Biotechnology

Department Profile

BRIEF HISTORY OF DEPARTMENT

Date of Establishment: 3rd June, 2006

History

Biotechnology is an interdisciplinary course with application of biology in technology. In order to advent the need of having a professional course the Congregation of Christian Brothers in India had started the course in Biotechnology in St. Edmund's College, Shillong. Initially the conceptual idea for erecting a professional subject like Biotechnology was first conceived by Bro. L.D. Lobo, ex-principal St. Edmund's College Shillong and Prof. J. Sen, Department of Zoology St. Edmund's College Shillong in the year 2005. Owing to their continuous effort and pertaining through the vernacular norms of the university the department existed into limelight in 2006. Bro. Miranda principal during that time took over all the duties and eventually started the department and inaugurated on 3rdJune, 2006 which was inaugurated by Prof. PramodTandon, ex vice chancellor NEHU, Shillong. Prof. J.Sen was appointed the first Head of Department from 2006 onwards along with the appointment of another faculty Dr. Samrat Adhikari.

For their valuable contribution in the setting up of the Biotechnology Department in St. Edmund's College, Shillong the College would like to thank the following dignitaries:

- Bro. E.V Miranda, c.f.c, Former Principal, St Edmund's College, Shillong.
- Prof. PramodTandon, Former Vice Chancellor, NEHU, Shillong.
- Mr. J. Sen, Head (Former), St Edmund's College Shillong.
- Prof. AnupamChatterjee, Head, Deptt. Of Biotechnology & Bioinformatics, NEHU, Shillong.
- Dr. Santa Ram Joshi, Associate Professor, Deptt. of Biotechnology & Bioinformatics, NEHU, Shillong.
- Ms. Martha Marwein, Director, College Development Council (CDC).
- Ms. PiyaliBhattacharjee, Assistant Professor, Deptt. of Biochemistry, St. Edmund's College Shillong

Presently the department is headed by Dr Samrat Adhikari under the auspicious chairmanship of our Principal DrSylvanusLamare with four other staffs and two research students'. The department has been pursuing very well and has been nominated by Department of Biotechnology, Govt. of India under its STAR college programme. Besides these the department has also Bioinformatics Infrastructure and Institutional Biotech Hub Facility (Funded by DBT, Govt. of India). The objective and mission of this department is to impart high quality education to

undergraduate students in the field of biotechnology so that they can prepare themselves to contribute as professionals to the fast growing industries such as fermentation technology, bioinformatics, genetic engineering, vaccine development, transgenic technology, diagnostic and therapeutic products, etc., in the country and beyond.

HEADS OF DEPARTMENT

Prof J. SEN

Former Head

Educational Qualification	MSC (Zoology), NEHU
Date of Joining	01-05-1971
Date of Joining Headship	01.06.2006
Date of Leaving	01-06-2010

SAMRAT ADHIKARI

Present Head

Educational Qualification	PhD [NEHU]
	MSc [Bangalore University]
	BITP [Mumbai]
	NET
Date of Joining	01.05.2006
Date of Headship	01-06-2010
Date of Leaving	Till Continuing

FACULTY PROFILE

BAIAKMENLANG MANNERS
Educational Qualification — MSc [ALU, Coimbatore]
Date of Joining — 01.05.2007

GOPESH PAUL
Educational Qualification — MSc [NEHU]
PhD [NEHU]
Date of Joining — 01.05.2010

KOBEN NONGKYNRIH
Educational Qualification — MSc [NEHU]
NET
Date of Joining — 01.05.2011

SHEKINAH CHALLAM
Educational Qualification — MSc [NEHU]NET, BET
Date of Joining — 01.08.2013

RESEARCH STUDENTS

NANGKYNTIEWBOR JUNGAI
Educational Qualification — MSc [NEHU]NET, BET
Date of Joining — 01.08.2012

BIKASH THAKURIA
Educational Qualification — MSc [Bangalore University]
Date of Joining — 01.05.2013

LAB ATTENDANT

ERWIN KHSHIAR
Educational Qualification — 12th Pass
Date of Joining — 01.06.2008

Programmes Organized By the Department

[2010-2015]

Workshops – National Level

WORKSHOP ORGANIZED

Year	2010
Title	A workshop on "Bioinformatics – a computational approach to biological information".
Dates	27th – 29th, July, 2010
Duration	3 Days
Funding Agency	Department of Biotechnology, Govt. of India
Organizing Secretary	Dr Samrat Adhikari
No of Participants	22
Level of Participants	Research Scholars from Tezpur University, Assam & NEHU, Shillong College Teachers from St Anthony's College, Shillong, UCC college, Umiam, SankerDev College, St. Edmund's College etc. School Teachers from various schools in shillong
Total No of Participants	18
Resource Persons	Prof B. K Konwar, Vice Chancellor, Nagaland University Prof SudipKundu, University of Calcutta, West Bengal. Prof A. K Singh, Deptt of Biochemistry, NEHU, Shillong Prof Guru Subramaniam, Deptt of Biotechnology, Mizoram University.
Nature of workshop	National Level with hands on training in wet lab and also dry lab techniques.
	2012
Title	National Level workshop on "Basic Biotechnology techniques"
Dates	21st – 25th, August, 2012.
Duration	5 days
Funding Agency	Department of Biotechnology, Govt. of India
Organizing Secretary	DrSamratAdhikari
No of Participants	22
Level of Participants	Scientists from Sikkim State council of Science and Technology, Govt. of Sikkim, Gangktok Research Scholars from North Bengal University, Siliguri, West Bengal Research Scholars from Gauhati University, Assam

	College teachers and Scientists from adjoining colleges and research institute in Shillong.
Total No of Participants	22
Resource Persons	All faculty of Biotechnology Department.
Nature of workshop	Complete Hands on Training.

