Under Supervision of  
Dr. Manisha Pattnaik  
Assistant Professor  
DEPARTMENT OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No./

DATE: 16 May 2023

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY


BHUBANESWAR – 751024, ODISHA


## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Miss. TAPASWINI PRADHAN is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.2002010190490114. She has carried out her project work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. TAPASWINI PRADHAN is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra  
Head of the Department

  
[GUIDE]

  
16.5.23  
Dr. G.K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

[HOD]

**THE COMPARATIVE STUDY OF SERCA1 BETWEEN GCN AND  
PECTORALIS MUSCLE OF CHICKEN**

A Project Report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to

**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**BACHELOR OF SCIENCE IN BIOTECHNOLOGY**

By

**YOJANAJYOTI PATRA**

**ROLL NO-- 2002010190490115**

Under Supervision of

**Dr. MOUSUMI MISHRA**

**Asst. Professor**

**DEPARTMENT OF BIOTECHNOLOGY**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, 751024, Odisha

*Evaluated*

*Mishra*





## MIT S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE:

**FROM**

PROF. (DR.) G.K. PANDA

DIRECTOR

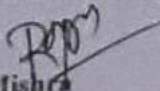
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR - 751024, ODISHA

### TO WHOM SO EVER IT MAY CONCERN

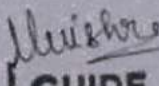
This is to certify that Miss. YOJANAJYOTI PATRA is a bonafide student of B.Sc. Biotechnology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 2002010190490115. She has carried out his dissertation work under the direct supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

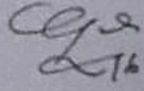
YOJANAJYOTI is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

HOD

  
GUIDE

  
26.5.23  
Dr. G.K. Panda

Director, MSB

MIT S School of Biotechnology  
Bhubaneswar

**EVALUATION OF ANTIMICROBIAL ACTIVITY OF  
MANGO GINGER (*Curcuma amada*) AND BLACK CUMIN  
(*Nigella sativa*) AGAINST FOOD SPOILAGE  
MICROORGANISMS**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

ABHIJIT MOHAPATRA

ROLL NO. 15254U214001

UNDER THE GUIDANCE OF

Dr. DIPTIPRIYA SETHI

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P) , INFOCITY PATIA , CHANDAKA INDUSTRIAL ESTATE , BHUBANESWAR, ODISHA, PIN -  
751024

*evaluated,*  
*Dr. Dipti*  
*28.7.23*

*Dr. Dipti*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 21-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr Abhijit Mohapatra** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214001 . He has carried out his dissertation work under the direct Supervision of **Dr. Diptipriya Sethi**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Mr Abhijit Mohapatra** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

*[Signature]*  
HOD

*[Signature]*  
24/7/23  
[GUIDE]

*[Signature]*  
24.7.23  
Prof. G. K. Panda

Director

**DEFENSE ENZYMES AND METABOLITES  
EXPRESSION IN RICE AGAINST RRKN**

*(M.graminicola)*

**A DISSERTATION REPORT SUBMITTED TO**



**MITS SCHOOL OF BIOTECHNOLOGY, BHUBANESWAR**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR  
THE AWARD OF A DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY**

By

**Mr. Abhisek Mohapatra**

**Roll No.-15254U214002**

**Under the Guidance of  
Dr. RUPAK JENA**



**ICAR -NATIONAL RICE RESEARCH INSTITUTE  
BIDYADHARPUR, CUTTACK, ODISHA 753006**

**(FEBRUARY 2023-JULY 2023)**

*evaluated*  
*Jena*  
*28/07/2023*  
*Rupak*  
*2.7.23*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

FROM

DATE- 24-07-23

PROF. (DR.) G.K. PANDA  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY,  
BHUBANESWAR-  
751024, ODISHA

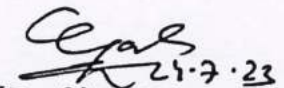
## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. Abhisek Mohapatra is a *bona fide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214002. He has carried out his dissertation work under the direct supervision of Dr. Rupak Jena Scientist, Department of Crop Protection Division, Nematology at ICAR-NRRI Cuttack, Odisha for a period of six (06) months i.e. from January 2023 to June 2023. Concerned. As per my knowledge concerned no part of this work has been submitted for any other degree or diploma.

Mr. Abhisek Mohapatra is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD ]

  
[ GUIDE ]

  
24-7-23  
Dr. (Prof.) G. K. Panda  
Director, MSB

Website: [www.msb.ac.in](http://www.msb.ac.in) Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

(P), Infocity, Patla, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**EVALUATION OF METAL STRESS AND ANTI-  
OXIDANT ACTIVITY ON CHICK PEA (*Cicer arietinum*)**



**THESIS SUBMITTED TO  
UTKAL UNIVERSITY  
FOR THE DEGREE OF  
MASTER OF SCIENCE  
IN  
BIOTECHNOLOGY (2023)**

**Investigator  
Alisha Sahoo  
RollNo.15254U214003**

**Under The Guidance Of  
Prof. BHABATOSH MITTRA  
Co-Guide: RASHMI RANJAN MISHRA**



*evaluated*  
*S. Mishra*  
*21.2.23*  
*Done*  
*21/9/2023*

**MITS SCHOOL OF BIOTECHNOLOGY  
2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024  
FEBRUARY-JULY 2023**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No.

DATE: 24-02-23

**FROM**

**Prof. G.K. Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Alisha Sahoo** is a Bonafede student of **M.Sc. (Fourth Semester)**, MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U184003. She has carried out her dissertation work under the direct Supervision of **Prof. Bhabatosh Mitra**, Dept. Biotechnology, MITS School of Biotechnology for duration of six (04) months i.e., from February, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Alisha Sahoo** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

**HOD**

**GUIDE**

24-2-23  
**Prof. G.K. Panda**

**Director**

**"OPTIMIZATION OF PRETREATMENT, ENZYMATIC HYDROLYSIS OF CORN HUSK FOR  
ENHANCED BIOETHANOL PRODUCTION"**

**THESIS SUBMITTED TO THE  
UTKAL UNIVERSITY  
FOR THE DEGREE OF  
MASTER OF SCIENCE**

**IN  
BIOTECHNOLOGY**

*Investigator*

**AMISHA BISWAL**

**Roll. No. 15254U214004**



**Supervisor**

**Dr. Rashmi Ranjan Mishra**

**MITS School of Biotechnology,**

**2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar -751024**

**JULY, 2023**

*evaluated  
Amish  
28-7-23*

*Dr.  
28/7/23*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 24-07-23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Amisha Biswal** is a bonafide student of **M.Sc. in Biotechnology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214004. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Amisha Biswal** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

**HOD**

**GUIDE**

**Prof. G.K.Panda**

**Director**

# **Bioremediation of hexavalent chromium using halotolerant bacteria**

**A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY**

**By**

**AMISHA NAYAK**

**Roll No. 15254U214005**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA**  
*Associate Professor*  
*Dept. Biotechnology*  
*MITS School of Biotechnology*  
*2(P), Infocity, Patia, Bhubaneswar-751024*



**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024  
2023**

*evaluated*

*Sans*  
*28/9/2023*

*Sd/*  
*28.9.23*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 24-07-23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA


## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Amisha Nayak** is a bonafide student of **M.Sc. in Biotechnology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214005. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Amisha Nayak** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**HOD**

  
**GUIDE**

  
**Prof. G.K.Panda**  
Director

**INVESTIGATION ON THE HEAVY METAL AND  
FUSARIUM INDUCED STRESS PROTEIN(FISP)IN  
CHICK PEA (*Cicer arietinum*)**



**THESIS SUBMITTED TO  
UTKAL UNIVERSITY**

**FOR THE DEGREE OF  
MASTER OF SCIENCE  
IN  
BIOTECHNOLOGY (2023)**

***Investigator*  
Arpita Barik  
Roll.No.15254U214006**

***Under The Guidance Of*  
Prof. BHABATOSH MITTRA  
CO-GUIDE: RASHMI RANJAN MISHRA**

*evaluated*  
*Rashmi*  
*28.7.23*



*Sena*  
*28/07/2023*

**MITS SCHOOL OF BIOTECHNOLOGY  
2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024  
FEBRUARY-JULY 2023**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No.

DATE:

**FROM**

**Prof. G.K. Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Arpita Barik** is a bonafide student of M.Sc. (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U184006. She has carried out her dissertation work under the direct Supervision of **Prof. Bhabatosh Mittra**, Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e., from January, 2023 to February 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Arpita Barik** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

**HOD**

**GUIDE**

  
21.7.23  
**Prof. G.K. Panda**

**Director**

**ISOLATION OF POTENTIAL PROBIOTIC  
LACTOBACILLUS FROM FERMENTED RICE WATER**

**A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**



**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**By**

**ARPITA JENA  
Roll No.-15254U214007**

**Under the guidance of  
Dr. MOUSUMI MISHRA  
(ASSISTANT PROFESSOR)  
MITS SCHOOL OF  
BIOTECHNOLOGY, BBSR**

*evaluated  
Alakh  
28.7.23*



**MITS SCHOOL OF BIOTECHNOLOGY  
2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar,  
Odisha, Pin - 751024  
2023**

*Jena  
28/7/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

DATE: 24-07-23

**FROM**

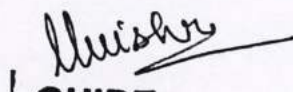
**PROF. (DR.) G.K.PANDA**  
**DIRECTOR**  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

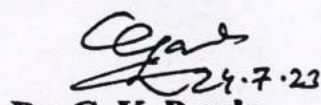
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Ms. ARPITA JENA is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214007. She has carried out her dissertation work under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, for a period of three (04) months i.e. from, Feb.2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Arpita Jena is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
24.7.23  
Dr. G. K. Panda  
Director, MSB

2(P), Infocity, Patla, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**Evaluation of nutritional values and antioxidant properties of  
common edible Mushrooms of Odisha**

**A**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**  
*Affiliated to*  
**Utkal University, Bhubaneswar, Odisha**

**In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Biotechnology (2023)**

**Submitted by**

**Arpita Samal**  
Roll No. 15254U214008

**Under The Guidance Of**

**Dr. Smaranika Sahu**  
Assistant Professor



**Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,**

*evaluated*

*Suse*  
*28/07/2023*

*Sah*  
*28.7.23*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 27-07-23

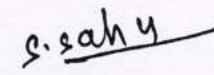
PROF. G.K.PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

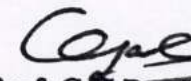
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss Arpita Samal is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214008. She has carried out her dissertation work under the direct Supervision of Dr. Smaranika Sahu, Assistant Professor for the duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

Miss Arpita Samal is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Prof. G.K. Panda 27-7-23  
Director

**VALIDATION AND STANDARDISATION OF *CDKN2A* MUTATION IN  
CENTRAL NERVOUS TUMORS USING MULTIPLEX LIGATION  
PROBE AMPLIFICATION (MLPA)**

**A Dissertation submitted for the partial fulfillment of the degree  
of**

**Masters of Science in Biotechnology  
Submitted By**

**AZHAR SHAHID**

**Roll No-15254U214009**



**Department of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY**



**Bhubaneswar -751024, Odisha, India.  
(Affiliated to Utkal University Bhubaneswar, Odisha)**

**Under the Guidance of  
Dr. OMSHREE SHETTY**

**ASSISTANT PROFESSOR AND SCIENTIFIC OFFICER 'E'  
MOLECULAR PATHOLOGY,  
DEPARTMENT OF PATHOLOGY  
TATA MEMORIAL HOSPITAL**



**DR. E BORGES ROAD PAREL, MUMBAI, MAHARASHTRA 400012**

**ACADEMIC YEAR 2021-2023**

*evaluated*  
*Shetty*  
*28.7.23*

*Shetty*  
*28/07/2023*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /  
MITS SCHOOL OF BIOTECHNOLOGY,  
BHUBANESWAR-751024, ODISHA

DATE: 21-07-23

## TO WHOME SOEVER IT MAY CONCERN

This is to certify that **Mr. Azhar Shahid** is a bonafide student of M.Sc. Biotechnology (Fourth Semester), **MITS School of Biotechnology, Bhubaneswar-24, Odisha** with University Roll No.15254U214009. He has carried out his dissertation work under the guidance of **Dr. Omshree Shetty** at **Tata Memorial Hospital, Mumbai**. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Azhar is a fit and suitable candidate for the award of Degree of Masters of Science in Biotechnology offered by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

Mr. (Prof.) G.K Panda

DIRECTOR

MITS School Of Biotechnology



[ HOD ]

[ GUIDE ]

**An Efficient Protocol for Direct Shoot Regeneration from  
nodal explants of *Bacopa Moneria L*: A Potent Medicinal Herb**

THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)

**BIJAYA LAXMI PRADHAN**

ROLL NO. 15254U214010

Under the guidance of  
**Mr. SIDDHARTH PARIDA**  
Associate Professor  
Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY



BHUBANESWAR, ODISHA

*evaluated*  
*Siddharth*  
*28.7.23*

*Sure*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. 24-07-23

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Bijaya laxmi Pradhan** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214010**. She has carried out her dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January 10th, 2023 to July 10th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Bijaya laxmi Pradhan** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

HOD ]

GUIDE ]

24-7-23  
Prof. (Dr.) G.K. Panda

Director, MSB

**NUTRIENT CONTENT AND BIOCHEMICAL EVALUATION  
OF POMFRET FISH (*Pampus argenteus*) DURING FROZEN  
STORAGE**

**A**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**

*Affiliated to*

**Utkal University, Bhubaneswar, Odisha**

In the partial fulfilment of the requirements for the award of  
**Degree of Master of Science in Biotechnology (2023)**  
Submitted by

**BISALAKHI AGASTY**

*Roll No-15254U214011*

*Under the guidance of*  
**Dr. Smaranika Sahu**  
(Assistant Professor)



**MITS School of Biotechnology**  
2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

*evaluated*  
*Sahu*  
*28.7.23*

*Sahu*  
*28/07/2023*





ESTD 2003

# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM IT MAY CONCERN

This is to certify that **Miss Bisalakhi Agasty** is a *Bonafede* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214011**. She has carried out her dissertation work under the direct Supervision of

**Dr. Smaranika Sahu**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Bisalakhi Agasty** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

HOD

GUIDE

  
24.7.23  
Prof. G.K. Panda

Director

**THE EXPRESSION STUDY OF SERCA1 IN THE QUAIL  
(*Coturnix coturnix*) PECTORALIS MUSCLE**

Project Report Submitted to  
**UTKAL UNIVERSITY**



for the partial fulfilment for the degree of  
**Master of Science (M.Sc.) in Biotechnology**

*by*

**BISWAJIT PADHY**

Roll No-15254U214012

*Under the guidance of*

**Dr. Satyananda Patel**

(Assoc. Prof., Dept. Of Biotechnology)



**MITS School of Biotechnology**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**JULY 2023**

*evaluated*

*Shekh*  
28.7.23

*Shekh*  
28/7/2023





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

REF. NO.

DATE: 24-07-23

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

## TO WHOM IT MAY CONCERN

This is to certify that Mr. BISWAJIT PADHY is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-15254U214012. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Biswajit is a fit and suitable candidate Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.



*[Signature]*  
HOD

*[Signature]*  
GUIDE

*[Signature]*  
24.7.23  
Prof. (Dr.) G.K. PANDA  
DIRECTOR

P), Infocity, Patia, Bhubaneswar  
n- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

# Bacterial lipases as potential antioxidant: an overview

A

Dissertation Submitted

To

MITS SCHOOL OF BIOTECHNOLOGY

*Affiliated to*

Utkal University, Bhubaneswar, Odisha

In the Partial fulfilment of the requirements for the award of

Degree of Master of Science in Biotechnology (2023)

Submitted by

**BISWAJIT PRADHAN**

**Roll No. 15254U214013**

Under The Guidance Of

**Dr. Smaranika Sahu**

Assistant Professor



Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,

*evaluated by*  
*S. Sahu*  
*28.3.23*

*S. Sahu*  
*28/3/2023*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr. Biswajit Pradhan** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214013**. He has carried out his dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor for the duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Mr. Biswajit Pradhan** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

**HOD** ]

[ **GUIDE**

  
Prof. G.K.Panda

Director

# **A Study to check the effect of Bacopa monnieri extract on 6-OHDA induced C6 cells**

**A Project report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY  
Affiliated to  
UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**MASTER OF SCIENCE IN BIOTECHNOLOGY**

By  
**Chitranka Priyadarshini Pradhan**  
Roll NO – 15254U214014

Under Supervision of  
**Dr. Sarika Singh**  
**Associate Professor, Department of Biotechnology**



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

DATE:

Ref. No./

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. Chitranka Priyadarshini Pradhan is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-15254U214014. She has carried out her dissertation work under the direct supervision of Dr. Sarika Singh, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Chitranaka is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R. R. Mishra  
H.O.D., MSB

**HOD**

**GUIDE**

Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

MINIMIZATION OF BIOTIC STRESS IN CHICK PEA  
(*Cicer arietinum*) BY PRE-EXPOSURE TO SUB-LETHAL  
DOSE OF Cd

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY



AFFILIATED TO

**UTKAL UNIVERSITY, BHUBANESWAR**

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY.