Title	Bioinformatics for students
Dates	4th -5th October, 2012
Duration	2 days
Funding Agency	Department of Biotechnology, Govt. of India
Organizing Secretary	DrSamratAdhikari
No of Participants	30
Level of Participants	Students of Biotechnology honours were given training on basic bioinformatics tools.
Resource Persons	All faculty of Biotechnology Department
Nature of workshop	Hands on session on Bioinformatics tools

2014

Title	National Level workshop on "Hand on Training on Basic Techniques in Genomics & Proteomics"
Dates	17th – 21st November, 2014
Duration	5 Days
Funding Agency	Department of Biotechnology, Govt. of India
Organizing Secretary	DrSamratAdhikari
No of Participants	22
Level of Participants	Research Scholars from GTB Hospital, University of Delhi, New Delhi Faculty from other Colleges of Shillong Research Scholars from Rajiv Gandhi University, Itanagar, AP Research Scholars from Silchar, Assam
Resource Persons	Prof M. A Lashkar, Department of Biotechnology, St. Anthony's College, Shillong DrParthaSarathi Das, Bioinformatics centre, Vidyasagar University, West Bengal DrVipinTyagi, Department of Physiology, UCMS, New Delhi DrPravinDeshmukh, Department of Physiology, UCMS, New Delhi DrPiyaliBhattacharjee, Department of Biochemistry, St. Edmund's College
Nature of workshop	Complete Hands on Training.

Programmes Organized By the Department

[2010-2015]

Faculty Improvement Programme

Faculty Improvement Programme

Year	2014
Organizing Secretary	DrSamratAdhikari, Member Secretary, STAR SCHEME, St. Edmund's College
Title	Faculty Improvement Programme
Duration	1 Day
Dates	17th October, 2014
Mode of Presentation	Power point and one to one interaction
Theme of Programme	Effective project Proposal writing
Resource Person	Prof BasuDev Banerjee Department of Biochemistry University College of Medical Sciences & GTB Hospital New Delhi
Level of Participants	Teaching Faculty

Details of Participants

Sl No	Institute	Department	No of Participants
1	NEIGRIHMS, Shillong	Pathology	02
2	NEIGRIHMS, Shillong	Oncology	02
3	NEIGRIHMS, Shillong	Surgery	02
4	NEIGRIHMS, Shillong	Microbiology	02
5	St. Edmund's College	Physics	02
6	St. Edmund's College	Biochemistry	03
7	St. Edmund's College	Electronics	02
8	St. Edmund's College	Environmental Science	02
9	St. Edmund's College	Chemistry	01
10	St. Edmund's College	Mathematics	02
11	St. Edmund's College	Biotechnology	02
		Total	22

Feedback Excellent: 03 Good: 12 Average: 07 Satisfactory: NIL

Programmes Organized By the Department

[2010-2015]

NATIONAL SEMINAR ORGANIZED

NATIONAL SEMINARS ORGANIZED

Activity	Inter College Research Seminar
Year	2010
Organizing Department	Biotechnology
Topic	"Minor Research in Biological Sciences"
Duration:	1 day
Dates:	2nd December, 2010
Objective of the Programme	This programme is designed for providing a basic platform for the Students of biological science at undergraduate level to present both oral & poster presentation of the research work that they have pursued during the STAR College practical's
Name of the Judges	Research students from NEHU, Shillong
No of participants	30 (Presenters) * 90 Participants

Details of Participants

Students from reputed colleges of Shillong

College	Stream	Participants [Oral & Posters]	Participants [attending]
St. Edmund's College, Shillong	Biotechnology	12	10
St. Anthony's College, Shillong	Biotechnology	08	10
RCHE, Shillong	Biotechnology	10	10
St. Mary' College, Shillong	Botany, Zoology	-	20
Lady's Keane College, Shillong	Biochemistry	-	20
Shillong College, Shillong	Microbiology	-	20
	TOTAL	30	90

Feedback Excellent: 35 Good: 45 Average: 10 Satisfactory: NIL

Activity	Inter College Research Seminar
Year	2011
Organizing Department	Biotechnology
Topic	"Minor Research in Biological Sciences"
Duration:	1 day
Dates:	2nd December, 2011
Objective of the Programme	This programme is designed for providing a basic platform for the Students of biological science at undergraduate level to present both oral & poster presentation of the research work that they have pursued during the STAR College practical's
Name of the Judges	Faculty from nearby colleges
No of participants	35 (Presenters) * 96 Participants

Details of Participants

Students from reputed colleges of Shillong

College	Stream	Participants [Oral & Posters]	Participants [attending]
St. Edmund's College, Shillong	Biotechnology	12	10
St. Anthony's College, Shillong	Biotechnology	08	10
RCHE, Shillong	Biotechnology	15	16
St. Mary' College, Shillong	Botany, Zoology	-	20
Lady's Keane College, Shillong	Biochemistry		20
Shillong College, Shillong	Microbiology	-	20
	TOTAL	33	96

Feedback Excellent: 40 Good: 45 Average: 16 Satisfactory: NIL

Programmes Organized By the Department

[2010-2015]

Guest Lectures

GUEST LECTURES

2010

Topic: "HUMAN GENOME PROJECT"

Duration & Dates: 1 Day, 4th September, 2010

Resource Persons: Prof AnupamChatterjee, Molecular Genetics Lab, Deptt. of Biotechnology & Bioinformatics, NEHU, Shillong

Level of participants: 45 (Degree)

Participants Details:

Department	Year	No. of Students
Botany	III	05
Zoology	III	07
Biochemistry	III	10
Biotechnology	III	23
	TOTAL	45

Topic: Plant Biotechnology and its applications

Duration & Dates: 1 Day, 25th October, 2010

Resource Persons: Prof SumanKumaria, Plant Biotechnology Division, NEHU, Shillong

Level of participants: UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Botany	III	15
Biotechnology	III	24
	TOTAL	39

2011

Topic: "Emerging role of Food Biotechnology"

Duration & Dates: 1 Day, 28th May, 2011

Resource Persons: DrSaikatDuttaMazumdar, CEO, NutriPlus Knowledge Centre, ICRISAT.

Level of participants: UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Botany	III	08
Zoology	III	12
Biochemistry	III	05

Biotechnology	III	15
Chemistry	III	05
	TOTAL	45

Topic: A lecture on Fundamentals of Bioinformatics

Duration & Dates: 1 Day, 7th June, 2011

Resource Persons: Ms. P. Priyadarshini, Research Fellow, Auckland University, New Zealand.

Level of participants: UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Botany	III	10
Zoology	III	07
Biochemistry	III	05
Biotechnology	III	22
Chemistry	III	03
	TOTAL	48

2011

Topic: "Marine Biotechnology in India: Prespectives and prospects"

Duration & Dates: 1 Day, 7th August, 2011

Resource Persons: MrBorve D. A Kharsyntiew, Scholar, SRM University, Chennai, India

Level of participants: UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Botany	III	05
Zoology	III	03
Biochemistry	III	07
Biotechnology	III	16
Chemistry	III	03
	TOTAL	34

2013

Topic:	Plant Biotechnology in India
Duration & Dates:	1 Day, 6th September, 2013
Resource Persons:	Prof. S. R Rao, Department of Biotechnology & Bioinformatics, NEHU, Shillong
Level of participants:	UG students from constituent departments
Participants Details:	

Department	Year	No. of Students
Biotechnology	III	15
Botany	III	15
	Total	30

2014

Topic:	Plant Biotechnology – Tools & Techniques
Duration & Dates:	1 Day, 25th July 2014
Resource Persons:	Prof. PratapJyotiHandique, Dept. of Biotechnology, Guwahati University, Guwahati.
Level of participants:	UG students from constituent departments
Participants Details:	

Department	Year	No. of Students
Botany	III	12
Zoology	III	05
Biotechnology	III	25
Teachers		07
	TOTAL	49

Topic:	Genetic engineering- tools & techniques
Duration & Dates:	1 Day, 18th October, 2014
Resource Persons:	DrTusha Sharma, Department of Biochemistry, University College of Medical Sciences & GTB Hospital, New Delhi
Level of participants:	UG students from constituent departments
Participants Details:	

Department	Year	No. of Students
Botany	III	10
Zoology	III	12
Biotechnology	III	18
Teachers		08
	TOTAL	48

2014

Topic:	Accessing Scholarly Web Resources
Duration & Dates:	1 Day, 24th October, 2014
Resource Persons:	Dr. Lalmacchchuana, Documentation Officer, NEHU Central Library, Shillong..
Level of participants:	UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Botany	III	12
Zoology	III	05
Biotechnology	III	25
Teachers	III	07
	TOTAL	49

TOTAL 1079

2015

Topic:	Accessing Scholarly Web Resources
Duration & Dates:	1 Day, 23rd May, 2015
Resource Persons:	Dr. Lalmacchchuana, Documentation Officer, NEHU Central Library, Shillong..
Level of participants:	UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Botany	III	15
Zoology	III	19
Biotechnology	III	12
Teachers	III	03
	TOTAL	34

Topic:	Use of Graphics display tool in Bioinformatics
Duration & Dates:	1 Day, 19th August, 2015
Resource Persons:	Mr BikashThakuria Research Associate Bioinformatics Centre, St. Edmund's College, Shillong
Level of participants:	UG students from constituent departments

Participants Details:

Department	Year	No. of Students
Physics	III	10
Chemistry	III	5
Zoology	III	3
Biochemistry	III	7
Biotechnology	III	20
Computer Science/BCA	III	5
Mathematics	III	5
	TOTAL	55

Programmes Organized By the Department

[2010-2015]

Popular Lectures

POPULAR LECTURE

2014

Topic:	A Wandering Scientist / Do Science and See the World
Duration & Dates:	1 Day, 12th August, 2014
Resource Persons:	Prof S. V Eswaran Emeritus Scientist, CSIR, New Delhi Distinguished Faculty, St. Stephen's College, New Delhi
Level of participants:	UG students from constituent departments
Participants Details:	

Department	Year	No. of Students
Physics	I, II, III	121
Chemistry	I, II, III	120
Botany	I, II, III	90
Zoology	I, II, III	85
Biochemistry	I, II, III	74
Biotechnology	I, II, III	125
Environmental Science	I, II, III	121
Computer Science/BCA	I, II, III	154
Mathematics	I, II, III	51
Electronics	I, II, III	64
Geography	I, II, III	74
	TOTAL	1079

Title	Excitement in Science- It Pays Too
Duration	1 Day
Dates	11th August, 2014
Mode of Presentation	Power point and one to one interaction
Resource Person	Prof S. V Eswaran Emeritus Scientist, CSIR, New Delhi Distinguished Faculty, St. Stephen's College, New Delhi
Level of Participants	Higher Secondary School Students.
Details of Participants	