BY

**HARAPRIYA SAHOO**

ROLL NO: 15254U211015

**UNDER THE GUIDANCE OF**

PROF. BHABATOSH MITTRA

(ASSISTANT PROFESSOR)



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-  
751024

*evaluated*  
*Sah*  
*27.7.23*  
*Saha*  
*28/07/2023*





# मिस्स जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

REF.NO:

DATE-

FROM:

PROF.(DR.) G. K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. HARAPRIYA SAHOO is a bonafide student of M.sc Biotechnology of MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no - 15254U211015. She has carried out his dissertation work under the direct supervision of Prof. BHABATOSH MITTRA, Assistant professor, Department of Biotechnology, MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha within the stipulated time of six months (January to July, 2023). As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. HARAPRIYA SAHOO has completed her dissertation work for partial fulfillment of the requirement to award for Master Degree of Science in Biotechnology conferred by Utkal university. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. Rashmi Ranjan Mishra

(Head of the department)

*Dr. R. Mishra*  
24/7/23  
HOB

*G. K. Panda*  
GUIDE

*G. K. Panda*  
Director

MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

Efficient invitro multiplication of *Aloe vera* , An Important  
Medicinal Plant

THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)

Submitted By

Jagannath Acharya

ROLL NO: 15254U214016

Under the guidance of:  
**Mr. SIDDHARTH PARIDA**  
(Associate Professor)  
Department of Biotechnology



MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR, ODISHA

*evaluated*

*Siddh*  
28.7.23

*Suresh*  
28/07/2023





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. 24-07-23

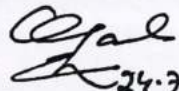
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Jagannath Acharya** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214016. He has carried out his dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January 10th, 2023 to July 10th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Jagannath Acharya** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD ]

  
GUIDE ]

  
24.7.23  
Prof. (Dr.) G.K.Panda  
Director, MSB

# A comparative study on Antioxidative Properties of Green Synthesised Silver Nanoparticles

A Project report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**  
Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**MASTER OF SCIENCE IN BIOTECHNOLOGY**

By  
**Jhansirani Patra**  
Roll NO – 15254U214017  
Under Supervision of  
**Dr. Ashok Kumar Nayak**  
**Associate Professor, Department of Biotechnology**



MIT S School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneshwar, 751024, Odisha





# MIT S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

DATE:

Ref. No./

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR


MIT S SCHOOL OF BIOTECHNOLOGY -

BHUBANESWAR - 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. Jhansirani Patra is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-15254U214017. She has carried out her dissertation work under the direct supervision of Dr. Ashok Kumar Nayak, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Jhansirani is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
H.O.D., MSB

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB

Director  
MIT S School of Biotechnology  
Bhubaneswar

# Synthetic seed production of Aloe vera

An important medicinal plant

**THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)**

**By**

**KADAMBINI RATH**

**ROLL NO: 15254U214018**

Under the guidance of :

**Mr. SIDDHARTH PARIDA**

(Associate Professor)

**Department of Biotechnology**



**MITS SCHOOL OF BIOTECHNOLOGY, BHUBANESWAR**

**MITS SCHOOL OF BIOTECHNOLOGY, BHUBANESWAR, ODISHA**

*updated*  
*[Signature]*  
*28/7/2023*  
*[Signature]*  
*28.7.23*





# मिदस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. 24-07-23

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Kadambini Rath** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214018. She has carried out her dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from 3rd January , 2023 to July 11th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Kadambini Rath** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

HOD

GUIDE

Prof. (Dr.) G.K.Panda

Director, MSB

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, P.O.-KIIT Campus, Bhubaneswar-751024

Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**ISOLATION AND CHARACTERIZATION OF HEAVY METAL  
RESISTANT BACTERIA ISOLATED FROM INDUSTRIAL WASTE**

A

DISSERTATION SUBMITTED TO  
**MITS SCHOOL OF BIOTECHNOLOGY**

AFFILATED TO



**UTKAL UNIVERSITY, BHUBANESWAR**

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY

BY

KAJAL KIRAN SAHOO

ROLL NO. 15254U214019

UNDER THE GUIDANCE OF

**Dr. DIPTIPRIYA SETHI**

(ASSISTANT PROFESSOR)



**MITS SCHOOL OF BIOTECHNOLOGY**

**(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN - 751024**

*evaluated*

*Dr. Dipti Priya Sethi*  
*28.7.22*

*Sana*  
*28/9/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Kajal Kiran Sahoo** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214019 . She has carried out his dissertation work under the direct Supervision of **Dr. Diptipriya Sethi**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Kajal Kiran Sahoo** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*R.K.P.*  
HOD

*Dr. Diptipriya Sethi*  
24/7/23  
GUIDE

*G.K.P.*  
24.7.23  
Prof. G. K.Panda

Director

**A STUDY ON PECTINOLYTIC BACTERIA ISOLATED  
FROM**

*Musa acuminata (Banana)*

**A**

**Dissertation Submitted To  
MITS school of biotechnology**

**Affiliated to**

**Utkal University, Bhubaneswar**

**In partial fulfilment of the requirement for the award of  
Degree of master of science in Biotechnology**



**Submitted by**

**Kishan Kumar Sahoo**

**Roll no. -15254U214020**

*evaluated*  
*[Signature]*  
*2.7.23*



**Dr Manisha Patnaik**

**MITS School of Biotechnology**

**Infocity Patia Chandrasekharpur, Bhubaneswar-751024**

*[Signature]*  
*28/7/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Date : 17/7/2023

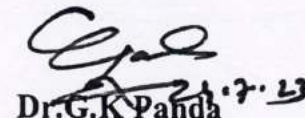
PROF. (DR.) G. K. PANDA DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr kishan kumar sahuo is a Bonafede student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214020. He has carried out his dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e., from January, 2023to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma. Ms. Kishan Kumar Sahoo is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during this investigation.

  
HOD

  
GUIDE

  
Dr.G.K.Panda  
Director.MSB

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**Screening of cellulolytic enzyme producing bacteria from  
*Solanum tuberosum***

**Δ  
Dissertation Submitted To  
MITS School Of Biotechnology  
Affiliated To  
Utkal University, Bhubaneswar**

**In Partial Fulfillment Of The Requirement For The Award Of Degree  
Of Master Of Science In Biotechnology**



**Submitted by  
Janhavi Tajan  
Roll no. -14754U214021**



**Supervised by  
Dr. Manisha Patnaik  
Asst. Professor, Dept. Of Biotechnology  
MITS School of Biotechnology  
2(P), Infocity, Patia, Chandrasekhar Pur,  
Bhubaneswar-751024(2022)**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /  
DATE  
FROM

PROF. (DR.) G. K.  
PANDA DIRECTOR

MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. Janhavi Tajan is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214021. She has carried out her dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

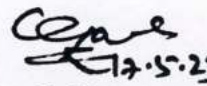
Miss. Janhavi Tajan is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
13/5/23  
Dr. Rashmi Ranjan Mishra

Head of the department

HOD

  
GUIDE

  
17.5.23  
Dr. G. K. Panda

Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocly, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**“PRODUCTION OF ALKALINE PROTEASE FROM HALOTOLERANT  
BACILLUS SP. THROUGH SUBMERGED FERMENTATION AND STUDY  
OF ITS FERMENTATION KINETICS”**

**A DISSERTATION THESIS SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILATED TO  
UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE  
OF MASTER OF SCIENCE IN BIOTECHNOLOGY.**

**BY**

**LIPSHA RAY**

**ROLL NO.15254U214022**

**UNDER THE GUIDANCE OF**

**DR. RASHMI RANJAN MISHRA**

*Associate Professor Dept. Biotechnology*

*Mits School Of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*



*evaluator*  
*Rashmi*  
*28.7.23*  
*Sena*  
*28/07/2023*

**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (p), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin – 751024**

**2023**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 27.07.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

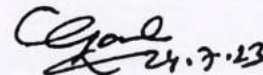
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Lipsha Ray** is a bonafide student of **M.Sc. in Biotechnology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214022. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Lipsha Ray** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
[ GUIDE ]

  
Prof. G.K.Panda  
Director

Role of TDZ in the quick regeneration of multiple shoots from nodal explants of *Bacopa monnieri* L –

THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)

LOPAMUDRA SAHOO

ROLL NO: 15254U214023

Under the guidance of:  
Mr. SIDDHARTH PARIDA  
(Associate Professor)  
Department of Biotechnology



MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR, ODISHA

evaluated

Siddharth Parida  
28.7.23

Dr. Parida  
28/7/2023





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. 21-07-23

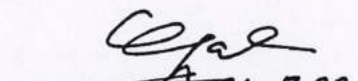
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Lopamudra Sahoo** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214023. She has carried out her dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January 10th, 2023 to July 10th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Lopamudra Sahoo** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Prof. (Dr.) G.K. Panda  
21.7.23  
Director, MSB

**Optimization of Amylase Production by Halotolerant  
*Bacillus cereus*, Isolated from Bichitrapur Mangrove,  
Odisha**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

MALABIKA PATTANAİK

ROLL NO. 15254U214024

UNDER THE GUIDANCE OF

**Dr. MOUSUMI MISHRA**

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA,

PIN - 751024

*evaluated*

*[Signature]*  
28.7.23

*[Signature]*  
28/07/2023





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Malabika Pattanaik** is a bonafide student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214024 . She has carried out her dissertation work under the direct Supervision of **Dr. Mousumi Mishra**, Assistant Professor for duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Malabika Pattanaik** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

**HOD**

**GUIDE**

  
24-07-23  
Prof. G. K. Panda

Director

# Probiotics and Prebiotics in Alginate Beads to Produce Functional Foods

A Project report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**  
Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**MASTER OF SCIENCE IN BIOTECHNOLOGY**

By  
**Mixchi Nayak**  
Roll NO – 15254U214025

Under Supervision of  
**Dr. Namrata Misra**  
**Associate Professor, Department of Biotechnology**



MIT S School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneshwar, 751024, Odisha





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

DATE:

Ref. No./

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. Mixchi Nayak is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-15254U214025. She has carried out her dissertation work under the direct supervision of Dr. Namrata Misra, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Mixchi is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R. R. Mishra  
H.O.D., MSB

HOD

GUIDE

Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**Induction and Maintenance of Callus from Leaf explants  
of *Bacopa monnieri* (L.)**

**THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)**

**NAME: NEETIPREETA DASH**

**ROLL NO: 15254U214026**

Under the guidance of:  
**Mr. SIDDHARTH PARIDA**  
(Associate Professor)  
Department of Biotechnology



**MIT SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR, ODISHA**

*evaluated*  
*S. Parida*  
*28.7.23*

*Dash*  
*28/07/2023*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. 13/07/2023


## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Neetipreeta Dashisa** *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214026**. She has carried out her dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January 10th, 2023 to July 13th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Neetipreeta Dash** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Dr. R.R. Mishra  
Head of the Department

**OPTIMISATION OF THE CELLULASE PRODUCTION  
ACTIVITY OF THERMOTOLERANT CELLULOSE  
DEGRADING BACTERIA**

**THESIS SUBMITTED TO THE  
UTKAL UNIVERSITY  
FOR THE DEGREE OF  
MASTER OF SCIENCE**

**IN**

**Biotechnology (2023)**

***Investigator***

**Nihar Ranjan Mahanta,**

**Roll no. 15254U214027**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**Regional Institute of Biotechnology,  
Patia, Chandrasekharpur,  
Bhubaneswar-751024**

*evaluated*

*Behera*  
*28/07/2023*

*Bikash*  
*28.7.23*





**MITS**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

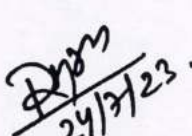
Date. 24/7/23

**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

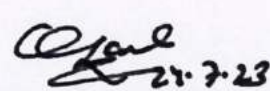
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Nihar Ranjan Mahanta** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214027. He has carried out his dissertation work under the direct Supervision of, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Mr. Nihar Ranjan Mahanta**, is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
Head of the Department

  
GUIDE

  
Prof. (Dr.) G. K. Panda

Director, MSB

Plot-2(P), InfocityPatia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: www.msb.ac.in

# ANTIBACTERIAL ACTIVITY OF ZINC NANOPARTICLES (ZnO) SYNTHESIZED USING PLANT EXTRACTS

A

Dissertation Submitted To  
MITS School Of Biotechnology  
Affiliated To  
Utkal University, Bhubaneswar  
In Partial Fullfillment Of The Requirement For The Award Of Degree  
of Master Of Science In Biotechnology



Submitted by  
**Pinali Mohapatra**  
Roll no.-15254U214028



Supervised by  
**Dr. Manisha Patnaik**  
Asst. Professor, Dept. Of Biotechnology

MITS School of Biotechnology  
2(p) Infocity, Patia, Chandrasekharpur, Bhubaneswar-751024  
(2023)

*evaluated*  
*Shekh*  
*28.7.23*

*Dr. Manisha Patnaik*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

DATE: 29-7-23

Ref.No./

FROM PROF. (DR.)G.K.PANDA

DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY

BHUBANESWAR-  
751024,ODISHA

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Ms. Pinali Mohapatra is a bonafide student of M.Sc.Bio technology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odishawith University Roll No. 15254U214028. She has carried out her dissertation work under the direct Supervision of Dr.Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Pinali Mohapatra is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Dr.G.K.Panda

Director,MSB

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**OPTIMIZATION OF PURIFICATION PROCESS FOR  
Escherichia coli EXPRESSED RECOMBINANT DNase I  
PRODUCTION.**

A DISSERTATION REPORT SUBMITTED TO



MITS SCHOOL OF BIOTECHNOLOGY BHUBANESWAR  
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER  
OF SCIENCE IN BIOTECHNOLOGY

By Ms Padmaja Sahoo

Roll No.-15254U214029

Under the Guidance of  
Dr. Ashok Kumar Patra

Dr. Purushottam Ojha

*evaluated*  
*[Signature]*  
*28.7.23*



IMGENEX INDIA PVT.LTD. E-5 INFOCITY AREA, KIIT  
POST OFFICE, CHANDRASEKHARPUR, BHUBANESWAR,  
ODISHA. PIN-751024





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No.....

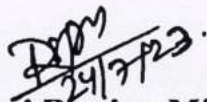
Date: 24/7/23

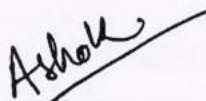
FROM  
PROF.(DR.) G.K. PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY,  
BHUBANESWAR-751024, ODISHA

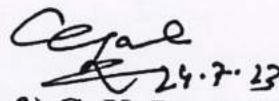
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that, Miss. Padmaja Sahoo is a student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar- 751024, Odisha with University Roll No. 15254U214029. She has carried out her dissertation work under the direct Supervision of Dr. Ashok Kumar Patra, Director, Dr. Purusottam Ojha, Senior Scientist, Biologics Development Division, Imgenex, India Private Limited, Bhubaneswar, Odisha. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Padmaja Sahoo is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. she has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra  
Head of the Department  
HOD

  
Ashok  
GUIDE

  
Dr. (Prof.) G. K. Panda  
Director, MSB

# Structure based analysis of hypothetical protein through homology modelling

Dissertation submitted to MITS School of  
Biotechnology Affiliated to Utkal University



In Partial Fulfillment of The Requirement for The Award of Degree of Master Of  
Science in Biotechnology

Submitted By

**Prabin Kumar dash**  
Roll no. 15254U214030

Under the Guidance of

**DR. ASHOK KUMAR NAYAK**

(VISITING FACULTY)

*evaluated*  
*Ashok*  
*26.7.23*

*Dense*  
*28/07/2023*

DEPARTMENT OF BIOTECHNOLOGY, MITS SCHOOL OF BIOTECHNOLOGY 2(P),  
INFOCITY, PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA.  
PIN- 741024

202  
3





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24.7.23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr Prabin Kumar Dash is a bonafide student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214030 . He has carried out her review report under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

Mr Prabin Kumar Dash is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

*R.P.*  
[ ]

*A.K. Nayak*  
[ GUIDE

*G.K.Panda*  
24.7.23  
Prof. G. K.Panda

Director

# Evaluation of Antimicrobial Efficacy of Probiotic Isolates from Commercial Curd Against Foodborne Pathogens

A Review Report submitted for the  
partial fulfilment of the degree of

**Master of Science in Biotechnology**

Submitted By

**Pragyan Priyadarsani**

Roll No-15254U214031

**Department of Biotechnology**



**MITS SCHOOL OF BIOTECHNOLOGY**

Bhubaneswar -751024, Odisha, India.



(Affiliated to Utkal University Bhubaneswar, Odisha)

**Under the Guidance of  
Dr. Namrata Misra**

ASSISTANT PROFESSOR

School of Biotechnology,

HEAD-TECH INCUBATION, KIIT-TBI



**KIIT SCHOOL OF BIOTECHNOLOGY**

*evaluated*  
*Shah*  
*28.7.23*  
*Done*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

Date: 24-07-23

Mr. (Prof.) G.K Panda

Director

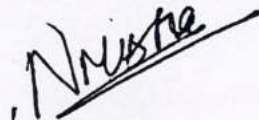
MITS SCHOOL OF BIOTECHNOLOGY,  
BHUBANESWAR-751024, ODISHA

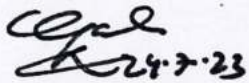
## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Pragyan Priyadarsani is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214031. He has carried out his review work under the guidance of Dr. Namrata Misra at KIIT School of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Pragyan is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology offered by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Mr. (Prof.) G.K Panda  
Director  
MITS School of Biotechnology

2(P), Infocity, Patia, Bhubaneswar Website: [www.msb.ac.in](http://www.msb.ac.in) Pin- 751024 (Odisha), INDIA Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**Attainable Antioxidant and Antimicrobial activity of two  
Cyanobacteria species collected from Nandankanan  
Kanjia Lake, Bhubaneswar, Odisha.**



**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY  
On dt-14.07.23**

**AFFILIATED TO  
UTKAL UNIVERSITY, BHUBANESWAR  
IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF  
MASTERS OF SCIENCE IN BIOTECHNOLOGY  
BY**

**PRAJNA PRIYADARSHINEE DHAL**

**ROLL NO: 15254U214032**

**UNDER THE GUIDANCE OF**

**SABYASACHY PARIDA  
(ASSISTANT PROFESSOR)**

*Evaluated  
S. Parida  
28.7.23*



*S. Parida  
28/7/2023*

**MITS SCHOOL OF BIOTECHNOLOGY  
2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA  
PIN-751024,  
(FEBRUARY 2023 - JULY 2023)**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

REF.NO:

DATE- 24-07-23

FROM:

DIRECTOR,

(DR) G.K.PANDA,

MITS SCHOOL OF

BIOTECHNOLOGY,

,BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. PRAJNA PRIYADARSHINEE DHAL is a bonafide student of M.sc Biotechnology of MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no – 15254U214032. She has carried out her dissertation work under the direct supervision of Mr. Sabyasachy Parida, Assistant professor, Department of Applied microbiology, MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha, within the stipulated time of five months (January to May, 2023). As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. PRAJNA PRIYADARSHINEE DHAL has completed her dissertation work for partial fulfillment of the requirement to award for Masters Degree of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*RPM*  
HOD

*Sparida*  
23/07/23  
GUIDE

*G.K.Panda*  
24.7.23  
Dr. G.K Panda  
DIRECTOR, MSB

Plot- 2(P), Infocity Patia, Chandaka Industrial Estate, P.O.- KIIT Campus, Bhubaneswar- 751024, Ph: 0674-3196060, Telefax: 0674-2741584, Web: www.msb.ac.in

**EVALUATION OF THE ANTIBACTERIAL AND ANTIOXIDANT  
ACTIVITY OF THE PHYTOCHEMICALS EXTRACTED FROM  
LEAF OF *CALOTROPIS PROCERA***

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**BIOTECHNOLOGY (2023)**

*Investigator*

**Preetipallavi Muduli**

**15254U214033**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS School of Biotechnology,  
Patia, Chandrasekharapur,  
Bhubaneswar-751024**

*evaluated*  
*SB*  
*28.7.23*  
*Dr. Bikash Chandra Behera*  
*28/4/2023*





**MITS**

**SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR**

**(AFFILIATED TO UTKAL UNIVERSITY)**

Ref. No. \_\_\_\_\_

Date. 24-07-23

**FROM**

DIRECTOR

PROF. (DR.) G.K. PANDA

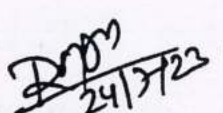
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Miss. Preetipallavi Muduli** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214033**. She has carried out his dissertation work under the direct Supervision of, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss. Preetipallavi Muduli**, is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra

Head of the Department

**HOD**

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024

  
**GUIDE**

  
Prof. (Dr.) G. K. Panda

Director, MSB

Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**IN-VITRO EVALUATION OF ANTIMICROBIAL AND  
ANTIOXIDANT PROPERTIES OF TWO FRESH WATER  
CYANOBACTERIA SPECIES**

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY  
FOR PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

PREETIMAYEE JENA

ROLL NO. 15254U214034

UNDER THE GUIDANCE OF  
Mr. SABYASACHI PARIDA  
(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P) , INFOCITY PATIA , CHANDAKA INDUSTRIAL ESTATE , BHUBANESWAR, ODISHA, PIN -  
751024, July 2023

*evaluated*  
*S. Parida*  
*28.7.23*

*28/7/2023*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No.  
FROM

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

DATE: 24-07-23

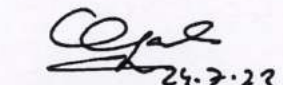
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Preetimayee Jena** is a bonafide student of M.Sc. in Biotechnology, MITS School of Biotechnology, Bhubaneswar-24, Odisha bearing University Roll No. **15254U214034** . She has carried out her dissertation work under the direct Supervision of **Mr. Sabyasachy Parida**, Assistant Professor in Biotechnology, MITS School of Biotechnology. She carried out her dissertation for a duration of six months.