School	Stream	Year	No. of Students
St. Edmund's College Higher Secondary Section	Science	Class XII	56
Laban Bengalee Higher Secondary School	Science	Class XII	44
St Margaret Higher Secondary School	Science	Class XII	65
St. Mary's Higher Secondary School	Science	Class XII	46
St. Peter Higher Secondary School	Science	Class XII	37
Pine Mount Higher Secondary School	Science	Class XII	39
Army School	Science	Class XII	46
KendriyaVidhalaya, NEHU	Science	Class XII	25
KendriyaVidhlaya, Laitkor Peak	Science	Class XII	51
KendriyaVidhalaya, Happy Valley	Science	Class XII	41
Shillong Academy	Science	Class X	35
Sacred Heart Boys Higher Secondary School	Science	Class XII	31
Sevenset Higher Secondary School	Science	Class XII	45
		TOTAL	561

Feedback Excellent: 225 Good: 73 Average: Satisfactory: NIL

Programmes Organized By the Department

[2010-2015]

Interactive Sessions

Interactive Sessions

Year	2010
Duration	3 hrs
Dates	11th March, 2010
Theme of Programme	Faculty interaction
Invited Person	Prof MichealKuesgen Dean, Faculty of Pharmacy Phillip University, Marburg, Germany
Level of Participants	Teaching Faculty

Details of Participants

Sl No	Institute	Department	No of Participants
1	St. Edmund's College	Physics	04
2	St. Edmund's College	Biochemistry	04
3	St. Edmund's College	Chemistry	04
4	St. Edmund's College	Biotechnology	04
5	St. Edmund's College	Botany	03
6	St. Edmund's College	Zoology	03
		Total	22

Feedback Excellent: 03 Good: 12 Average: 07 Satisfactory: NIL

Year	2013
Duration	3 hrs
Dates	18th March, 2013
Theme of Programme	Faculty interaction
Invited Person	Prof S. Sikhamany Former Vice Chancellor Academic Staff College, Hyderabad
Level of Participants	Teaching Faculty

Details of Participants

Sl No	Institute	Department	No of Participants
1	St. Edmund's College	Physics	05
2	St. Edmund's College	Biochemistry	05
3	St. Edmund's College	Chemistry	05
4	St. Edmund's College	Biotechnology	05
5	St. Edmund's College	Botany	05

6	St. Edmund's College	Zoology	05
		Total	30

Feedback: Excellent: 06 Good: 14 Average: 10 Satisfactory: NIL

Year	2014
Duration	2 hrs
Dates	13th August, 2014
Theme of Programme	Faculty interaction
Invited Person	Prof S. V Eswaran Emeritus Scientist, CSIR, New Delhi Distinguished Faculty, St. Stephen's College, New Delhi
Level of Participants	Teaching Faculty

Details of Participants

Sl No	Institute	Department	No of Participants
1	St. Edmund's College	Physics	03
2	St. Edmund's College	Biochemistry	02
3	St. Edmund's College	Electronics	01
4	St. Edmund's College	Environmental Science	02
5	St. Edmund's College	Chemistry	03
6	St. Edmund's College	Mathematics	02
7	St. Edmund's College	Biotechnology	02
8	St. Edmund's College	Botany	03
9	St. Edmund's College	Zoology	02
10	St. Edmund's College	Computer Science	02
		Total	22

Feedback: Excellent: 02 Good: 18 Average: 02 Satisfactory: NIL

Duration	2 hrs
Dates	19th July, 2014
Theme of Programme	Faculty interaction
Invited Person	Dr T. Madhan Mohan Advisor Department of Biotechnology Govt. of India, New Delhi

Level of Participants: Teaching Faculty

Details of Participants

Sl No	Institute	Department	No of Participants
1	St. Edmund's College	Biochemistry	05
2	St. Edmund's College	Chemistry	05
3	St. Edmund's College	Biotechnology	05
4	St. Edmund's College	Botany	05
		Total	20

Feedback: Excellent: 15 Good: 05 Average: Satisfactory: NIL

Duration: 3 hrs

Dates: 28th October, 2014

Theme of Programme: Student Interaction

Invited Person: Prof Ashish Mukherjee
Department of Molecular Biology & Biotechnology
Tezpur University, Tezpur, Assam

Level of Participants: UG Students

Details of Participants

Stream	Institute	Department	No of Participants
BScIII	St. Edmund's College	Physics	11
BScIII	St. Edmund's College	Biochemistry	14
BScIII	St. Edmund's College	Environmental Science	09
BScIII	St. Edmund's College	Mathematics	14
BScIII	St. Edmund's College	Biotechnology	15
BScIII	St. Edmund's College	Botany	11
BScIII	St. Edmund's College	Zoology	08
		Total	68

Feedback: Excellent: 19 Good: 31 Average: 16 Satisfactory: 02

Programmes Organized By the Department

[2010-2015]

Awareness Programmes

AWARENESS PROGRAMME

Year	2013			
Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students			
Dates	21st March, 2013			
Resource Person	DrSamratAdhikari, Department of Biotechnology, St. Edmund's Shillong Dr D. Syiemiong, Department of Botany, St. Edmund's Shillong Prof S. Choudhury, Department of Chemistry, St. Edmund's Shillong			
School	St. Margaret Higher Secondary School, Shillong Laban Bengalee Boys School St. Edmund's School, Shillong			
Area	Town			
Duration	1 Day			
Level of Participants	Class XII			
Mode of Presentation	Presentations & Demonstration			
No. of Participants	32			
Feedback	Excellent: 10	Good: 14	Average: 08	Satisfactory: NIL

Year	2014			
Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students			
Dates	24th May, 2014			
Resource Person	DrGopesh Paul, Department of Biotechnology, St. Edmund's Shillong Dr S. Goswami Department of Botany, St. Edmund's Shillong Prof Sumit Deb, Department of Chemistry, St. Edmund's Shillong			
School	St. Margaret Higher Secondary School, Shillong			
Area	Town			
Duration	1 Day			
Level of Participants	Class XII			
Mode of Presentation	Presentations & Demonstration			
No. of Participants	30			
Feedback	Excellent: 10	Good: 12	Average: 08	Satisfactory: NIL

Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	28th June, 2014
Resource Person	DrGopesh Paul, Department of Biotechnology, St. Edmund's Shillong Dr S. Goswami Department of Botany, St. Edmund's Shillong Prof Sumit Deb, Department of Chemistry, St. Edmund's Shillong
School	GorkhaPathsala Higher Secondary School, Shillong
Area	Town
Duration	1 Day
Level of Participants	Class XII
Mode of Presentation	Presentations & Demonstration
No. of Participants	32
Feedback	Excellent: 09 Good: 11 Average: 12 Satisfactory: NIL

Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	26th July, 2014
Resource Person	Prof S. Challam, Department of Biotechnology, St. Edmund's Shillong Prof D. Syiemiong, Department of Botany, St. Edmund's Shillong Dr D. Rangad, Department of Zoology, St. Edmund's Shillong
School	Sacred Heart Boys H.S School, Shillong
Area	Town
Duration	1 Day
Level of Participants	Class XII
Mode of Presentation	Presentations & Demonstration
No. of Participants	35
Feedback	Excellent: 10 Good: 12 Average: 08 Satisfactory: NIL

Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	30th August, 2014
Resource Person	Mr Nangkyntiew Jungai, Department of Biotechnology, St. Edmund's Shillong Dr S. Goswami Department of Botany, St. Edmund's Shillong DrAyonBhattacharjee, National Institute of Technology, Shillong
School	Army Public School, Shillong
Area	Town
Duration	1 Day
Level of Participants	Class XII
Mode of Presentation	Presentations & Demonstration
No. of Participants	29
Feedback	Excellent: 12 Good: 11 Average: 06 Satisfactory: NIL
Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	27th September, 2014
Resource Person	Prof K. Nongkynrih, Department of Biotechnology, St. Edmund's Shillong Dr R. Das, Department of Physics, St. Edmund's Shillong Prof S. Choudhury, Department of Biochemistry, St. Edmund's Shillong
School	Laban Bengali H.S School, Shillong
Area	Town
Duration	1 Day
Level of Participants	Class XII
Mode of Presentation	Presentations & Demonstration
No. of Participants	36
Feedback	Excellent: 12 Good: 20 Average: 04 Satisfactory: NIL
Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	25th October, 2014
Resource Person	Prof. B. Manners, Department of Biotechnology, St. Edmund's Shillong Dr. P. Bhattacharjee, Department of Biochemistry, St. Edmund's Shillong Dr. Viki Manners, Department of Botany, Shillong
School	Seven set H.S Schools, Shillong
Area	Town

Duration	1 Day			
Level of Participants	Class XII			
Mode of Presentation	Presentations & Demonstration			
No. of Participants	41			
Feedback	Excellent: 19	Good: 21	Average: 01	Satisfactory: NIL

Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	27th September, 2014
Resource Person	Prof K. Nongkynrih, Department of Biotechnology, St. Edmund's Shillong Dr R. Das, Department of Physics, St. Edmund's Shillong Prof S. Choudhury, Department of Biochemistry, St. Edmund's Shillong
School	Laban Bengali H.S School, Shillong
Area	Town
Duration	1 Day
Level of Participants	Class XII
Mode of Presentation	Presentations & Demonstration
No. of Participants	36
Feedback	Excellent: 12 Good: 20 Average: 04 Satisfactory: NIL

2015

Objective	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students
Dates	18thAugust, 2015
Resource Person	Prof K. Nongkynrih, Department of Biotechnology, St. Edmund's Shillong Prof S. Choudhury, Department of Chemistry, St. Edmund's Shillong
School	Army Public School, Shillong
Area	Town
Duration	1 Day
Level of Participants	Class XII

Mode of Presentation	Presentations & Demonstration			
No. of Participants	46			
Feedback	Excellent: 12	Good: 20	Average: 04	Satisfactory: NIL

Title	Capacity building, awareness, sensitization on Biotechnology for Higher Secondary School students			
Dates	19thSeptember, 2015			
Resource Person	Prof S Challam, Department of Biotechnology, St. Edmund's Shillong DR S. Goswami, Department of Botany, St. Edmund's Shillong			
School	St. Margaret School, Shillong			
Area	Town			
Duration	1 Day			
Level of Participants	Class XII			
Mode of Presentation	Presentations & Demonstration			
No. of Participants	32			
Feedback	Excellent: 12	Good: 20	Average: 04	Satisfactory: NIL

Programmes Organized By the Department

[2010-2015]

Resources Developed

RESOURCES DEVELOPED

Module Developed	Virtual Laboratory
Developed by	MrBikashThakuria Research Associate, Bioinformatics Centre, St. Edmund's College Shillong
Collaborator	Mr Nangkyntiew Jungai Senior Research Fellow, Institutional Biotech Hub St. Edmund's College Shillong
Mode of operation	Both online & offline
Methodology	Free wares & online databases
Techniques Developed	Estimation of Protein by Lowry's Method

Module Developed	Laboratory Manuals
Details	Laboratory manual for undergraduate students of Biotechnology
Availability	Print only (Free for students)
Developed by	Mr Nangkyntiew Jungai Senior Research Fellow, Institutional Biotech Hub St. Edmund's College Shillong
Collaborator	MrBikashThakuria Research Associate, Bioinformatics Centre, St. Edmund's College Shillong

Module Developed	SOP's
Developed by	Faculty of Biotechnology Department
Collaborator	Bioinformatics Centre & Biotech Hub St. Edmund's College Shillong
Details	Fluorescence Microscope, Electrophoresis apparatus, Gel Documentation system, Microbiology Culture facility, Plant tissue culture facility,