As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma. **Miss Preetimayee Jena** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this dissertation.

  
HOD

  
23/07/23  
GUIDE

  
24.7.23  
Prof. G. K.Panda  
Director

**A Study on Beneficial Effect of Moong Rhizospheric  
Bacteria *Bacillus timonensis* on Plant Growth**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

PRITILIMA MISHRA

ROLL NO. 15254U214035

UNDER THE GUIDANCE OF

Dr. MOUSUMI MISHRA

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA,

PIN - 751024

evaluated  
Shubh -  
28.7.23

~~28/7/2023~~





# मिदस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 21-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Pritilima Mishra** is a bonafide student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214035 . She has carried out her dissertation work under the direct Supervision of **Dr. Mousumi Mishra**, Assistant Professor for duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Pritilima Mishra** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*[Signature]*  
HOD

*[Signature]*  
GUIDE

*[Signature]*  
Prof. G. K.Panda

Director

**MODULATORY EFFECT OF SODIUM ACETATE ON RICE  
AGAINST HEAVY METAL TOXICITY**

**A**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**  
*Affiliated to*  
**Utkal University, Bhubaneswar, Odisha**

**In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Biotechnology (2023)**

**Submitted by**

**Priyanka Priyadarshinee Parida**  
Roll No. 15254U212036

**Under The Guidance Of**

**Dr.Smaranika Sahu**  
Assistant Professor



*evaluated*  
*Shubh*  
*28.7.23*

*Sena*  
*28/07/2023*

**Department Of Biotechnology**  
**MITS SCHOOL OF BIOTECHNOLOGY,**  
**2(P), Infocity, Patia, Bhubaneswar, Odisha,**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE:

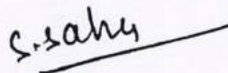
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

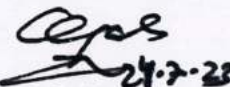
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss Priyanka Priyadarshinee Parida is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U212036. She has carried out her dissertation work under the direct Supervision of Dr. Smaranika Sahu, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

Miss Priyanka Priyadarshinee Parida is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD ]

  
[ GUIDE

  
Prof. G. K. Panda  
Director

2(F), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DIL, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**A COMPARATIVE EXPRESSION STUDY OF RYR1 GENE IN  
GASTROCNEMIUS MUSCLE OF CHICKEN (*Gallus gallus*) AND  
QUAIL (*Coturnix coturnix*)**

**A Project report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY  
Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
MASTER OF SCIENCE IN BIOTECHNOLOGY**

**By  
Priyanka Priyadarshini Swain  
Roll NO – 15254U214037**

**Under Supervision of  
Dr. Satyananda Patel  
Associate Professor, Department of Biotechnology**

*updated  
28/7/23*



*Done  
28/07/2023*

**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha**



# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY



ESTD 2003

Ref.No: MSB/ ADM/

Dated: 24.07.2023

## TO WHOM IT MAY CONCERN

It is to certify that Priyanka Priyadarshini Swain, enrolled with Roll No. 15254U214037, is a student of this institution pursuing M.Sc. degree in Biotechnology. She is currently in her 4th Semester. According to the guidelines set by Utkal University, she has successfully completed her M.Sc. project work from February to July 2023. Throughout this period, she received guidance from Dr. Satyananda Patel, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, her project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.

*[Signature]*

HOD



*[Signature]*  
GUIDE

*[Signature]*  
Prof. (Dr.) G.K. Panda  
DIRECTOR

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIV.

**ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES  
OF TWO CYANOBACTERIA SPECIES OBTAINED  
FROM NANDANKANDAN KANJIA LAKE**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

PRIYANKA PRUSTY

ROLL NO. 15254U214038

UNDER THE GUIDANCE OF  
Mr. SABYASACHI PARIDA

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN -  
751024, July 2023

*evaluated*  
*J. Parida*  
*28.7.23*

*[Signature]*  
*28/7/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Priyanka Prusty** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214038. She has carried out her dissertation work under the direct Supervision of **Mr. Sabyasachi Parida**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Priyanka Prusty** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD ]

  
23/07/23  
GUIDE ]

  
24.7.23  
Prof. G. K.Panda

Director

**THE COMPARATIVE STUDY OF SERCA1 IN THE  
SKELETAL MUSCLE OF CHICKEN (*Gallus gallus*)  
AND QUAIL (*Coturnix coturnix*)**

**A Project report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY  
Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
MASTER OF SCIENCE IN BIOTECHNOLOGY**

**By  
PURNOPAMA ROY  
Roll NO – 15254U214039**

**Under Supervision of  
Dr. Satyananda Patel  
Associate Professor, Department of Biotechnology**



*evaluated*

*[Signature]*

*[Signature]*  
*28/07/2023*

**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No./  
FROM  
PROF. (DR.) G.K. PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR – 751024, ODISHA

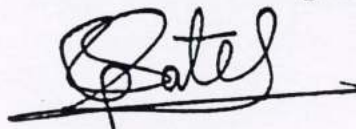
Dt: 27.07.2023

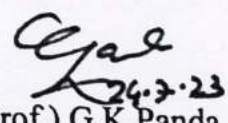
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. PURNOPAMA ROY is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar, University Roll No- 15254U214039. She has carried out her dissertation work for the duration of six months under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology during January to June 2023. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Purnopama Roy is a fit and suitable candidate in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
24.7.23  
Dr. (Prof.) G.K.Panda  
Director,MSB

# Antimicrobial activity of Green Synthesized CuO Nanoparticles: A Comparative Study

Dissertation submitted to MITS School of Biotechnology Affiliated to Utkal University



In Partial Fulfillment Of The Requirement for The Award of Degree of Master Of Science  
In Applied Microbiology

Submitted By

**Rajalaxmi Dash**  
Roll no. 15254U214040

Under the Guidance of  
**DR. ASHOK KUMAR NAYAK**  
(VISITING FACULTY)

*evaluated*  
*Jene*  
*28/07/2023*  
*Aksh*  
*28.7.23*

DEPARTMENT OF BIOTECHNOLOGY, MITS SCHOOL OF BIOTECHNOLOGY  
2(P), INFOCITY, PATIA, CHANDAKA INDUSTRIAL ESTATE,  
BHUBANESWAR, ODISHA. PIN- 741024  
2023





# MITS

School Of Biotechnology,  
Bhubaneswar  
Affiliated to Utkal university

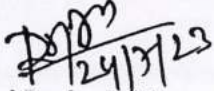
DATE: 24-07-23

Ref. No. /  
FROM PROF. (DR.) G.K. PANDA  
DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

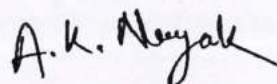
This is to certify that Miss. Rajalaxmi Dash is a bonafide student of M.Sc. applied microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214040. She has carried out his dissertation work under the direct Supervision of Dr. Ashok Kumar Nayak, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Rajalaxmi Dash is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

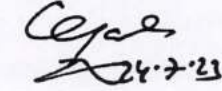
  
Dr. Rashmi Ranjan Mishra

Head of the Department

**HOD**



**GUIDE**

  
Dr. G. K. Panda

Director

EXPRESSION OF SERCA1 IN  
PECTORALIS MUSCLE OF CHICKEN

A Project report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY  
Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
MASTER OF SCIENCE IN BIOTECHNOLOGY

By  
SAMEEKSHA JENA  
Roll NO – 15254U211042

Under Supervision of  
Dr. Satyananda Patel  
Associate Professor, Department of Biotechnology

*evaluated*  
*S. Jena*  
*28.7.23*



*S. Jena*  
*28/07/2023*

MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No:

Dated: 14/07.2023

## TO WHOM IT MAY CONCERN

It is to certify that Sameeksha Jena, enrolled with Roll No. 15254U214042, is a student of this institution pursuing M.Sc. degree in Biotechnology. She is currently in her 4th Semester. According to the guidelines set by Utkal University, she has successfully completed her Comprehensive Review work in 2023 in her 4<sup>th</sup> SEM. Throughout this period, she received guidance from Dr.Satyananda Patel, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, her project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*D.P.*  
HOD

*Satya*  
GUIDE

*G.K.*  
25.7.23  
Prof.(Dr.) G.K. Panda  
DIRECTOR, MSB

2(P), Infocity, Patna, Bhubaneswar  
Pin-751024(Odisha), INDIA

Website: www.msb.ac.in  
Email: prin@msb.ac.in

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**ANTIOXIDANT AND ANTIBACTERIAL PROPERTIES OF  
*ADHATODA VASICA***

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**BIOTECHNOLOGY (2023)**

*Investigator*

**Samikshya priyadarshini Samal**

**Roll no. -15254U214043**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS School of Biotechnology,  
Patia, Chandrasekharapur,  
Bhubaneswar-751024**

*evaluated*  
*Bikash*  
*28.7.23*

*Behera*  
*28/7/2023*





**MIT**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

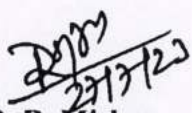
Date. \_\_\_\_\_

**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Samikshya priyadarshini Samal** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214043**. He has carried out his dissertation work under the direct Supervision of, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.


**Miss. Samikshya priyadarshini Samal**, is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra

Head of the Department

**HOD**

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

  
GUIDE

  
Prof. (Dr.) G. K. Panda

Director, MSB

# Micropropagation and elicitation studies in Aloe vera, An Important Medicinal Plant

THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)

Submitted By

SANKET BISWAL

ROLL NO: 15254U214044

Under the guidance of:  
Mr. SIDDHARTH PARIDA  
(Associate Professor)  
Department of Biotechnology



MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR, ODISHA

*evaluated*  
*Sanket*  
*28.7.23*

*Sanket*  
*28/7/2023*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. \_\_\_\_\_

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **SANKET BISWAL** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214044**. He has carried out her dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January 10th, 2023 to July 15th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**SANKET BISWAL** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

HOD

GUIDE

Prof. (Dr.) G.K.Panda

Director, MSB

**AN EFFICIENT PROTOCOL FOR DIRECT SHOOT  
REGENERATION FROM NODAL EXPLANTS OF *Tinospora  
cordifolia* . AN IMPORTANT MEDICINAL PLANT**

**THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)**

**NAME: SASWOT SUBHANKAR**

**ROLL NO: 15254U214045**

Under the guidance of:  
**Mr. SIDDHARTH PARIDA**  
(Associate Professor)  
**Department of Biotechnology**



**MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR, ODISHA**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. \_\_\_\_\_

Date. 24-7-23

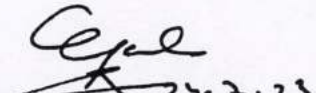
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Saswot Subhankar is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U184023. He has carried out his dissertation work under the direct Supervision of Mr. Siddharth Parida, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January 10th, 2023 to July 10th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Saswot Subhankar is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Prof. (Dr.) G.K. Panda  
Director, MSB

**BIO PROSPECTIVE BACTERIA: ISOLATION AND ANALYSIS OF  
MULTIENZYME PRODUCING ACTIVITY**

**A**

**Dissertation Submitted To  
Utkal University  
For The Degree Of  
Master Of Science  
In  
Biotechnology**



**Submitted by  
Satarupa Routraya  
Roll no. -15254U214046**



**Dr. Manisha Patnaik  
MITS School of Biotechnology  
2(p) Infocity, Patia, Chandrasekharpur, Bhubaneswar-751024  
(July 2023)**

*Evaluated*  
*[Signature]*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

REF. NO/

DATE: 24-7-23

FROM:

PROF. (DR.) G. K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY


BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Ms. Satarupa Routraya is a Bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U204046. she has carried out his dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e., from February 2023 to July 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma. Ms. Satarupa Routraya is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
HOD

  
GUIDE

  
24-7-23  
Dr. G. K. Panda  
DIRECTOR

Infocity, Patia, Bhubaneswar  
751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**EVALUATION OF INDOLE ACETIC ACID PRODUCTION BY  
BACTERIA ISOLATED AND IDENTIFIED FROM TOMATO  
RHIZOSPHERE SOIL**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**BIOTECHNOLOGY (2023)**

*Investigator*

Satyajit Nath

**15254U214047**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS School of Biotechnology,  
Patia, Chandrasekharpur,  
Bhubaneswar-751024**

*Evaluation*

*28/7/2023*





**MITS**

**SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

Date. 24/7/23

**FROM**

**DIRECTOR**

**PROF. (DR.) G.K.PANDA**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Satyajit Nath** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214047**. He has carried out his dissertation work under the direct Supervision of, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Mr. Satyajit Nath**, is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra

Head of the Department

**HOD**

  
**[ GUIDE ]**

  
Prof. (Dr.) G. K. Panda

Director, MSB

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: www.msb.ac.in

**ISOLATION OF CELLULASE PRODUCING BACTERIA  
FROM ROTTEN JACKFRUIT (*Artocarpus heterophyllus*)**

**A**

**Dissertation Submitted To  
MITS School Of Biotechnology**

**Affiliated To**

**Utkal University, Bhubaneswar**

**In Partial Fulfillment Of The Requirement For The Award Of Degree  
Of Master Of Science In Biotechnology**



**Submitted by**

**Shibani Pradhan**

**Roll no. -15254U214048**



**Supervised by**

**Dr. Manisha Patnaik**

**Asst. Professor, Dept. Of Biotechnology**

**MITS School of Biotechnology**

**2(P), Infocity, Patia, Chandrasekharpur,**

**Bhubaneswar-751024(2022)**

*Evaluator*

*Dr. Manisha Patnaik*  
28/07/2023





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. / DATE: 21-07-23

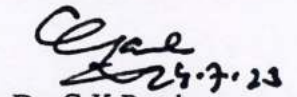
FROM  
PROF. (DR.) G.K. PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY,  
BHUBANESWAR-751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss Shibani Pradhan is a bonafde student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214048. She has carried out her dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e., from January 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma. Miss Shibani Pradhan is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
HOD

  
GUIDE

  
Dr. G.K.Panda  
Director, MSB

2(P), Infocity, Patia, Bhubaneswar  
Pin-751024(Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

# SELF ASSEMBLY OF Y SHAPED DNA NANOSTRUCTURE IN DIFFERENT CATIONS.

Dissertation submitted to MITS School of Biotechnology

Affiliated to Utkal University



In Partial Fulfillment of The Requirement for The Award of Degree of Master Of Science In  
Biotechnology

Submitted By

**SHWETA PRAVA DHAL**  
Roll No.: 15254U214049

Under the Guidance of  
**DR. ASHOK KUMAR NAYAK**

(VISITING FACULTY)

*Evaluating*

*Dr. Ashok Kumar Nayak*  
28/07/2023



DEPARTMENT OF BIOTECHNOLOGY, MITS SCHOOL OF BIOTECHNOLOGY 2(P),  
INFOCITY, PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA. PIN-  
741024  
2023





# MITS

School Of Biotechnology,  
Bhubaneswar  
Affiliated to Utkal university

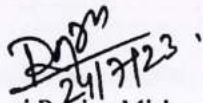
DATE: 24-07-23

Ref. No. /  
FROM PROF. (DR.) G.K. PANDA  
DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

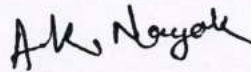
This is to certify that Miss. Shweta Prava Dhal is a Bonafede student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214049. She has carried out her dissertation work under the direct Supervision of Dr. Ashok Kumar Nayak, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (05) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Shweta Prava Dhal is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

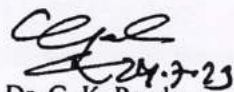
  
Dr. Rashmi Ranjan Mishra

Head of the department

**HOD**



**GUIDE**

  
Dr. G. K. Panda

Director

**MODE OF RESISTANCE TO FUSARIUM INFECTION  
BY A MILD DOSE PRE-EXPOSURE OF CADMIUM IN  
CHICK PEA (*Cicer arietinum*)**



**THESIS SUBMITTED TO  
UTKAL UNIVERSITY**

**FOR THE DEGREE OF  
MASTER OF SCIENCE  
IN  
BIOTECHNOLOGY (2023)**

**Investigator  
Smaranika Rath  
Roll.No.15254U214050**

**Under The Guidance Of  
Prof. BHABATOSH MITTRA  
Co-Guide: RASHMI RANJAN MISHRA**

*Evaluator*  
*Sense*  
*28/4/2023*



**MIT S SCHOOL OF BIOTECHNOLOGY  
2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024  
FEBRUARY-JULY 2023**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No.

DATE: 24-07-23

**FROM**

**Prof. G.K. Panda**

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA


## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Smaranika Rath** is a bonafide student of **M.Sc. (Fourth Semester)**, MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U184050. She has carried out her dissertation work under the direct Supervision of **Prof. Bhabatosh Mitra**, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e., from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Smaranika Rath** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
24.7.23  
Prof. G.K. Panda  
Director

**Synthetic seed production of *Bacopa monnieri* L.  
An important medicinal plant**

**THESIS SUBMITTED TO THE  
FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF SCIENCE IN BIOTECHNOLOGY  
(2023)**

**By**

**SNIGDHARANI DAS**

**ROLL NO:**

**15254U214051**

**Under the guidance of:  
Mr. SIDDHARTH PARIDA  
(Associate Professor)  
Department of Biotechnology**

*evaluated*  
*[Signature]*  
*28/4/2023*



**MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR, ODISHA**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY


Ref. No. \_\_\_\_\_

Date. 27-07-23

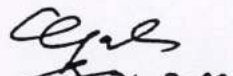
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Snigdharani Das** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214051**. She has carried out her dissertation work under the direct Supervision of **Mr. Siddharth Parida**, Associate professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from February 10th, 2023 to July 10th 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Snigdharani Das** is a fit and suitable candidate for the award of Degree of Master of Science in M.Sc. Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD ]

  
GUIDE ]

  
24.7.23  
Prof. (Dr.) G.K.Panda  
Director, MSB

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, P.O.-KIIT Campus,  
Bhubaneswar-751024

Ph: 0674-3196060, telefax: 0674-2741584, web: www.msb.ac.in

**Salinity induced oxidative stress and antioxidant  
response in moong seedlings**

**A**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**  
*Affiliated to*  
**Utkal University, Bhubaneswar, Odisha**

**In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Biotechnology (2023)**

**Submitted by**

**Somyasaswati Betal**

**Roll No. 15254U214052**

**Under The Guidance Of**

**Dr. Smaranika Sahu**

**Assistant Professor**



*Evaluator*  
*Somy*  
*28/07/2023*

**Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 24-07-23

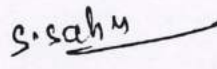
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

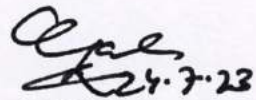
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Somyaswati Betal** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214052. She has carried out her dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor for the duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Somyaswati Betal** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
[GUIDE

  
Prof. G.K.Panda  
Director

**The Study of RYR1 GENE EXPRESSION  
IN QUAIL (*Coturnix coturnix*) PECTORALIS MUSCLE**

Project Report Submitted to  
UTKAL UNIVERSITY



for the partial fulfilment for the degree of  
Masters of Science (M.Sc.) In Biotechnology

by

**SOURAV SUBHADARSHY**

Roll No-15254U214053

*Under the guidance of*

**Dr. Satyananda Patel**

(Associate Professor; Dept. Of Biotechnology)



MITS School of Biotechnology

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India

**MAY 2023**

*Evaluated*

*Dr. S.*  
28/9/2023





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No:

Dated. 27/07.2023

## TO WHOM IT MAY CONCERN

It is to certify that Sourav Subhadarshy, enrolled with Roll No. 15254U214053, is a student of this institution pursuing M.Sc. degree in Biotechnology. He is currently in his 4th Semester. According to the guidelines set by Utkal University, he has successfully completed his M.Sc. project work from February to July 2023. Throughout this period, he received guidance from Dr. Satyananda Patel, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, his project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.



*[Signature]*  
HOD

*[Signature]*  
GUIDE

*[Signature]*  
Prof. (Dr.) G.K. Panda  
DIRECTOR

# IDENTIFYING GENOME EDITED RICE LINES WITH MOLECULAR ANALYSIS



Dissertation submitted to MITS School Of Biotechnology affiliated to  
Utkal University, Bhubaneswar  
In partial fulfillment of the requirement for the award of degree  
of Master of Biotechnology  
by

**Subhasree Subhasmita Satapathy**

**Roll no. 15254U214054**

Under the guidance of

**Dr. Kutubuddin Ali Molla, Scientist**

**Crop Improvement Division**

**ICAR-National Rice Research Institute, Cuttack, Odisha**



**ICAR-NRRI**



**UTKAL UNIVERSITY**

**2023**

*Evaluative*

*Sena*  
*28/07/2023*





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY


Ref. No./PROJ/MSB/2023  
FROM

PROF. G.K.PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

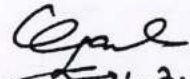
## TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Subhasree Subhasmita Satapathy**, is a bonafide student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214054. She has carried out her dissertation work under the direct Supervision of **Dr. Kutubuddin Ali Molla, Scientist at NRRI, Cuttack, Odisha** for duration of six (06) months i.e. from Jan 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. **Subhasree Subhasmita Satapathy** a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
24.7.23  
Prof. G. K. Panda  
Director

**ISOLATION AND IDENTIFICATION OF PHOSPHATE  
SOLUBILIZING BACTERIA FROM RHIZOSPHERE SOIL**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**BIOTECHNOLOGY (2023)**

*Investigator*

Suchismita Chainy

**15254U214055**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS School of Biotechnology,  
Patia, Chandrasekharpur,  
Bhubaneswar-751024**

*Evaluator*

*[Signature]*  
28/07/2023





**MITS**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AHFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

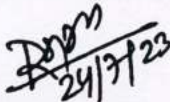
Date. 24.07.23

**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Suchismita Chainy** is a *bonafide* student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **15254U214055**. He has carried out his dissertation work under the direct Supervision of, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

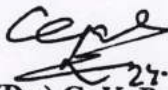
**Miss. Suchismita Chainy**, is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
Head of the Department

**HOD**

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

  
**[GUIDE**

  
Prof. (Dr.) G. K. Panda  
Director, MSB

**DECOLORIZATION OF BRILLIANT GREEN USING  
FUNGAL STRAINS**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY  
AFFILIATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

SUSHREE SAMIKSHYA DAS

ROLL NO. 15254U214056

UNDER THE GUIDANCE OF

Dr. MOUSUMI MISHRA

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA,

PIN - 751024

*Evaluated*

*Dr. Mousumi Mishra*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 27-07-23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Sushree Samikshya Das** is a bonafide student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214056 . She has carried out her dissertation work under the direct Supervision of **Dr. Mousumi Mishra**, Assistant Professor. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Sushree Samikshya Das** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*[Signature]*  
HOD

*[Signature]*  
GUIDE

*[Signature]*  
27-7-23  
Prof. G. K. Panda

Director

**ANTIOXIDANT PROPERTIES OF DIFFERENT TISSUES OF  
MARINE FISH *Megalops Cyprinoides***

A

Dissertation Submitted

To

**MITS SCHOOL OF BIOTECHNOLOGY**  
*Affiliated to*  
**Utkal University, Bhubaneswar, Odisha**

In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Biotechnology (2023)

Submitted by

**Susmita Priyadarsinee Panda**  
Roll No. 15254U214057

Under The Guidance Of

**Dr. Smaranika Sahu**  
Assistant Professor

*Evaluating*

*[Signature]*  
2/07/2023



Department Of Biotechnology  
**MITS SCHOOL OF BIOTECHNOLOGY,**  
2(P), Infocity, Patia, Bhubaneswar, Odisha,





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 23.07.23

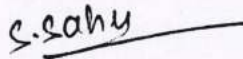
PROF. G.K.PANDA  
DIRECTOR  
MITSSCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Susmita priyadarsinee Panda** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214057. She has carried out her dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor for the duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Susmita priyadarsinee Panda** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal university she has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD ]

  
[ GUIDE

  
Prof. G.K. Panda  
Director

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIV.

**Comparison of effectiveness of RAPD,ISSR and SSR markers for analysis of  
*Ustilaginoidea virens* isolates from east India**



**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY  
AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY**

By

**SWAYAM PRAGNYA MISHRA**

Roll No.-15254U214058

Under the Guidance of

Dr. Manas Kumar Bag

*Evaluated*  
*[Signature]*  
*28/9/2023*



ICAR-National Rice Research Institute

Cuttack, Odisha, India-753006

(FEBRUARY 2023-JULY 2023)





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No./

DATE

FROM

PROF.(DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY,

BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that, Miss. Swayam Pragnya Mishra is a student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar- 751024, Odisha with University Roll No. 15254U214058. She has carried out her dissertation work under the direct supervision of Dr. Manas Kumar Bag Principal Scientist, Crop Protection Division, ICAR-National Rice Research Institute, Odisha. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

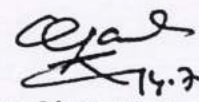
Miss. Swayam Pragnya Mishra is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra

Head of the Department

HOD

  
GUIDE

  
Dr. (Prof.) G. K. Panda

Director, MSB

**“Characterization, Partial purification and Optimization of  
Cellulase enzyme production from bacteria isolated from  
mangrove soil of Bhitarkanika, Odisha”**

**A  
DISSERTATION SUBMITTED TO**

**MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY**

**By**

**SWETLINA SAHOO**

**Roll No. 15254U214059**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA**

*Associate Professor*

*Dept. Biotechnology*

*MITS School of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*



**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024**

**2023**

*Evaluator*

*[Signature]*  
*28/07/2023*





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 17-7-23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**


**BHUBANESWAR-751024, ODISHA**

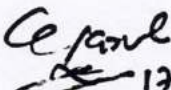
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Ms. Swetlina Sahoo** is a bonafide student of **M.Sc. in Biotechnology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.15254U214059. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to June, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Swetlina Sahoo** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
[GUIDE]

  
17.7.23  
Prof. G.K.Panda  
Director

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

# STUDY OF ANTAGONISTIC ACTIVITY OF ISOLATED BACTERIA FROM PRAWN CULTURE SITE

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
BIOTECHNOLOGY

BY

TANMAYEE MOHANTA

ROLL NO. 15254U214060

UNDER THE GUIDANCE OF

Dr. DIPTIPRIYA SETHI

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN -  
751024

*Evaluated*

*Sena*  
28/07/2023





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 17-7-23

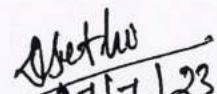
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

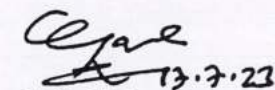
This is to certify that **Miss Tanmayee Mohanta** is a *bonafide* student of M.Sc. in Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214060 . She has carried out his dissertation work under the direct Supervision of **Dr. Diptipriya Sethi**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Tanmayee Mohanta** is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
27/7/23

[ GUIDE ]

  
17.7.23  
Prof. G. K. Panda

Director

DEGRADATION OF POLYETHYLENE BY *Bacillus xiamenensis*  
ISOLATED FROM DUMPING SITE

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY



AFFILIATED TO

**UTKAL UNIVERSITY, BHUBANESWAR**

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN BIOTECHNOLOGY

BY

**TANUSHREE PRADHAN**

ROLL NO: 15254U214061

UNDER THE GUIDANCE OF

DR. MOUSUMI MISHRA

(ASSISTANT PROFESSOR)

*Evaluated*

*Dena*  
*28/07/2023*



**MITS SCHOOL OF BIOTECHNOLOGY**

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-751024





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

DATE- 27.7.23

Ref.

FROM:

PROF.(DR.) G. K. PANDA,

(DIRECTOR)

MITS SCHOOL OF BIOTECHNOLOGY BHUBANESWAR-751024, ODISHA

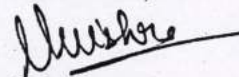
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss. Tanushree Pradhān** is a bonafide student of M.sc Biotechnology of MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no – 15254U214061. She has carried out her dissertation work under the direct supervision of Prof. Mousumi Mishra, Assistant professor, Department of Biotechnology, MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha within the stipulated time of six months (January to June, 2023). As per my knowledge is concerned, nopart of this work has been submitted for any other degree or diploma.

**Miss. Tanushree Pradhan** has completed her dissertation work for partial fulfillment of the requirement to award for Master Degree of Science in Biotechnology by Utkal university. She has duly acknowledged the assistance and help received during the course of this investigation.

  
27.7.23  
Dr. G.K Panda

DIRECTOR, MSB

  
GUIDE

  
HOD

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

# MODULATION OF WNT SIGNALLING DURING DENGUE VIRUS INFECTION

A Dissertation submitted in partial fulfilment for the degree of

Masters of Science in Biotechnology

Submitted By

TASHMIM AFTAB

4<sup>th</sup> Semester

Roll no.15254U214062



Department of Biotechnology

MITS School of Biotechnology,

Bhubaneswar-751024, Odisha, India.



(Affiliated to Utkal University Bhubaneswar, Odisha)

Under the Supervision of  
Dr. Gulam Hussain Syed, Ph.D.  
Scientist E

*Evaluated*  
*[Signature]*  
28/7/2023



**Institute of Life Science**

An autonomous Institute of the Department of Biotechnology, Govt. of India  
Bhubaneswar, Odisha, India  
ACADEMIC YEAR 2021-2023





# मिदस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /  
FROM  
Dr. Prof. G.K. Panda  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY,  
BHUBANESWAR-751024, ODISHA

DATE: 17.7.23

TO WHOM SOEVER IT MAY CONCERN

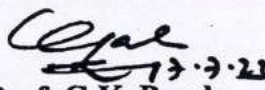
This is to certify that Miss. Tashmim Aftab is a Bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 15254U214062. She has carried out her dissertation work under the direct Supervision of Dr. Gulam Hussain Syed, Scientist E, Institute of Life Sciences, Bhubaneswar, for a period of six months. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Tashmim Aftab is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.



HOD

GUIDE

  
Dr. Prof. G.K. Panda  
DIRECTOR, MSB

2(P), Infocity, Patia, Bhubaneswar Website: [www.msb.ac.in](http://www.msb.ac.in) Pin- 751024 (Odisha), INDIA Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**RYR1 COMPARATIVE EXPRESSION STUDY IN PECTORALIS, SKELETAL  
MUSCLE BETWEEN CHICKEN (*Gallus gallus*) AND QUAIL (*Coturnix  
coturnix*)**

Project Report Submitted to  
UTKAL UNIVERSITY



for the partial fulfilment for the degree of  
MASTER OF SCIENCE IN BIOTECHNOLOGY

by

**TEJASWINI MOHAPATRA**

Roll No-15254U214063

*Under the guidance of*

**Dr. Satyananda Patel**

(Assoc. Prof., Dept. Of Biotechnology)

*Evaluator*

*Date*  
*28/07/2023*



**MITS School of Biotechnology**

2(P) Infocity, Patia, Bhubaneswar, Odisha-751 024, India





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No:


Dated: 15.07.2023

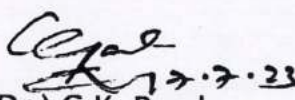
## TO WHOM IT MAY CONCERN

It is to certify that Tejaswini Mohapatra, enrolled with Roll No. 15254U214063, is a student of this institution pursuing M.Sc. degree in Biotechnology. She is currently in her 4th Semester. According to the guidelines set by Utkal University, she has successfully completed her M.Sc. project work from February to May 2023. Throughout this period, she received guidance from Dr. Satyananda Patel, who is associated with this institute.

Based on the recommendations of both the guide and the Head of the Department, her project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.

  
HOD

  
GUIDE

  
Prof.(Dr.) G.K. Panda  
Director, MSB

# Quercetin and *Epigallocatechin gallate* as Potential Therapeutic Agents for Respiratory Inflammation: A Preclinical Evaluation

A Dissertation Submitted to



**MITS SCHOOL OF BIOTECHNOLOGY**  
Bhubaneswar, 751024, Odisha

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**MASTER OF SCIENCE IN BIOTECHNOLOGY**

By

**YASH RAJ PATNAIK**

Roll no- 15254U214064

Under the Guidance of  
**Dr. William R. Surin**  
Principal Research Scientist  
Department of Microbiology and Cell Biology



**Indian Institute of Science**  
Bangalore, 560012

*Evaluated*

*Surin*  
28/07/2023





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /  
MITS SCHOOL OF BIOTECHNOLOGY,  
BHUBANESWAR-751024, ODISHA

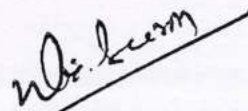
Date: 17-7-23


## TO WHOM IT MAY CONCERN

This is to certify that **Master Yash Raj Patnaik** is a bonafide student of M.Sc. Biotechnology (Fourth Semester), **MITS School of Biotechnology, Bhubaneswar, Odisha** with University Roll No. **15254U214064**. According to the guidelines set by Utkal University, he has successfully completed his M.Sc. dissertation work from February to May 2023. He has carried out his dissertation work under the guidance of **Dr. William R. Surin**, Principal Research Scientist, Department of Microbiology and Cell Biology, **Indian Institute of Science, Bangalore**. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Based on the recommendations of both the guide and the Head of the Department, his project meets the requirements for submission and evaluation as per the CBCS pattern specified in Utkal University's regulations.