	Cyanobacterial repository facility, Lyophilizer, Balance, Millipore distillation unit, Bacteriological Incubator BOD incubator, Spectrophotometer Calorimeter, Handling of Ethidium Bromide, Handling of microbiology waste Ultrasonicator, General Microscope, Ice machine, -20oC referigator.
Module Developed	E- Books Repository Facility
Details	Contains a collection of 314 e-books in biosciences for students
Availability	Free and only in Bioinformatics centre
Developed by	MrBikashThakuria Research Associate, Bioinformatics Centre, St. Edmund's College Shillong
Collaborator	NIL

Programmes Organized By the Department

[2010-2015]

Educational Trips Conducted

EDUCATIONAL TOUR CONDUCTED BY THE DEPARTMENT

Sl No	Year	Place of Visits	Instituted visited	Industries visits	Other attractions	Fund Source	No of students	No of Teachers
1	2010	Hyderabad, Andra Pradesh	ICRISAT, Tarnaka Osmania University, Secunderabad IICT, Uppal Road Central University of Hyderabad	NIL	Ramoji Film City\ Lumbini Gardens Local site seeing	STAR	35	6
2	2011	Kolkata, West Bengal	IICB, Jadavpur NIRJAFT, Tollygunge Bose Institute	NIL	Science City Nicco Park Local tour	STAR	38	6
3	2012	Jorhat, Assam	NEIST, Tarajan AAU Campus Sericulture Institute TOCKLAI, Cinnamara	NIL	Local site tour	STAR	34	6
4	2013	Hyderabad, Andra Pradesh	Central University of Hyderabad National Institute of Nutrition IICT, Hyderabad	SanthaBiotechnic Ltd Reddy's Laboratory GVK Biosciences	Ramoji Film City Snow World Lumbini Gardens Zoological Park Local Tour	College	45	6

5	2014	Kolkata, West Bengal	IICB, Jadavpur IACS, Jadavpur Jadavpur University	Dey's Medical	Wax Meseum Eco Park Zooligical Garden Science City	STAR	54	8
6	2015	Bangalore, Karnataka	IISC, Bangalore IBAB, Bangalore AMC College, Bangalore ACRI, Bangalore	Biocon India Ltd	Wonderla, Bangalore Mysore Palace, Mysore Brindavan Gardens, Mysore Botanical Garden	STAR	60	4

Academic Activities

[2010-2015]

Students Intake

STUDENTS INTAKE

2010

No of Sanctioned seats	30
No. of Applications	350
No of students admitted	56
No. of Students appeared in Examination	20

2011

No of Sanctioned seats	40
No. of Applications	421
No of students admitted	46
No. of Students appeared in Examination	22

2012

No of Sanctioned seats	40
No. of Applications	552
No of students admitted	62
No. of Students appeared in Examination	15

2013

No of Sanctioned seats	40
No. of Applications	556
No of students admitted	54
No. of Students appeared in Examination	23

2014

No of Sanctioned seats	40
No. of Applications	689
No of students admitted	60
No. of Students appeared in Examination	13

2015

No of Sanctioned seats	50
No. of Applications	774
No of students admitted	55
No. of Students appeared in Examination	29

Academic Activities

[2010-2015]

Results

RESULTS

2010

No. of Students appeared in Examination	20
No. of First Class	20
No of Second class	NIL
Pass Percentage	100 %
Positions	02
Name of Students	Rank
PaiaShadap	7th
UpasanaChetry	8th

2011

No. of Students appeared in Examination	22
No. of First Class	21
No of Second class	01
Pass Percentage	100 %
Positions	02
Name of Students	Rank
Poonam Sharma	6th
BanrapMawkhlieng	8th

2012

No. of Students appeared in Examination	15
No. of First Class	14
No of Second class	01
Pass Percentage	100 %
Positions	03
Name of Students	Rank
Alicia BamonSyiem	1st
John Paul Swer	3rd
Samantha B Nongbri	4th

2013	
No. of Students appeared in Examination	23
No. of First Class	22
No of Second class	01
Pass Percentage	100 %
Positions	05
Name of Students	Rank
Gou Khan Maun	1st
MelarihunLyngkhoi	3rd
YogeshNegi	4th
Bijen Singh	7th
Plentiful Pyngrope	9th
2014	
No. of Students appeared in Examination	13
No. of First Class	11
No of Second class	02
Pass Percentage	100 %
Positions	03
Name of Students	Rank
JasmineSailo	5th
ChayanikaBaruah	7th
Mary Vanlalhruai	9th
2015	
No. of Students appeared in Examination	25
No. of First Class	25
No of Second class	NIL
Pass Percentage	100 %
Positions	03
Name of Students	Rank
DeepshikaNath	3rd
Amrita Choudhury	8th
VanitaLyngdoh	10th

Academic Activities

[2010-2015]

Individual Faculty Profile

Dr SamratAdhikari

SAMRAT ADHIKARI

Educational Qualification	PhD [NEHU]
	MSc [Bangalore University]
	BITP [Mumbai]
	NET
Designation	Assistant Professor & Head
Specialization	Environmental Biotechnology & Bioinformatics
Date of Joining	01.05.2006
Teaching Experience	10yrs.
Research Experience	15yrs.
Email:	samratadhikari@rediffmail.com
	stedmundc.btisnet@nic.in
	secbt.hub@dbt.nic.in