  
HOD

  
GUIDE

  
17-7-23  
Prof. (Dr.) G.K. Panda  
DIRECTOR  
MITS School Of Biotechnology

2(P), Infocity, Patia, Bhubaneswar Website: [www.msb.ac.in](http://www.msb.ac.in) Pin- 751024 (Odisha), INDIA Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**SCREENING OF EXOPOLYSACCHARIDE PRODUCING  
BACTERIA FROM PURI COAST**

**A**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**  
*Affiliated to*  
**Utkal University, Bhubaneswar, Odisha**

**In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Applied Microbiology (2023)**

**Submitted by**

**Abhijit Padhi**

**Roll No. 14754U214001**

**Under The Guidance Of**

**Dr. Smaranika Sahu**

**Assistant Professor**



**Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

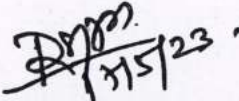
DATE: 17/5/23

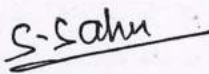
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

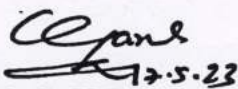
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr. Abhijit Padhi** is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214001. He has carried out his dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Mr. Abhijit Padhi** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Prof. G. K. Panda  
Director  
MITS School of Biotechnology  
Bhubaneswar

**ISOLATION AND IDENTIFICATION OF BACTERIA CAUSING  
SPOILAGE IN TOMATO**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**APPLIED MICROBIOLOGY (2023)**

*Investigator*

**Abhilipsa Sahoo**

**ROLL NO. 14754U214002**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS SCHOOL OF BIOTECHNOLOGY**





**MIT S**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

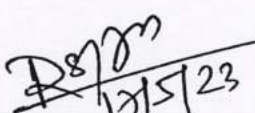
Date. 17/5/23

**FROM**  
**DIRECTOR**  
**PROF. (DR.) G.K.PANDA**  
**MIT S SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR-751024, ODISHA**

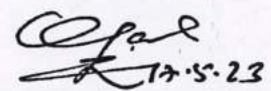
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Miss Abhilipsa Sahoo** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214002**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Abhilipsa Sahoo**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R. R. Mishra**  
**Head of the Department**  
**HOD**

  
**GUIDE**

  
**Prof. (Dr.) G. K. Panda**  
**Director**  
**MIT S School of Biotechnology**  
**Bhubaneswar**

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024

Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**ISOLATION AND CHARACTERIZATION OF  
YELLOW PIGMENT BY *PENICILLIUM RUBIDURUM* NSB5  
ISOLATED FROM HEAVY METAL CONTAMINATED SOIL**

**A  
DISSERTATION SUBMITTED TO**

**MITS SCHOOL OF BIOTECHNOLOGY**

*AFFILIATED TO*

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

*By*

**ADESH KUMAR PUJAPANDA**

**Roll No. 14754U214003**

*Under the guidance of*

**Dr. RASHMI RANJAN MISHRA  
ASSOCIATE PROFESSOR AND HEAD  
DEPARTMENT OF BIOTECHNOLOGY  
MITS SCHOOL OF BIOTECHNOLOGY**



**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha,**

**Pin - 751024**

**MAY, 2023**



Ref. No. /PROJ/MSB/2023

DATE: 17/05/2023

FROM:

PROF. G.K.PANDA

DIRECTOR

MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Mr. Adesh Kumar Pujapandaisa** bonafide student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214003**. He has carried out his dissertation work under the direct Supervision of **Dr. Rashmi Ranjan Mishra**, Associate professor and for duration of five (05) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Mr. Adesh Kumar Pujapanda** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

*RJM*  
*17/5/23*  
Dr. Rashmi Ranjan Mishra  
Head of the Department

HOD

*RJM*  
*17/5/23*  
GUIDE

*G.K.P.*  
*17.5.23*  
Prof. G. K. Panda

Director

Director  
MIT S School of Biotechnology  
Bhubaneswar

**GLUTATHIONE MEDIATED ENHANCED RESISTANCE IN CHICK PEA**

**(*Cicer arietinum*) AGAINST BIOTIC STRESS**

**A**

**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**



**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**BY**

**ADITYA JENA**

**ROLL NO :- 14754U214004**

**UNDER THE GUIDANCE OF**

**Prof. BHABATOSH MITTRA**

**(PROFESSOR)**



**MITS SCHOOL OF MICROBIOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR,  
ODISHA, PIN - 751024**



# MIT S

SCHOOL OF BIOTECHNOLOGY BHUBANESWAR

(AFFILIATED TO UTKAL UNIVERSITY)



Ref. No. /

DATE

FROM


PROF. (DR.) G. K. PANDA  
DIRECTOR

MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

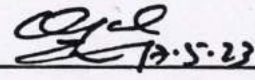
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Mr. Aditya Jena** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar- 751024, Odisha with University Roll No. **14754U214004**. He has carried out his dissertation work under the direct Supervision of **Prof. Bhabatosh Mitra**, Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (04) months i.e., from February, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Aditya Jena is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Dr. (Prof.) G. K. Panda  
Director, MSB.  
MITS School of Biotechnology  
Bhubaneswar

Plot- 2(P), Infocity Patia, Chandaka Industrial Estate, P.O.- KIIT Campus, Bhubaneswar-  
751024, Ph: 0674-3196060, Telefax: 0674-2741584, Web: www.msb.ac.in





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2022  
FROM

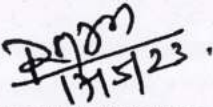
DATE: 17/5/23.

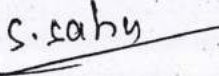
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

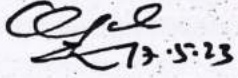
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss Adya Srabani Parida is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214005. She has carried out her dissertation work under the direct Supervision of Dr. Smaranika Sahu, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

Miss Adya Srabani Paridais a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Prof. G. K. Panda  
Director  
MITS School of Biotechnology  
Bhubaneswar



**PRETREATMENT AND ENZYMATIC HYDROLYSIS OF CORN HUSK  
USING RESPONSE SURFACE METHODOLOGY FOR ENHANCED  
BIOETHANOL PRODUCTION**

**A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

***IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY***

**By**

**AKANKSHYA DASH**

**Roll No. 14754U214006**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA**  
*Associate Professor*  
*Dept. Biotechnology*  
*MITS School of Biotechnology*  
*2(P), Infocity, Patia, Bhubaneswar-751024*



**MITS SCHOOL OF BIOTECHNOLOGY**  
**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024**  
**2023**



# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/20203

DATE: 17.05.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

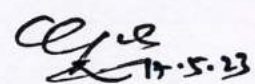
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Ms. Akankshya Dash** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214006 . She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Akankshya Dash** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**HOD**

  
**GUIDE**

  
**Prof. G.K.Panda**  
**Director**  
Director  
MITS School of Biotechnology  
Bhubaneswar



**EVALUATION OF ANTIBACTERIAL PROPERTY OF HONEY  
COLLECTED FROM KENDUJHAR DISTRICT OF ODISHA**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**APPLIED MICROBIOLOGY (2023)**

*Investigator*

**Akankshya sahuo**

**ROLL NO. 14754U214007**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS SCHOOL OF BIOTECHNOLOGY**



**MIT S**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

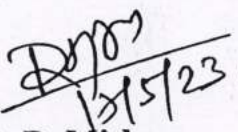
Date. 17 / 5 / 23


**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

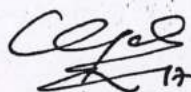
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Miss Akankshya sahuo** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214007**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Akankshya sahuo**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
17/5/23  
**Dr. R. R. Mishra**  
Head of the Department

  
**GUIDE**

  
17.5.23  
**Prof. (Dr.) G. K. Panda**  
Director, MSB  
MIT S School of Biotechnology  
Bhubaneswar-751024  
Bhubaneswar

**HOD**  
Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**CERTIFICATE**



**BIOCHEMICAL CHARACTERISATION OF ORGANIC  
ACID FERMENTING BACTERIA TAKING  
*Solanum tuberosum* AS SUBSTRATE**

A Project report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfillment for the degree of  
**MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

By  
**ANKITA PRIYADARSHINI**

Roll no-14754U214008

Under Supervision of  
**Dr. Satyananda Patel**  
Associate Professor, Department of Biotechnology



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha



**MIT S**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

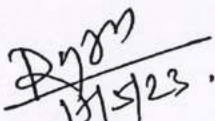
Date. 12/5/23

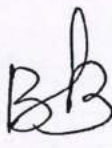
**FROM**  
**DIRECTOR**  
**PROF. (DR.) G.K.PANDA**  
**MIT S SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR-751024, ODISHA**


**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Anshu Rani** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214009**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Anshu Rani**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R. R. Mishra**  
Head of the Department

  
**GUIDE**

  
**Prof. (Dr.) G. K. Panda**

**Director, MSB**  
MITS School of Biotechnology  
Bhubaneswar-751024

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)





**MIT S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)


DATE:

Ref. No./  
FROM  
PROF. (DR.) G.K. PANDA  
DIRECTOR  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR – 751024, ODISHA

TO WHOME SOEVER IT MAY CONCERN

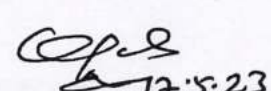
This is to certify that Miss. ANWESHA MISHRA is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-14754U214010. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Anwasha is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
16/5/23  
Dr. R. R. Mishra  
H.O.D., MSB

**HOD**

  
**GUIDE**

  
17.5.23  
Dr. G.K. Panda  
Director, MSB

Director  
MIT S School of Biotechnology  
Bhubaneswar

**Isolation and physicochemical characterization of bacteria from chilli  
(*Capsicum annuum* L.) rhizosphere and screening for their heavy metal  
tolerance potential.**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to**

**Utkal University, Bhubaneswar, Odisha**

**In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Applied Microbiology (2023)**

**Submitted by**

**Arghyarupa Tripathy**

**Roll No. 14754U214011**

**Under The Guidance Of**

**Dr.Smaranika Sahu  
Assistant Professor**



**Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023

DATE:

*FROM*

**PROF. G.K.PANDA**  
DIRECTOR  
MITSSCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Miss Arghyarupa Tripathy** is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214011. She has carried out her dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Arghyarupa Tripathy** suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*Rashmi*  
*17/5/23*  
**Dr. Rashmi R. Mishra**  
Head of the Department  
**HOD**

*S. Sahu*  
**[GUIDE**

*G.K. Panda*  
*17.5.23*  
**Prof. G. K.Panda**  
Director  
Director  
MITS School of Biotechnology  
Bhubaneswar

IDENTIFICATION AND CHARACTERISATION OF *Bacillus amyloliquifaciens* FROM *Colocasia esculenta* ROOT FERMENTATION

A Project report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY  
Affiliated to  
UTKAL UNIVERSITY



For the partial fulfilment for the degree of  
MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

By  
Arpita Mishra  
Roll NO – 14754U214012

Under Supervision of

Dr. Satyananda Patel

Associate Professor, Department of Biotechnology



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha






**MITS SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)  
DATE:

Ref. No./  
FROM  
PROF. (DR.) G.K. PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR – 751024, ODISHA

TO WHOME SOEVER IT MAY CONCERN

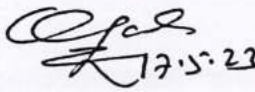
This is to certify that Miss. ARPITA MISHRA is a Bonafide Student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-14754U214012. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Arpita is a fit and suitable Candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
H.O.D., MSB

**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**LOW DOSE METAL INDUCED EXPRESSED RESISTANCE  
AGAINST FUSARIUM INFECTION**

**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**



**AFFILIATED TO**

***UTKAL UNIVERSITY, BHUBANESWAR***

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

BY

**ASMINI PADHI**

ROLL NO: 14754U214013

UNDER THE GUIDANCE OF

**PROF. BHABATOSH MITTRA**

(PROFESSOR)



**MITS SCHOOL OF BIOTECHNOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-  
751024**





# MIT S

## School of Biotechnology

(AFFILIATED TO UTKAL UNIVERSITY)

REF.NO:

DATE- 17/5/23

FROM:

PROF.(DR.) G. K. PANDA

DIRECTOR

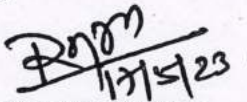
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

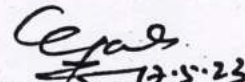
### TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. ASMINI PADHI is a bonafide student of M.scApplied Microbiology of MIT S SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no - 14754U214013. She has carried out his dissertation work under the direct supervision of Prof. BHABATOSH MITTRA, Assistant professor, Department of Applied microbiology, MIT S SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha within the stipulated time of five months (January to May, 2023). As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. ASMINI PADHI has completed her dissertation work for partial fulfillment of the requirement to award for Master Degree of Science in Applied Microbiology conferred by Utkal university. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra  
(Head of the department)  
**HOD**

  
**GUIDE**

  
Dr. G.R. Panda  
DIRECTOR, MSB

Director  
MIT S School of Biotechnology  
Bhubaneswar

**MULTIDRUG RESISTANCE PROFILE AND MOLECULAR  
CHARACTERIZATION OF *PSEUDOMONAS AERUGINOSA*  
ISOLATED FROM CLINICAL SAMPLES**

**THESIS SUBMITTED TO THE  
UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**APPLIED MICROBIOLOGY (2023)**

*Investigator*

**Avinab Maharana**

**ROLL NO. 14754U214014**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS SCHOOL OF BIOTECHNOLOGY**





**MIT S**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

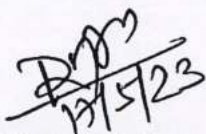
Date. 17/5/23

**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

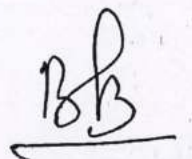
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Mr. Avinab Maharana** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214014**. He has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

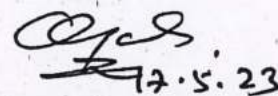
**Mr. Avinab Maharana**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
17/5/23

**Dr. R. R. Mishra**  
Head of the Department



**GUIDE**

  
17.5.23

**Prof. (Dr.) G. K. Panda**  
Director  
MIT S School of Biotechnology  
Bhubaneswar

**HOD**, Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**Heavy metal resistance and bioremediation of hexavalent  
chromium by native soil bacteria**

**A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO  
UTKAL UNIVERSITY, BHUBANESWAR**

***IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY***

**By**

**BHAGYASHREE PRUSTY**

**Roll No. 14754U214015**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA**

*Associate Professor*

*Dept. Biotechnology*

*MITS School of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*







# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/20203

DATE: 15.05.23

**FROM**  
**Prof. G.K.Panda**  
**DIRECTOR**  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

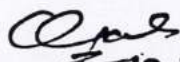
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Bhagyashree Prusty** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214015. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Bhagyashree Prusty** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
17.5.23

Prof. G.K.Panda

Director

Director  
MITS School of Biotechnology  
Bhubaneswar

**BIO-DECOLOURIZATION OF SYNTHETIC DYES BY  
BACTERIAL STRAINS ISOLATED FROM  
DYE CONTAMINATED WATER**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILATED TO



*UTKAL UNIVERSITY, BHUBANESWAR*

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT

FOR THE AWARD OF MASTER OF SCIENCE

IN APPLIED MICROBIOLOGY

**BY**

BISMAYA KUMAR DASH

ROLL NO. 14754U214016

**UNDER THE GUIDANCE OF**

**Dr. MOUSUMI MISHRA**

(ASSISTANT PROFESSOR)



MITS SCHOOL OF BIOTECHNOLOGY

2(P) , INFOCITY PATIA , CHANDAKA INDUSTRIAL ESTATE , BHUBANESWAR, ODISHA, PIN - 751024





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

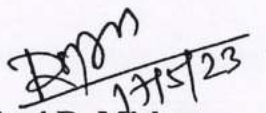
DATE:

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr. Bismaya Kumar Dash** is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214016. He has carried out his dissertation work under the direct Supervision of **Dr. Mousumi Mishra**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

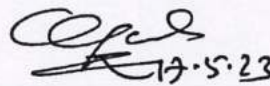
**Mr. Bismaya Kumar Dash** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi R. Mishra

Head of the Department

**HOD**

  
**GUIDE**

  
Prof. G. K. Panda

Director  
Director  
MITS School of Biotechnology  
Bhubaneswar

# Hospital and meat associated *Staphylococcus aureus* and Their Biofilm Characteristics

A Project report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**  
Affiliated to  
**UTKAL UNIVERSITY**

For the partial fulfilment for the degree of  
**MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

By  
**Gourab Kumar Naik**  
Roll NO – 14754U214018

Under Supervision of  
**Dr. Rashmi Ranjan Mishra**  
Associate Professor, Department of Biotechnology



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha





# MIT S SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)


DATE:

Ref. No./  
FROM  
PROF. (DR.) G.K. PANDA  
DIRECTOR  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR – 751024, ODISHA

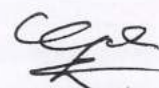
## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Mr. GOURAB KUMAR NAIK is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MIT S School of Biotechnology, Bhubaneswar University Roll No-14754U214018. He has carried out her dissertation work under the direct supervision of Dr. Rashmi Ranjan Mishra, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Gourab is a fit and suitable candidate Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
H.O.D., MSB  
**HOD**

  
**GUIDE**

  
Dr. G.K. Panda  
Director, MSB  
Director  
MIT S School of Biotechnology  
Bhubaneswar

**SCREENING OF POTENTIAL INDIGENOUS FUNGAL STRAINS FOR  
DYE DECOLOURIZATION**

**^  
Dissertation Submitted To  
MITS School Of Biotechnology**

**Affiliated To  
Utkal University, Bhubaneswar**

**In Partial Fulfilment Of The Requirement For The Award Of  
Degree Of Master Of Science In Applied Microbiology**



**Submitted by**

**Ipsita pani**

**Roll no. -14754U214019**



**Supervised by**

**Dr. Mousumi Mishra  
Asst. Professor, Dept. Of Biotechnology**

**MITS School of Biotechnology  
2(P), Infocity, Patia, ChandrasekharPur,  
Bhubaneswar-751024(2022)**





# MITS

School Of Biotechnology,  
Bhubaneswar  
Affiliated to Utkal university

Ref. No. /

DATE: 17/5/23

FROM PROF. (DR.) G.K. PANDA

DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss.Ipsita pani is a Bonafede student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214019. She has carried out his dissertation work under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Ipsita Pani is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

*Rashmi Mishra*  
17/5/23

Dr. Rashmi Ranjan Mishra

Head of the department

HOD

*Mousumi Mishra*

GUIDE

*G.K. Panda*  
12.5.23

Dr. G. K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

# MIT S

SCHOOL OF BIOTECHNOLOGY BHUBANESWAR  
(AFFILIATED TO UTKAL UNIVERSITY)



Ref. No. /

DATE

FROM

PROF. (DR.) G. K. PANDA  
DIRECTOR

MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that **Mr. Jagat Jyoti Acharya** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar- 751024, Odisha with University Roll No. **14754U214020**. He has carried out his dissertation work under the direct Supervision of **Prof. Bhabatosh Mitra**, Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (04) months i.e., from February, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Jagat Jyoti Acharya is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

Dr. Rashmi Ranjan Mishra  
Head of the Department

**HOD**

**GUIDE**

Dr. (Prof.) G. K. Panda  
Director, MSB

Director

MIT S School of Biotechnology

Plot- 2(P), Infocity Patia, Chandaka Industrial Estate, P.O.- KIIT Campus, Bhubaneswar-  
751024, Ph: 0674-3196060, Telefax: 0674-2741584, Web: www.msb.ac.in





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

DATE:

Ref. No./  
FROM  
PROF. (DR.) G.K. PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR – 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. Janhavi Tajan is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-14754U214021. She has carried out her dissertation work under the direct supervision of Dr. Manisha Pattnaik, Assistant Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Janhavi is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. R. R. Mishra  
H.O.D., MSB

**HOD**

**GUIDE**

Dr. G.K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**ISOLATION AND IDENTIFICATION OF PHOSPHATE  
SOLUBILISING BACTERIA FROM MAHANADI MANGROVE  
SOIL**

**THESIS SUBMITTED TO THE  
UTKAL UNIVERSITY  
FOR THE DEGREE OF  
MASTER OF SCIENCE  
IN  
APPLIED MICROBIOLOGY (2023)**

***Investigator***

**Kapi Sriram Himansu Sekhar Sahu**

**Roll No. 14754U214022**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS School of Biotechnology,  
Patia, Chandrasekharpur,  
Bhubaneswar-751024**





**MITS**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

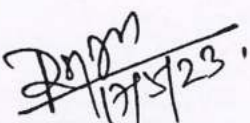
Date. 17/5/23


**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

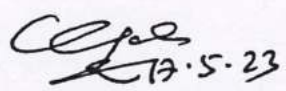
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Kapi Sriram Himansu Sekhar Sahu** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214022**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Mr Kapi Sriram Himansu Sekhar Sahu**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. he has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. R. R. Mishra**  
Head of the Department  
**HOD**

  
**GUIDE**

  
**Prof. (Dr.) G. K. Panda**  
Director, MSB  
MITS School of Biotechnology  
Bhubaneswar

**EVALUATION OF ANTIBACTERIAL PROPERTY OF  
PASTEURISED MILK AND HUMAN BREAST MILK  
COLLECTED FROM BHUBANESWAR, ODISHA**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**APPLIED MICROBIOLOGY (2023)**

*Investigator*

**Kiki Debasrita Jena**

**ROLL NO. 14754U214023**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS SCHOOL OF BIOTECHNOLOGY**





**MIT S**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

Date. \_\_\_\_\_

FROM

DIRECTOR

PROF. (DR.) G.K.PANDA

MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Miss Kiki Debasrita Jena** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214023**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Kiki Debasrita Jena**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*Dr. R. R. Mishra*  
17/05/23

Dr. R. R. Mishra

Head of the Department

HOD

*BB*

GUIDE

*G.K. Panda*  
17.5.23

Prof. (Dr.) G. K. Panda

Director, MSB

Director

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024, Odisha

Ph: 0674-3196060, telefax: 0674-2741584, web: [www.mitsbhubaneswar.org](http://www.mitsbhubaneswar.org)

*Studies on In vitro Antioxidant and Antimicrobial  
activity of Cyanobacteria obtained from Nandankan  
Kanjia Lake, Odisha*



DISSERTATION SUBMITTED TO  
MIT'S SCHOOL OF BIOTECHNOLOGY

**AFFILIATED TO**

***UTKAL UNIVERSITY, BHUBANESWAR***

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

BY

**LIPIKA DAS**

ROLLNO: 14754U214024

UNDER THE GUIDANCE OF

**SABYASACHI PARIDA**

(ASSISTANT PROFESSOR)



**MIT SCHOOL OF BIOTECHNOLOGY**

**2(P), INFO CITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-  
751024**





# MIT S

## School of Biotechnology

(AFFILIATED TO UTKAL UNIVERSITY)

REF.NO:

DATE-

FROM:

PROF.(DR.) G. K.

PANDADIRECTOR

MITSSCHOOLOFBIOTECHNOLOGYB

HUBANESWAR-751024,ODISHA

### TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. LIPIKA DAS is a bonafide student of M.sc Applied Microbiology of MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no - 14754U214024. She has carried out his dissertation work under the direct supervision of Mr . Sabyasachy Parida, Assistant professor, Department of Applied microbiology, MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha within the stipulated time of five months (January to May, 2023). As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. LIPIKA DAS has completed her dissertation work for partial fulfillment of the requirement to award for Master Degree of Science in Applied Microbiology conferred by Utkal university. She has duly acknowledged the assistance and help received during the course of this investigation.

*Rashmi*  
*17/5/23*  
Dr.RASHMI RANJAN MISHRA  
(HEAD OF THE DEPARTMENT)

HOD

*Sparide*  
*16/5/23*

GUIDE

*G.K.Panda*  
*17.5.23*  
Dr.G.K PANDA

DIRECTOR, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**Isolation and characterization of thermophiles from hot  
springs of Atri, Odisha for industrial important  
enzyme production**

**Dissertation submitted to MITS School of Biotechnology**

**Affiliated to Utkal University**



**In Partial Fulfillment of The Requirement for The Award of Degree of Master Of Science In  
Applied Microbiology**

**Submitted By**

**LIPSA SAMAL  
Roll No.: 14754U214025**

**Under the Guidance of**

**DR. ASHOK KUMAR NAYAK**

**(VISITING FACULTY)**



**DEPARTMENT OF BIOTECHNOLOGY, MITS SCHOOL OF BIOTECHNOLOGY  
2(P), INFOCITY, PATIA, CHANDAKA INDUSTRIAL ESTATE,  
BHUBANESWAR, ODISHA. PIN- 741024  
2023**





# MITS

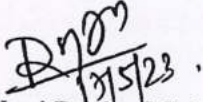
School Of Biotechnology,  
Bhubaneswar  
Affiliated to Utkal university  
DATE:

Ref. No. /  
FROM PROF. (DR.) G.K. PANDA  
DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

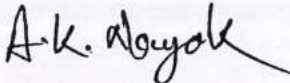
This is to certify that Miss. Lipsa Samal is a bonafide student of M.Sc. applied microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214025. He has carried out his dissertation work under the direct Supervision of Dr. Ashok Kumar Nayak, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (05) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Lipsa Samal is a fit and suitable candidate for the award of Degree of Master of Science in applied microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra

Head of the Department

**HOD** ]



**GUIDE**

  
Dr. G. K. Panda

Director  
Director  
MITS School of Biotechnology  
Bhubaneswar



# मिट्स जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

## BIOACTIVITY ASSESSMENT OF ENDOPHYTIC FUNGI AND BACTERIA ASSOCIATED WITH *Murraya koenigii*

A Dissertation Submitted To  
MITS School Of Biotechnology  
Affiliated To  
Utkal University, Bhubaneswar

In Partial Fulfilment Of The Requirement For The Award Of Degree Of Master Of  
Science In Microbiology



Submitted by  
NABANITA SINGH  
Roll no: -14754U212026

Supervised by  
Dr. Mousumi Mishra  
Coordinator, Dept. of Biotechnology  
MITS School of Biotechnology,  
2(P), Infocity, Patia, Chandrasekharpur, Bhubaneswar, 751024





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

Date:

FROM PROF. (DR.) G.K. PANDA

DIRECTOR MITS SCHOOL OF BIOTECHNOLOGY


BHUBANESWAR-751024, ODISHA

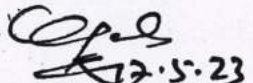
TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. Nabanita Singh is a Bonafede student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U212026. She has carried out his dissertation work under the direct Supervision of Dr. Mousumi Mishra, Coordinator, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e., from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Nabanita Singh is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
HOD

  
GUIDE

  
Dr. G. K. Panda

(Director)

MITS School of Biotechnology

Bhubaneswar

Website: [www.msb.ac.in](http://www.msb.ac.in)

Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**SCREENING OF RHIZOSPHERIC BACTERIA OF *Vigna radiata* FOR  
PLANTGROWTH PROMOTING ACTIVITIES**

A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO



*UTKAL UNIVERSITY, BHUBANESWAR*

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

BY  
NEHA SINHA

ROLL NO: - 14754U214027

UNDER THE GUIDANCE OF

**Dr. MOUSUMI MISHRA**  
(ASSISTANT PROFESSOR)



**MITS SCHOOL OF MICROBIOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR,  
ODISHA, PIN - 751024**



# MIT S

SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR  
(AFFILIATED TO UTKAL UNIVERSITY)



Ref. No. /

DATE

FROM  
PROF. (DR.) G. K. PANDA  
DIRECTOR  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Neha Sinha** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar- 751024, Odisha with University Roll No. **14754U214027**. She has carried out his dissertation work under the direct Supervision of **Dr. Mousumi Mishra**, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (04) months i.e., from February, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Neha Sinha is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

*Dr. R.R. Mishra*  
16/05/23

Dr. R.R. Mishra,  
Head of the Department

HOB

*Mousumi Mishra*

GUIDE

*G.K. Panda*  
19.5.23

Dr. (Prof.) G. K. Panda  
Director, MSB

MIT S School of Biotechnology

Bhubaneswar

Plot- 2(P), Infocity Patia, Chandaka Industrial Estate, P.O.- KIIT Campus, Bhubaneswar-

751024, Ph: 0674-3196060, Telefax: 0674-2741584, Web: www.msb.ac.in

**ANTIBACTERIAL POTENTIAL OF NEEM(*Azadiracta Indica*)  
Against Different Pathogens Producing Beta -  
actamase Enzyme : A Clue to Future Antibacterial Agent.**

**A Project Report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY**

**Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfillment for the degree of  
MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**BY**

**NIKIPRITAM SAHOO  
Roll No. - 14754U214028**

***Under The Guidance Of*  
Dr. DIPTIPRIYA SETHI**

**ASSISTANT PROFESSOR, MITS SCHOOL OF BIOTECHNOLOGY**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka  
Industrial Estate, Bhubaneshwar, 751024, Odisha  
2023**





# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 17/05/2023

DR. G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

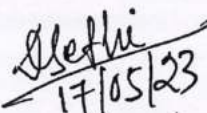
## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. NIKIPRITAM SAHOO is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.14754U214028. She has carried out her dissertation work under the direct supervision of Dr. Diptipriya Sethi, Assistant Professor, Department of Applied Microbiology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma. Miss. Niki is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R.R. Mishra

Head of the Department

HOD

  
17/05/23

GUIDE

  
Dr. G.K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

MITS School of Biotechnology 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar-751024

**"A STUDY ON PLANT MEDIATED SYNTHESIS OF ZnO  
NANOPARTICLES AND THEIR ANTIBACTERIAL  
ACTIVITIES"**

**Dissertation Submitted To  
MIT School Of Biotechnology  
Affiliated To  
Utkal University, Bhubaneswar**

**In Partial Fulfillment Of The Requirement For The Award Of  
Degree Of Master Of Science In Biotechnology**



**Submitted by  
Pradyumna Kumar Sahoo**

**Rollno.14754U214029**



**Supervised by  
Dr. Manisha Patnaik**

**Asst. Professor, Dept. Of Biotechnology**

**MITS School of Biotechnology**

**2(P), Infocity, Patia, Chandrasekharpur,  
Bhubaneswar-751024(2022)**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No./

DATE:

FROM PROF.(DR.)G. K. PANDA

DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY

BHUBANESWAR-  
751024,ODISHA

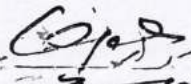
TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr Pradyumna Kumar Sahoo is a Bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214029. She has carried out her dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr Pradyumna Kumar Sahoo is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
[HOD

  
[GUIDE

  
12.5.23  
Dr. G. K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**ISOLATION AND CHARACTERIZATION OF METAL RESISTANCE BACTERIA FROM  
TEXTILE WASTE WATER**

**A**

**Dissertation Submitted**

**To**

**MITS SCHOOL OF BIOTECHNOLOGY**  
*Affiliated to*  
**Utkal University, Bhubaneswar, Odisha**

**In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Applied Microbiology (2023)**

**Submitted by**

**Pravasini Jena**  
Roll No. 14754U214030

**Under The Guidance Of**

**Dr.Smaranika Sahu**  
Assistant Professor



**Department Of Biotechnology**  
**MITS SCHOOL OF BIOTECHNOLOGY,**  
**2(P), Infocity, Patia, Bhubaneswar, Odisha,**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023

DATE: 17/5/23.

FROM

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss Pravasini Jena is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214030. She has carried out her dissertation work under the direct Supervision of Dr. Smaranika Sahu, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

Miss Pravasini Jena is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*Rashmi*  
17/5/23

Dr. Rashmi R. Mishra

Head of the Department

**HOD**

*S. Sahu*

**GUIDE**

*G.K. Panda*  
17/5/23

Prof. G. K.Panda

Director  
MITS School of Biotechnology  
Bhubaneswar

# **MOLECULAR CHARACTERIZATION OF CITRATE PRODUCING BACTERIA IN RADISH (RAPHANUS SATIVUS)**

**A Project report Submitted to  
MITS SCHOOL OF BIOTECHNOLOGY  
Affiliated to  
UTKAL UNIVERSITY**



**For the partial fulfilment for the degree of  
MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**By  
PRITIREKHA ACHARYA  
Roll NO -14754U214031**

**Under Supervision of  
Dr. Satyananda Patel  
Associate Professor, Department of Biotechnology**



**MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha**





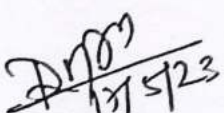
**MIT'S SCHOOL OF BIOTECHNOLOGY**  
(Affiliated to UTKAL UNIVERSITY)  
DATE:

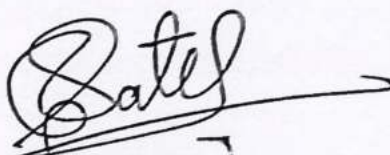
Ref. No./  
FROM  
PROP. (DR.) G.K. PANDA  
DIRECTOR  
MIT'S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR - 751024, ODISHA

**TO WHOME SOEVER IT MAY CONCERN**

This is to certify that Miss. Pritirekha Acharya is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MIT'S School of Biotechnology, Bhubaneswar University Roll No-14754U214031. She has carried out her dissertation work under the close supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Pritirekha Acharya is a fit and suitable candidate Microbiology certified by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr.R. R. Mishra  
H.O.D., MSB  
HOD

  
GUIDE

  
Dr.G.K. Panda  
Director, MSB  
Director  
MIT'S School of Biotechnology  
Bhubaneswar

# **Bioremediation of hexavalent chromium using cell free extract of *Bacillus* sp.**

A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO

UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

By

PRIYANKA DAS

Roll No. 14754U214032

Under the guidance of

Dr. RASHMI RANJAN MISHRA

*Associate Professor*

*Dept. Biotechnology*

*MITS School of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*



MITS SCHOOL OF BIOTECHNOLOGY

2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024

2023





# मिट्स जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 15.05.23

**FROM**

Prof. G.K.Panda

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Priyanka Das** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214032. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Priyanka Das** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*[Signature]*  
HOD

*[Signature]*  
[GUIDE

*[Signature]*  
15.5.23  
Prof. G.K.Panda

**Director**

Director  
MITS School of Biotechnology  
Bhubaneswar

**BIOSYNTHESIS OF CITRIC ACID FROM ORANGE PEELS BY  
*ASPERGILLUS NIGER* THROUGH BATCH FERMENTATION**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**Applied Microbiology (2023)**

*Investigator*

**Priyanka Priyadarshini**

**ROLL NO. 14754U214033**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MIT SCHOOL OF BIOTECHNOLOGY,**





**MITS**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

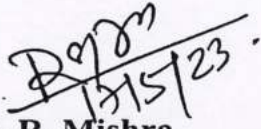
Date. 17/5/23

**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SO EVER IT MAY CONCERN**

This is to certify that **Priyanka Priyadarshini** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214033**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Priyanka Priyadarshini**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Prof. (Dr.) G. K. Panda

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**"CHARACTERIZATION AND PARTIAL PURIFICATION OF  
ALKALINE PROTEASE FROM HALOTOLERANT *BACILLUS SP.*"**

**A  
DISSERTATION THESIS SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO  
UTKAL UNIVERSITY, BHUBANESWAR  
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED  
MICROBIOLOGY**

*By*

**PUJA PRUSTY**

**Roll No.: 14754U214034**

*Under the guidance of*

**Dr. RASHMI RANJAN MISHRA, M.Sc., Ph.D.**

*Associate Professor in Biotechnology  
Department of Biotechnology, MITS School of Biotechnology*



**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024**

**2023**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 17.05.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Puja Prusty** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214034. She has carried out her dissertation work under the direct Supervision of Dr. **Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Puja Prusty** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Prof. G.K.Panda

Director

Director  
MITS School of Biotechnology  
Bhubaneswar

**The Study of Fermentation of  
*Ipomoea batatas* Using Amylase Producing Bacteria**

A Project report Submitted to  
**MITS SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfillment for the degree of  
**MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

By  
**PUSPANJALI NAYAK**  
Roll no-14754U214035

Under Supervision of  
**Dr. Satyananda Patel**  
Associate Professor, Department of Biotechnology



MITS School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha



# MITS SCHOOL OF BIOTECHNOLOGY

(Affiliated to UTKAL UNIVERSITY)

DATE:



Ref. No./

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

## TO WHOME SOEVER IT MAY CONCERN

This is to certify that Miss. PUSPANJALI NAYAK is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-14754U214035. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Puspanjali is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*Dr. R. R. Mishra*  
17/5/23

Dr. R. R. Mishra

H.O.D., MSB

**HOD**

*Satyananda Patel*  
**GUIDE**

*G.K. Panda*  
17.5.23

Dr. G.K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**Isolation and Identification of Bacteria From Fermented Yam (*Dioscorea alata*)**  
A Project report Submitted to  
**MIT SCHOOL OF BIOTECHNOLOGY**

Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfilment for the degree of  
**MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

By

**RITIKA BEURA**

Roll no-14754U201036

Under Supervision of  
**DR SATYA NANDA PATEL**



**MIT SCHOOL OF BIOTECHNOLOGY**

2(P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar-751024





OF BIOTECHNOLOGY

MITS SCHOOL

(Affiliated to UTKAL UNIVERSITY)