Academic Positions

2010 - till present	Head, Department of Biotechnology, St. Edmund's College, Shillong
	Member, School board of Life Science, NEHU, Shillong
	Member, BOS on Biotechnology, NEHU, Shillong
	Examiner, UG Examination, NEHU, Shillong
	Scrutinizer, UG Examination, NEHU, Shillong
	Paper Setter, UG Examination, NEHU, Shillong
	Moderator, UG Examination, NEHU, Shillong
2011	Selection Committee Member, St. Edmund's College, Shillong
2012	Selection Committee Member, St. Edmund's College, Shillong
2014 till Present	Project assessment Committee, St. Edmund's College, Shillong
2013 till present	Reviewer, Wyno Academic Journal of Biological sciences
2014 till present	Editorial Committee, Academic Publishers, USA.
2015	Member, BOS on Bioinformatics, Mangalore University, Karnataka
2015	Member Biotechnology Club, New Delhi

R & D PROJECTS

2010 till present	Bioinformatics Infrastructure Facility [Project Investigator] Sponsored by Department of Biotechnology, Govt. of India, New Delhi Total Cost: 75 Lakhs Status: ongoing
2011 till present	Institutional Biotech Hub Facility [Project Investigator] Sponsored by Department of Biotechnology, Govt. of India, New Delhi Total Cost:42 Lakhs Status: ongoing

2013 till Present	STAR COLLEGE SCHEME [Member Secretary] Sponsored by Department of Biotechnology, Govt. of India, New Delhi Total Cost: 88 Lakhs Status: ongoing
2011-2012	Bioremediation of Thallium Polluted areas [Project Investigator] Sponsored by UGC, Govt. of India, New Delhi Total Cost: 2 Lakhs. Status: Completed

HANDS ON TRAINING/WORSHOP ORGANIZED

2010	3 Days National Workshop on "Bioinformatics – a computational approach to biological information" on 27th – 29th July, 2010. As ORGANIZING SECRETARY
2012	5-day National Workshop on "Hands on training in Basic Biotechnological Techniques" on 21st to the 25th August, 2012. As ORGANIZING SECRETARY
2014	5 day Workshop on "Training on basic Techniques in Genomics and Bioinformatics" on 17th to the 21st November, 2014. As ORGANIZING SECRETARY
	Organized Science Mela for 3 days 21st November – 23rd November, 2014, as coordinator
2015	Coordinator , 30 Years of DBT Celebration, for 3 days

AWARENESS PROGRAMME ORGANIZED

2013	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 29th April, 2013
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 27th September, 2013
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 21st November, 2013
2014	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 24th May, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 28th June, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 26th July, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for

Higher Secondary Science students of Shillong" 30th August, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 27th September, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 25th October, 2014

2015 1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 28th April, 2015.

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 23rd August, 2015

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 19th September, 2015

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 9th November, 2015

FACULTY IMPROVEMENT PROGRAMME ORGANIZED

2014 One day Seminar cum Workshop FIP Programme on "Effective Project Writing" 17th October, 2014. Resource Person: Prof D. D Banerjee, UCMS, GTB Hospital, New Delhi.

POPULAR /GUEST LECTURES ORGANIZED

2014

A Wandering Scientist / Do Science and See the World
1 Day, 12th August, 2014
Prof S. V Eswaran
Emeritus Scientist, CSIR, New Delhi
Distinguished Faculty, St. Stephen's College, New Delhi

Excitement in Science- It Pays Too
11th August, 2014
Prof S. V Eswaran
Emeritus Scientist, CSIR, New Delhi
Distinguished Faculty, St. Stephen's College, New Delhi

Genetic Engineering- tools & techniques
1 Day, 18th October, 2014
DrTusha Sharma, Department of Biochemistry,

"Marine Biotechnology in India: Prespectives and prospects"

2011 1 Day, 7th August, 2011

MrBorve D. A Kharsyntiew,

Scholar, SRM University, Chennai, India

"Emerging role of Food Biotechnology"

1 Day, 28th May, 2011

DrSaikatDutta Mazumdar,

CEO, NutriPlus Knowledge Centre, ICRISAT

A lecture on Fundamentals of Bioinformatics

1 Day, 7th June

Ms. P. Priyadarshini, Research Fellow, Auckland University, New Zealand.

2011 "HUMAN GENOME PROJECT"

1 Day, 4th September, 2009

Prof AnupamChatterjee,

Molecular Genetics Lab, Deptt. of Biotechnology & Bioinformatics

NEHU, Shillong

MEETINGS ORGANIZED

2014 STAR COLLEGE Advisory meeting – 4th April, 2014 with Dr SandhyaShenoy, Joint Director, Department of Biotechnology, Govt. of India, New Delhi as Expert

STAR COLLEGE Mentoring meeting with Prof Ashish Mukherjee, Dean, Tezpur University and Dr RamendhuBhattacharjee, Pro Vice Chancellor, Assam University as Expert on 3rd November, 2014

2015 STAR COLLEGE Advisory meeting – 5th June, 2015 with Dr SandhyaShenoy, Joint Director, Department of Biotechnology, Govt. of India, New Delhi as Expert

Coordinated the STAR COLLEGE ADVISORY MEETING of Department of Biotechnology, Govt. of India for 8 colleges of the North East India.