Ref. No./

DATE: 16May2023

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR – 751024, ODISHA

**TO WHOME SOEVER IT MAY CONCERN**


This is to certify that Miss. RITIKA BEURA is a bonafide student of M.Sc. Applied Microbiology (Sixth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. She has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Zahra is a fit and suitable candidate for the award of Degree of Bachelor of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. M. Mishra

MSc. Coordinator, MSB

HOD

  
GUIDE

Dr. G.K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**Optimization of cellulase production from Bacillus sp. isolated from  
mangrove soil of Bhitarkanika, Odisha using Response surface  
methodology**

**A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

***IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY***

**By**

**ROSALI BISWAL**

**Roll No. 14754U214037**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA**

*Associate Professor*

*Dept. Biotechnology*

*MITS School of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*



**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024**

**2023**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 15.05.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA**

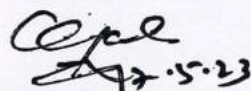
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Rosali Biswal** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214037. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Rosali Biswal** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**HOD**

  
**GUIDE**

  
**Prof. G.K.Panda**  
**Director**

Director  
MITS School of Biotechnology  
Bhubaneswar

**Isolation And Optimization Of Amylase From Bacteria Isolated From  
*Ipomoea Batatas***

**A**

**Dissertation Submitted To**

**Utkal University**

**For The Degree Of**

**Master Of Science**

**In**

**Applied Microbiology**



**Submitted by**

**Rutuparna Sharma**

**Roll no. -14754U214038**



**Supervised by**

**Dr. Manisha Patnaik**

**MITS School of Biotechnology**

**2(p) Infocity, Patia, Chandrasekharpur, Bhubaneswar-751024**

**2023**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

DATE: 17/5/23

FROM PROF. (DR.) G.K. PANDA

DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Ms. Rutuparna Sharma is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214038. She has carried out his dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January, 2022 to June, 2022. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Rutuparna Sharma is a fit and suitable candidate for the award of Degree of Master of Science in Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
17/5/23

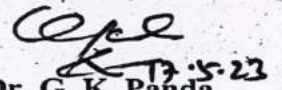
Dr. Rashmi Ranjan Mishra

Head of the department

**HOD**



**GUIDE**

  
17/5/23

Dr. G. K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY  
OF *SANTALUM ALBUM* BARK EXTRACTS**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**APPLIED MICROBIOLOGY (2023)**

*Investigator*

**Sagarika Behera**

**ROLL NO. 14754U214039**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MIT S SCHOOL OF BIOTECHNOLOGY,**





**MIT S**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

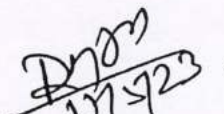
Date. 12/5/23

**FROM**  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Sagarika Behera** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214039**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Sagarika Behera**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. R. R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Prof. (Dr.) G. K. Panda  
Director, MSB

MITS School of Biotechnology  
Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

# **Characterization of Halotolerant Amylase-Producing Bacteria from Mangrove of Bichitrapur, Balasore**

A DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO



UTKAL UNIVERSITY, BHUBANESWAR

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

BY

**SAI SANKALP PAUL**

ROLL NO: - 14754U214040

UNDER THE GUIDANCE OF

Dr. MOUSUMI MISHRA

(ASSISTANT PROFESSOR)



**MITS SCHOOL OF MICROBIOLOGY**

---

2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN - 24

---





Ref. No. /

DATE

FROM

**PROF. (DR.) G. K. PANDA**  
**DIRECTOR**

MIT S SCHOOL OF  
BIOTECHNOLOGY,

BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that Mr. Sai Sankalp Paul is a student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar- 751024, Odisha with University Roll No.14754U214040. He has carried out his dissertation work under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of four (04) months i.e., from February, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Sai Sankalp Paul is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

*Rashmi*  
*13/5/23*  
**Dr. Rashmi Ranjan Mishra**  
Head of the Department  
**HOD**

*Mishra*  
**GUIDE**

*G. K. Panda*  
*17.5.23*  
**Dr. (Prof.) G. K. Panda**  
Director, MSB

Director

MIT S School of Biotechnology

Plot- 2(P), Infocity, Patia, Chandaka Industrial Estate, P.O.- KIIT Campus, Bhubaneswar

751024, Ph: 0674-3196060, Telefax: 0674-2741584, Web: www.msb.ac.in

*Attainable Antimicrobial activity of Cyanobacteria  
isolated from Nandankan Kanjia Lake, Odisha*



DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

**AFFILIATED TO**

***UTKAL UNIVERSITY, BHUBANESWAR***

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

BY

**SAMUKARANI SWAIN**

ROLL NO: 14754U214041

UNDER THE GUIDANCE OF

**SABYASACHY PARIDA**



(ASSISTANT PROFESSOR)

**MITS SCHOOL OF BIOTECHNOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-  
751024**





# MIT S

## School of Biotechnology

REF.NO:

DATE- 17.5.23

FROM:  
PROF.(DR.) G. K. PANDA DIRECTOR  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. SAMUKA RANI SWAIN is a bonafide student of M.sc Applied Microbiology of MIT S SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no - 14754U214041. She has carried out his dissertation work under the direct supervision of Mr. Sabyasachy Parida, Assistant professor, Department of Applied microbiology, MIT S SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha within the stipulated time of five months (January to May, 2023). As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. SAMUKARANI SWAIN has completed her dissertation work for partial fulfillment of the requirement to award for Master Degree of Science in Applied Microbiology conferred by Utkal university. She has duly acknowledged the assistance and help received during the course of this investigation.

Dr. Rashmi Ranjan Mishra  
(Head of the department)

*RJM*  
17/5/23

*Sparide*  
14/5/23  
GUIDE

*G.K.Panda*  
17.5.23  
Dr. G.K Panda  
DIRECTOR, MSB  
Director

HOD

MIT S School of Biotechnology

Plot- 2(P), Infocity Patia, Chandika Industrial Estate, P.O.- KBTU Campus, Bhubaneswar- 751024,

Ph: 0674-3196060, Telefax: 0674-2741584, Web: www.msb.ac.in

**ISOLATION AND IDENTIFICATION OF FREE LIVING  
NITROGEN FIXING BACTERIA FROM AGRICULTURAL SOIL**

**THESIS SUBMITTED TO THE**

**UTKAL UNIVERSITY**

**FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**IN**

**APPLIED MICROBIOLOGY (2023)**

*Investigator*

**SATYAPRIYA SAHOO**

**Roll No. 14754U214042**



**Supervisor**

**Dr. Bikash Chandra Behera**

**M.Sc., Ph.D. (North Orissa)**

**MITS SCHOOL OF BIOTECHNOLOGY**





**MITS**  
**SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

Date. \_\_\_\_\_

**FROM**

**DIRECTOR**

**PROF. (DR.) G.K.PANDA**

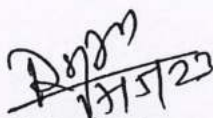
**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Mr. Satyapriya Sahoo** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214042**. He has carried out his dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Mr. Satyapriya Sahoo**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.


  
13/5/23


**Dr. R. R. Mishra**

**Head of the Department**

**HOD**

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar-751024  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

  
[GUIDE]

  
17.5.23  
**Prof. (Dr.) G. K. Panda**

**Director, MSB**

Director

MITS School of Biotechnology  
Bhubaneswar

**Green Synthesis Of ZnO Nanoparticles Using Leaf Extracts  
Of *Eupatorium ayapan*, *Ricinus communis*, *Artemisia  
vulgaris* and *Piper longum***

**Dissertation submitted to MITS School of Biotechnology**

**Affiliated to Utkal University**



**In Partial Fulfillment of The Requirement for The Award of Degree of Master Of Science In  
Applied Microbiology**

**Submitted By**

**Shibani Choudhury  
Roll no. 14754U214043**

**Under the Guidance of**

**DR. ASHOK KUMAR NAYAK**

**(VISITING FACULTY)**

**DEPARTMENT OF BIOTECHNOLOGY, MITS SCHOOL OF BIOTECHNOLOGY  
2(P), INFOCITY, PATIA, CHANDAKA INDUSTRIAL ESTATE,  
BHUBANESWAR, ODISHA. PIN- 741024  
2023**





# MITS

School Of Biotechnology,  
Bhubaneswar

Affiliated to Utkal university

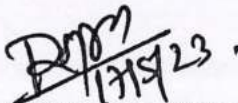
DATE: 17/5/23

Ref. No. /  
FROM PROF. (DR.) G.K. PANDA  
DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

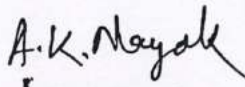
This is to certify that Miss. Shibani Choudhury is a bonafide student of M.Sc. applied microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214043. She has carried out his dissertation work under the direct Supervision of Dr. Ashok Kumar Nayak, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (05) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

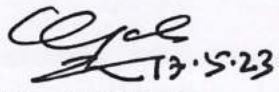
Miss. Shibani Choudhury is a fit and suitable candidate for the award of Degree of Master of Science in applied microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra

Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G. K. Panda

Director

Director  
MITS School of Biotechnology  
Bhubaneswar

**“BIOREMEDIATION OF SELENITE TO RED LEMENTAL SELENIUM  
USING SALT TOLERANT BACTERIA”**

**A  
DISSERTATION SUBMITTED TO**

**MITS SCHOOL OF BIOTECHNOLOGY**

*AFFILIATED TO*

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

*By*

**SHRUTI SUCHARITA PRADHAN**

**Roll No.- 14754U214044**

*Under the guidance of*

**Dr. RASHMI RANJAN MISHRA**

**ASSOCIATE PROFESSOR & HEAD  
MITS SCHOOL OF BIOTECHNOLOGY**



**MITS SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024**

**2023**



**Ref. No. /PROJ/MSB/2023**

**DATE: 17/05/2023**

**FROM:**

**PROF. G.K.PANDA**

DIRECTOR


MITS SCHOOL OF BIOTECHNOLOGY

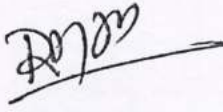
BHUBANESWAR-751024, ODISHA

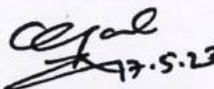
**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that **Miss. Shruti Sucharita Pradhan** is a bonafide student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214044**. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi Ranjan Mishra**, Associate professor and for duration of five (05) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss. Shruti Sucharita Pradhan** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**Dr. Rashmi Ranjan Mishra**  
Head of the Department  
**HOD**

  
**GUIDE**

  
**Prof. G. K. Panda**  
Director

**CHARACTERIZATION OF LACTOBACILLUS SPECIES FROM  
BREAST MILK AND STUDY OF THEIR ANTIMICROBIAL  
ACTIVITY**

**A**

**DISSERTATION SUBMITTED TO**

**MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**By**

**MS. SIPRA JENA  
Roll No.-14754U214045**

***Under the guidance of*  
Dr.MOUSUMI MISHRA  
ASSISTANT PROFESSOR  
MITS SCHOOL OF BIOTECHNOLOGY, BBSR**



**MITS SCHOOL OF BIOTECHNOLOGY  
2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar,  
Odisha, Pin - 751024  
2023**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

DATE : 17.5.23

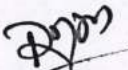
FROM

PROF. (DR.) G.K.PANDA  
DIRECTOR  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

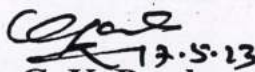
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that Ms. SIPRA JENA is a *bonafide* student of M.Sc.Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No.14754U214045. She has carried out her dissertation work under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, for a period of three (04) months i.e. from, Feb.2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Sipra Jena is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
HOD

  
GUIDE

  
Dr. G. K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**Studies on *in-vitro* Antioxidant Potential of Cyanobacteria obtained from  
Nandankanan Kanjia Lake, Odisha**



**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

***UTKAL UNIVERSITY, BHUBANESWAR***

**IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**BY**

**SK ABARAR HUSSAIN**

**ROLL NO: 14754U214046**

**UNDER THE GUIDANCE OF**

**SABYASACHY PARIDA**



**(ASSISTANT PROFESSOR)**

**MITS SCHOOL OF BIOTECHNOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-  
751024**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

DATE: 17.5.23

**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr. Sk Abarar Hussain** is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214046. He has carried out his dissertation work under the direct Supervision of **SABYASACHY PARIDA**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Mr. Sk Abarar Hussain** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

*Rm*  
17/5/23

**Dr. Rashmi R. Mishra**  
Head of the Department  
**HOD**

*Sparide*  
16/5/23

**GUIDE**

*G.K.Panda*  
17.5.23

**Prof. G. K.Panda**

**Director**  
Director  
MITS School of Biotechnology  
Bhubaneswar

**Optimization of protease production from  
Trichoderma sp. through submerged fermentation  
using different agrowastes**

A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO

UTKAL UNIVERSITY, BHUBANESWAR

*IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY*

By

SOMAPIKA BEHERA

Roll No. 14754U214047

Under the guidance of

Dr. RASHMI RANJAN MISHRA

*Associate Professor*

*Dept. Biotechnology*

*MITS School of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*



MITS SCHOOL OF BIOTECHNOLOGY

2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024

2023





# मिट्स जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 17.05.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Somapika Behera** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214047. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Somapika Behera** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

**HOD**

**GUIDE**

**Prof. G.K.Panda**

**Director**

Director  
MITS School of Biotechnology  
Bhubaneswar

# ***Daucus carota Subsp. Sativus* Fermentation Using Tartaric Acid Producing Bacteria**

A Project report Submitted to  
**MIT S SCHOOL OF BIOTECHNOLOGY**  
Affiliated to  
**UTKAL UNIVERSITY**



For the partial fulfillment for the degree of  
**MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

By  
**MR. SOMYA RANJAN PAIKARAY**  
Roll NO -14754U214048

Under Supervision of  
**Dr. Satyananda Patel**  
Associate Professor, Department of Biotechnology



MIT S School of Biotechnology, 2(P), Infocity, Patia, Chandaka Industrial Estate,  
Bhubaneswar, 751024, Odisha





MIT'S SCHOOL OF BIOTECHNOLOGY  
(Affiliated to UTKAL UNIVERSITY)

DATE:

Ref. No /  
FROM  
PROF. (DR ) G.K. PANDA  
DIRECTOR  
MIT'S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR – 751024, ODISHA

TO WHOME SOEVER IT MAY CONCERN

This is to certify that Mr. Somya Ranjan Paikaray is a Bonafede student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar University Roll No-14754U214048. He has carried out her dissertation work under the direct supervision of Dr. Satyananda Patel, Associate Professor, Department of Biotechnology. As far as my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Mr. Somya Ranjan Paikaray is a fit and suitable candidate Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*Dy03*  
*13/5/23*  
Dr. R.R. Mishra  
M.Sc. Co-Ordinator,

*HOD*  
**HOD**

*Satya*  
**GUIDE**

*G.K.P.*  
*14.5.23*  
Dr. G.K. Panda  
MSB Director, MSB

Director  
MIT'S School of Biotechnology  
Bhubaneswar

**ISOLATION AND CHARACTERISATION OF ALKALINE PROTEASE  
PRODUCING BACTERIA FROM MANGROVE SOIL**

**^**

**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**



**UTKAL UNIVERSITY, BHUBANESWAR**

**IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**BY**

**SONAL SINGH**

**ROLL NO:- 14754U214049**

**UNDER THE GUIDANCE OF**

**Dr. DIPTIPRIYA SETHI**

**(ASSISTANT PROFESSOR)**



**MITS SCHOOL OF MICROBIOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE , BHUBANESWAR,  
ODISHA, PIN - 751024**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

DATE

FROM

PROF. (Dr.) G K PANDA

DIRECTOR

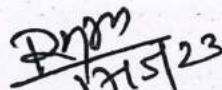
MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESHWAR – 751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Ms. Sonal Singh** is a student of MSc. Applied Microbiology (Fourth Semester), MITS SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-751024, Odisha with University Roll No. 14754U214049. She has carried out her dissertation work under the direct Supervision of **Dr. Diptipriya Sethi**, Assistant Professor, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e., from February, 2023 to July 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Ms. Sonal Singh is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra

(Head of the Department)

[ HOD

  
17/5/23

[ GUIDE

  
Dr.(Prof) G. K. PANDA

Director,MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**Characterization and purification of cellulase  
enzyme from bacteria isolated from mangrove  
soil of Bhitarkanika, Odisha.**

**A  
DISSERTATION SUBMITTED TO**

**MIT S SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

***IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY***

**By**

**SONALIKA MOHAPATRA**

**Roll No. 14754U214050**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA**

*Associate Professor*

*Dept. Biotechnology*

*MIT S School of Biotechnology*

*2(P), Infocity, Patia, Bhubaneswar-751024*



**MIT S SCHOOL OF BIOTECHNOLOGY**

**2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024**

**2023**





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/20203

DATE: 17.05.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

**MITS SCHOOL OF BIOTECHNOLOGY**

**BHUBANESWAR-751024, ODISHA**

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Sonalika Mohapatra** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214050. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Sonalika Mohapatra** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**HOD**

  
**GUIDE**

  
17.5.23

**Prof. G.K.Panda**

**Director**

Director

MITS School of Biotechnology  
Bhubaneswar

**Evaluation of Anti-bacterial, Anti-oxidant, Membrane-Stabilizing and  
Anti-Sickling Activity of Carica papaya Leaf Extract**

**A**

DISSERTATION SUBMITTED TO

**MITS SCHOOL OF BIOTECHNOLOGY**

AFFILIATED TO

**UTKAL UNIVERSITY, BHUBANESWAR**

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

By

**Sonalika Nayak**

M.Sc. Applied Microbiology  
Roll No. 14754U212051

Under the Joint guidance of

**Dr. Sangram Keshari Samal**  
Ramalinga Swami Fellow (Scientist-D)



**MITS SCHOOL OF BIOTECHNOLOGY**  
Plot 2(P), Infocity, Patia, Chandaka Industrial Estate Bhubaneswar,  
Odisha, Pin-751024  
MAY, 2023





**MITS**  
SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR

DATE: 17/05/23

Ref. No. \_\_\_\_\_ (AFFILIATED TO UTKAL UNIVERSITY)

FROM  
DIRECTOR  
PROF. (DR.) G.K.PANDA  
MITS SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

**TO WHOM SOEVER IT MAY CONCERN**

This is to certify that Miss Sonalika Nayak is a bonafide student of M.Sc. Biotechnology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Reg. No. 14754U214051. She has carried out her dissertation work under the direct Supervision of Dr. Sangram Keshari Samal, Ramalingaswami Fellow (Scientist D). Indian Council of Medical Research-Regional Medical Research Center, Bhubaneswar, Odisha for a period of six (06) months i.e. from 20 January 2023 to 13th May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss Sonalika Nayak is a fit and suitable candidate for the award of Degree of Master of Science in Biotechnology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*Dr. R.R. Mishra*  
17/05/23  
Dr. R.R. Mishra  
Head of the Department  
**HOD**

*Sangram K. Samal*  
**GUIDE**

*G.K. Panda*  
17.5.23  
Prof. (Dr.) G. K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

Plot-2P), Infocity Patia, Chandaka Industrial Estate, PO-KIIT Campus, Bhubaneswar-751024 Ph: 0674-3196060, telefax: 0674-2741584, Web: [www.msb.ac.in](http://www.msb.ac.in).

**Green Synthesis Of CuO Nanoparticles Using Leaf Extracts  
Of *Azadirachta indica*, *Aegle marmelos*, *Trachyspermum ammi*  
and *Piper longum***

**Dissertation submitted to MITS School of  
Biotechnology Affiliated to Utkal University**



**In Partial Fulfillment of The Requirement for The Award of Degree of Master Of Science  
In Applied Microbiology**

**Submitted By**

**Soumya Sonali  
Roll No.: 14754U214052**

**Under the Guidance of**

**DR. ASHOK KUMAR NAYAK**

**(VISITING FACULTY)**

**DEPARTMENT OF BIOTECHNOLOGY, MITS SCHOOL OF  
BIOTECHNOLOGY2(P), INFOCITY, PATIA, CHANDAKA INDUSTRIAL  
ESTATE, BHUBANESWAR, ODISHA. PIN- 741024  
2023**





# MITS

School Of Biotechnology,  
Bhubaneswar  
Affiliated to Utkal university

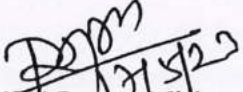
DATE: 17/5/23

Ref. No. /  
FROM PROF. (DR.) G.K. PANDA  
DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

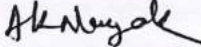
This is to certify that Miss. Soumya Sonali is a bonafide student of M.Sc. applied microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214052. She has carried out his dissertation work under the direct Supervision of Dr. Ashok Kumar Nayak, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (05) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

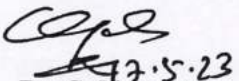
Miss. Soumya Sonali is a fit and suitable candidate for the award of Degree of Master of Science in applied microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra

Head of the Department

**HOD**

  
**GUIDE**

  
Dr. G. K. Panda

Director

Director  
MITS School of Biotechnology  
Bhubaneswar

**A STUDY ON PECTINOLYTIC BACTERIUM ISOLATED FROM**  
***Solanum tuberosum***

**A**  
**Dissertation Submitted To**  
**MITS School Of Biotechnology**

**Affiliated To**  
**Utkal University, Bhubaneswar**

**In Partial Fulfillment Of The Requirement For The Award Of**  
**Degree Of Master Of Science In Applied Microbiology**



**Submitted by**  
**Soumyashree Jena**  
**Roll no. -14754U214053**



**Supervised by**  
**Dr. Manisha Patnaik**  
**Asst. Professor, Dept. Of Biotechnology**

**MITS School of Biotechnology**  
**2(P), Infocity, Patia, ChandrasekharPur,**  
**Bhubaneswar-751024(2022)**





# MIT S

School Of Biotechnology,  
Bhubaneswar  
Affiliated to Utkal university

Ref. No. /

DATE: 17.5.23


FROM PROF. (DR.) G.K. PANDA

DIRECTOR MITS SCHOOL OF  
BIOTECHNOLOGY BHUBANESWAR-  
751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. Soumyashree Jena is a Bonafede student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214053. She has carried out his dissertation work under the direct Supervision of Dr. Manisha Patnaik, Assistant Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of six (06) months i.e. from January, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

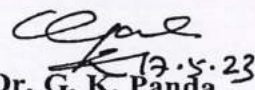
Miss. Soumyashree Jena is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
Dr. Rashmi Ranjan Mishra

Head of the department

HOD

  
GUIDE

  
Dr. G. K. Panda

Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

**MINIMIZATION OF BIOTIC STRESS IN CHICK PEA  
(*Cicer arietinum*) BY PRE-EXPOSURE TO SUB-LETHAL  
DOSE OF Cd**

**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**



**AFFILIATED TO**

***UTKAL UNIVERSITY, BHUBANESWAR***

**IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**BY**

**SROTASWINEE BISWAL**

**ROLL NO: 14754U214054**

**UNDER THE GUIDANCE OF**

**PROF. BHABATOSH MITTRA**

**(ASSISTANT PROFESSOR)**



**MITS SCHOOL OF BIOTECHNOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR, ODISHA, PIN-  
751024**





# MIT S

## School of Biotechnology

(AFFILIATED TO UTKAL UNIVERSITY)

REF.NO:

DATE- 17/5/23 .

FROM:

PF (DR.) G. K. PANDA

DIRECTOR

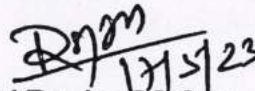
MIT S SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

### TO WHOM SOEVER IT MAY CONCERN

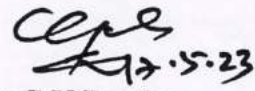
This is to certify that Miss. SROTASWINEE BISWAL is a bonafide student of M.sc Applied Microbiology of MIT S SCHOOL OF BIOTECHNOLOGY, Bhubaneswar-24, Odisha with university roll no - 14754U214054. She has carried out his dissertation work under the direct supervision of Prof. BHABATOSH MITTRA, Assistant professor, Department of Applied microbiology, MIT S SCHOOL OF BIOTECHNOLOGY, Bhubaneswar, Odisha within the stipulated time of five months (January to May, 2023). As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. SROTASWINEE BISWAL has completed her dissertation work for partial fulfillment of the requirement to award for Master Degree of Science in Applied Microbiology conferred by Utkal university. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra  
(Head of the department)

HOD

  
[GUIDE

  
Dr. G.K Panda

DIRECTOR , MSB

Director  
MIT S School of Biotechnology  
Bhubaneswar

**Antimicrobial attributes of mango ginger (*Curcuma amada*) and  
black cumin (*Nigella sativa*) against fruits and vegetables  
spoilage microorganisms**

A

DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY

AFFILIATED TO



*UTKAL UNIVERSITY, BHUBANESWAR*

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD  
OF DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY

BY

SUBHASHREE SUBHASMITA SAHOO

ROLL NO :- 14754U214055

UNDER THE GUIDANCE OF

**DR. DIPTIPRIYA SETHI**  
Assistant professor



**MITS SCHOOL OF MICROBIOLOGY**

**2(P) , INFOCITY PATIA , CHANDAKA INDUSTRIAL ESTATE , BHUBANESWAR,  
ODISHA, PIN - 751024**





# MIT S SCHOOL OF BIOTECHNOLOGY

## मिटस जैव प्रौद्योगिकी संस्थान

Ref. No. / DATE  
FROM  
PROF. (DR.) G. K. PANDA  
DIRECTOR  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. Subhashree Subhasmita Sahoo is a student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-751024, Odisha with University Roll No. 14754U214055. She has carried out his dissertation work under the direct Supervision of Dr. Diptipriya Sethi, Assistant Professor, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of Four (04) months i.e., from February, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Subhashree Subhasmita Sahoo is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

*RJM*  
17/5/23

Dr. Rashmi Ranjan Mishra  
Head of the Department

HOD

*Dsethi*  
17/5/23  
GUIDE

*G.K.Panda*  
17.5.23

Dr. (Prof.) G. K. Panda  
Director, MSB

Director  
MITS School of Biotechnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**ISOLATION AND IDENTIFICATION OF LACTIC ACID BY  
BACTERIA ISOLATED FROM WASTE DAIRY EFFLUENTS**

**THESIS SUBMITTED TO THE  
UTKAL UNIVERSITY  
FOR THE DEGREE OF  
MASTER OF SCIENCE  
IN  
APPLIED MICROBIOLOGY (2023)**

*Investigator*

**SUCHISMITA SAHOO**

**Roll No.14754U214056**



**Supervisor**

**Dr. Bikash Chandra Behera**  
M.Sc., Ph.D. (North Orissa)  
**MITS School of Biotechnology,**  
**Patia, Chandrasekharpur,**  
**Bhubaneswar-751024**





**MITS**

**SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR**

(AFFILIATED TO UTKAL UNIVERSITY)

Ref. No. \_\_\_\_\_

Date. 17/5/23

**FROM**  
**DIRECTOR**  
**PROF. (DR.) G.K. PANDA**  
**MITS SCHOOL OF BIOTECHNOLOGY**  
**BHUBANESWAR-751024, ODISHA**

**TO WHOMSOEVER IT MAY CONCERN**


This is to certify that **Miss Suchismita Sahoo** is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214056**. She has carried out her dissertation work under the direct Supervision of **Dr. Bikash Chandra Behera**, Visiting Professor, Department of Biotechnology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of five (06) months i.e. from January, 2023 to June 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Miss Suchismita Sahoo**, is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
17/5/23

**Dr. R. R. Mishra**  
**Head of the Department**  
**HOD**

  
**GUIDE**

  
17.5.23  
**Prof. (Dr.) G. K. Panda**

**Director, MSB**  
**MITS School of Biotechnology**  
**Bhubaneswar-751024**  
**Bhubaneswar**

Plot-2(P), Infocity Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha  
Ph: 0674-3196060, telefax: 0674-2741584, web: [www.msb.ac.in](http://www.msb.ac.in)

**SCREENING OF POTENTIAL PLASTIC DEGRADING FUNGI ISOLATED  
FROM DUMPING SITE**

**A**

**DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY**

**AFFILIATED TO**



*UTKAL UNIVERSITY, BHUBANESWAR*

**IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR THE AWARD  
OF DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY**

**BY**

**SUSHREE SANGEETA SWAIN**

**ROLL NO :- 14754U214057**

**UNDER THE GUIDANCE OF**

**DR. MOUSUMI MISHRA**  
Assistant professor



**MITS SCHOOL OF MICROBIOLOGY**

**2(P), INFOCITY PATIA, CHANDAKA INDUSTRIAL ESTATE, BHUBANESWAR,  
ODISHA, PIN - 751024**





# MIT S SCHOOL OF BIOTECHNOLOGY

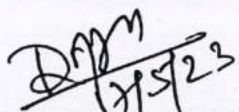
## मिडस जैव प्रौद्योगिकी संस्थान

Ref. No. /  
FROM  
PROF. (DR.) G. K. PANDA  
DIRECTOR  
MIT S SCHOOL OF BIOTECHNOLOGY  
BHUBANESWAR-751024, ODISHA

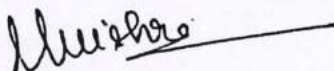
TO WHOM SOEVER IT MAY CONCERN

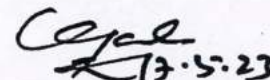
This is to certify that Miss. Sushree Sangeeta Swain is a student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-751024, Odisha with University Roll No.14754U214057. She has carried out his dissertation work under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of Four (04) months i.e., from February, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Sushree Sangeeta Swain is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi Ranjan Mishra  
Head of the Department

HOD

  
[GUIDE ;

  
Dr. (Prof.) G. K. Panda  
Director, MSB  
Director  
MITS School of Biotechnology  
Bhubaneswar

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**Characterization of multi enzyme producing thermophilic bacteria from  
Tarabola hot spring, Odisha**

^  
Dissertation Submitted To  
MITS School Of Biotechnology  
Affiliated To  
Utkal University, Bhubaneswar

**In Partial Fulfilment of The Requirement for The Award of Degree  
Of Master of Science in Applied Microbiology**



Submitted by: -  
**SWAYAM PRABHA RAUTARAY**  
ROLL NO.-14754U214058



Supervised by  
**Dr. MOUSUMI MISHRA**  
Assistant Professor

**MITS School of Biotechnology**

---

**2(P), Infocity, Patia, Chandrasekharpur, Bhubaneswar-751024**





# मिदस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /

DATE:

FROM

PROF. (DR.) G.K. PANDA

DIRECTOR

MITS SCHOOL OF  
BIOTECHNOLOGY,  
BHUBANESWAR  
751024, ODISHA

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Miss. Swayam Prabha Rautaray is a bonafide student of M.Sc. Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214021. She has carried out her dissertation work under the direct Supervision of Dr. Mousumi Mishra, Assistant Professor, Department of Applied Microbiology, MITS School of Biotechnology, Patia, Bhubaneswar, Odisha for a period of four (04) months i.e. from February, 2023 to May, 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

Miss. Swayam Prabha Rautaray is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during this investigation.

  
Dr. Rashmi Ranjan Mishra

Head of the department  
HOD

  
[GUIDE

  
Dr. G. K. Panda  
Director  
MITS Director, MSBchnology  
Bhubaneswar

2(P), Infocity, Patia, Bhubaneswar  
Pin- 751024 (Odisha), INDIA

Website: [www.msb.ac.in](http://www.msb.ac.in)  
Email: [principal@msb.ac.in](mailto:principal@msb.ac.in)

APPROVED BY DHE, GOVT. OF ODISHA & AFFILIATED TO UTKAL UNIVERSITY

**Screening and optimization of protease  
production from fungus isolated from mangrove  
soil of Bhitarkanika, Odisha.**

**A  
DISSERTATION SUBMITTED TO  
MITS SCHOOL OF BIOTECHNOLOGY  
AFFILIATED TO**

**UTKAL UNIVERSITY, BHUBANESWAR**

***IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
DEGREE OF MASTER OF SCIENCE IN APPLIED MICROBIOLOGY***

**By**

**SWETA SWAIN**

**Roll No. 14754U214059**

**Under the guidance of**

**Dr. RASHMI RANJAN MISHRA  
*Associate Professor  
Dept. Biotechnology  
MITS School of Biotechnology  
2(P), Infocity, Patia, Bhubaneswar-751024***



**MITS SCHOOL OF BIOTECHNOLOGY  
2 (P), Infocity, Patia, Chandaka Industrial Estate, Bhubaneswar, Odisha, Pin - 751024  
2023**





# मिटस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref. No. /PROJ/MSB/2023

DATE: 17.05.23

**FROM**

**Prof. G.K.Panda**

**DIRECTOR**

MITS SCHOOL OF BIOTECHNOLOGY

BHUBANESWAR-751024, ODISHA

## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Sweta Swain** is a bonafide student of **M.Sc. in Applied Microbiology** (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214059. She has carried out her dissertation work under the direct Supervision of **Dr. Rashmi R. Mishra**, Associate Professor, Dept. Biotechnology, MITS School of Biotechnology for duration of six (06) months i.e. from January, 2023 to May 2023. As per my knowledge is concerned, no part of this work has been submitted for any other degree or diploma.

**Ms. Sweta Swain** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
**HOD**

  
**GUIDE**

  
17.5.23  
**Prof. G.K.Panda**

**Director**

Director  
MITS School of Biotechnology  
Bhubaneswar

Screening of lactobacillus species for the production of probiotics drinks

A

Dissertation Submitted

To

MITS SCHOOL OF BIOTECHNOLOGY  
*Affiliated to*  
Utkal University, Bhubaneswar, Odisha

In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Applied Microbiology (2023)

Submitted by

**Sworupa Swain**  
Roll No. 14754U214060

Under The Guidance Of

**Dr. Smaranika Sahu**  
Assistant Professor



Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,





# मिडस जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

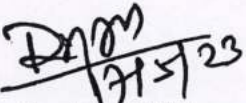
DATE:

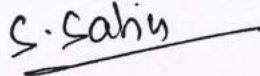
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

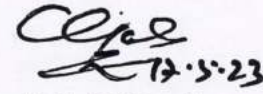
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Miss Sworupa Swain** is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. **14754U214060**. He has carried out his dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Miss Sworupa Swain** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. She has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi R. Mishra  
Head of the Department  
**HOD**

  
**GUIDE**

  
Prof. G. K. Panda  
Director  
Director  
MITS School of Biotechnology  
Bhubaneswar

# POTENTIAL ROLE OF PROBIOTICS BACTERIA IN FOOD COLOUR DECOLORIZATION

A

Dissertation Submitted

To

MITS SCHOOL OF BIOTECHNOLOGY  
*Affiliated to*  
Utkal University, Bhubaneswar, Odisha

In the Partial fulfilment of the requirements for the award of  
Degree of Master of Science in Applied Microbiology (2023)

Submitted by

Tanmaya Satapathy  
Roll No. 14754U214061

Under The Guidance Of

**Dr. Smaranika Sahu**  
Assistant Professor



Department Of Biotechnology  
MITS SCHOOL OF BIOTECHNOLOGY,  
2(P), Infocity, Patia, Bhubaneswar, Odisha,





# मिट्स जैव प्रौद्योगिकी संस्थान MITS SCHOOL OF BIOTECHNOLOGY

Ref.No. /PROJ/MSB/2023  
FROM

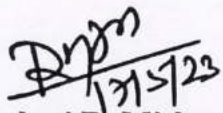
DATE: 17/5/23

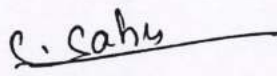
**PROF. G.K.PANDA**  
DIRECTOR  
MITS SCHOOL OF  
BIOTECHNOLOGY  
BHUBANESWAR-751024,  
ODISHA

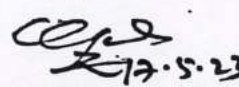
## TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr. Tanmaya Satapathy** is a *bonafide* student of M.Sc. in Applied Microbiology (Fourth Semester), MITS School of Biotechnology, Bhubaneswar-24, Odisha with University Roll No. 14754U214061. He has carried out his dissertation work under the direct Supervision of **Dr. Smaranika Sahu**, Assistant Professor and duration of six months. As per my knowledge is concerned, no part of this work has been submitted for any other Degree or diploma.

**Mr. Tanmaya Satapathy** is a fit and suitable candidate for the award of Degree of Master of Science in Applied Microbiology conferred by Utkal University. He has duly acknowledged the assistance and help received during the course of this investigation.

  
Dr. Rashmi R. Mishra  
Head of the Department  
HOD

  
GUIDE

  
Prof. G. K. Panda  
Director  
Director  
MITS School of Biotechnology  
Bhubaneswar