M Tech THESIS GUIDANCE,

2014 Ms. AbhilasaMehra, Banasthali University, Rajasthan; Duration 6 months

Ms. Sangrika Mishra, Banasthali University, Rajasthan; Duration 6 months

2013 MrJahnuSaikia, Lovely Professional University, Punjab; Duration 3 Months

RESEARCH TRAINEE

2010-2015 MrPhiralangDiengdoh, Kuvempu University, Karnataka Duration: 7 months
Ms Dolly Sewa, NEHU, Shillong; Duration: 6 months
MsSelinaNongkhlaw, Bangalore University, Duration: 6 months
Mr Harold Pyngrope, NEHU, Shillong; Duration: 6 months
MsIbansuklangKharmujai, NEHU, Shillong, Duration: 6 Months
MrSamudraSutradhar, NEHU, Shillong Duration: 6 Months
MsMandakiniKsoo, NEHU, Shillong Duration: 6 Months
Mr BangeilangDiengnam, JNU, New Delhi Duration 3 Months
Ms MelarihunLyngdoh, NEHU, Shillong, Duration 4 months
Ms SooniKerki Challam, NEHU, Shillong Duration 4 months

RESEARCH STUDENTS

SRF MrNangkyntiew Jungai, MSc NEHU, Shillong

RA MrBikashThakuria, MSc Bangalore University

RA MsPhilemPriyaDarshini, MSc NEHU, Shillong [Presently in New Zealand]

SRF Mr Harold B Pyngrope, MSc, NEHU, Shillong [Presently in Singapore]

RESEARCH PUBLICATIONS [As Corresponding Author]

2012 Priyadarshini Devi Philem&SamratAdhikari (2012); Homology modeling, docking studies and functional analysis of various azoreductase accessory interacting proteins of Nostoc sp.PCC7120; Bioinformation; Vol 8(7): 296-300.[IF=1.5]

PhilemPriyadarshini Devi and SamratAdhikari (2012): Homology modeling and functional sites prediction of azoreductase enzyme from the cyanobacteriumNostoc sp. PCC7120.Interdisciplinary Sciences computational biology 4:310–318.[IF=0.66]

2015 BikashThakuria, NangkyntiewborJungai, SamratAdhikari (2015); Catalytic Site Prediction of Azoreductase Enzyme of E. coli with Potentially Important Industrial Dyes Using Molecular Docking Tools; International Journal of Bioscience, Biochemistry and Bioinformatics; Vol. 5, [doi: 10.17706/ijbbb.2015.5.2.91-99 [Peer Reviewed]

BikashThakuria and SamratAdhikari, 2015. Homology modeling of functional proteins of Smilax

aspera plant and its docking study with p53 protein. International Journal of Extensive Research. 5: 72-78.[IF=2.86]

B. Thakuria, P. Diengdoh and S. Adhikari. 2015. An in silico study on the hydrogen peroxide binding of homology modelled cyanobacterial catalase-peroxidase enzyme from Cyanobacteriumaponinum and Synechococcus sp. NKBG042902. International J. Ext. Res. 10:7-16. [Impact Factor- 2.605]

BikashThakuria, Chandra J Singha, PremchandMaisnam and SamratAdhikari (2015); Functional and catalytic active sites prediction and docking analysis of azoreductase enzyme in Pseudomonas putida with a variety of commercially available azodyes; African Journal of Biotechnology; vol. 14(26), pp. 2162-2169. [IF=0.57]

Jungai, N and Adhikari, S. Genetic Diversity of Free Living Filamentous Cyanobacteria Isolated from aVariety of Coal Mining Areas of Jaintia Hills District, Meghalaya, India.International Journal of Research Studies in Biosciences; Volume 3, Issue 12, December 2015, pp 26-34. ISSN 2349-0365(online); [IF: 2.905]

Jungai, N and Adhikari, S Submitted 40 partial nucleotide 16S rRNA sequences of freshwater cyanobacteria to GenBank, NCBI.Accession No : KR709102-KR709149

ORAL /POSTER PRESENTATION

2011 Poster Presented on "Homology modeling of azoreductase enzyme for azodyes bioremediation", Presented at the "Silver Jubilee Symposium on Bioinformatics – BTISNET in India", Pondicherry University, Pondicherry, India on 2nd Feb, 2011.

2013 Paper presented on Role of Factor VIII & IX on the coagulation blood pathway using bioinformatics tools. Paper Presented at the National Symposium on Role of Bioinformatics in Biodiversity Management on 2nd February, 2013, organized by National Botanical Research Institute, Lucknow, India.

2014 Adhikari, S*., Sutradhar, S. P., Jungai, N., Thakuria, B.,& Paul, G. Docking analysis and catalytic site prediction of azoreductase in E. coli, with a wide range of industrially important azodyes.Accepted for presentation at Proceedings IWBBIO 2014. Granada, Spain 7-9 April, 2014, pp1587-1599.

2012 Poster Presented on the HMG – CoA pathway and its role on Melavanute Pathway using Bioinformatics tools; Presented at the National Symposium on "Bioinformatics: Challenges in the post Genomic era, 2nd February, 2012 at University of Jammu, Jammu.

Paper Presented on Homology Modelling and Ramachandran Plot on azoreductase enzyme.Presented at the National Conference on Comtemporary Bioinformatics Researches in India on 10th November, Organized by Assam University, Silchar, Assam

INVITED LECTURE DELIVERED

2013 Lecture delivered on Recombinant DNA Technology at the National Workshop on Biotechnology Tools & Techniques organized by the Institutional Biotech Hub, GC College, Silchar on 29th – 30th January, 2013

2014 Human Genome Project – its origins; 13th August, 2014, Organized by Department of Biochemistry, St. Edmund's College, Shillong

PROFESSIONAL TRAINING ATTENDED

2014 Workshop on Evaluation and Paper Setting at UG level, Organized by NEHU exam Centre on 4th – 5th December, 2014

2012 Hands on Training in Gene Cloning, Protein Purification and Crystallization" in Tata Memorial Centre, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Kharghar, Navi Mumbai from 2nd- 13th July 2012

Participated in the Edmund Rice Capacity Building Programme held at St. Edmunds College, Shillong on the 10th and 11th February, 2012

2010 Faculty Development Programme, Organized by the Federation of Universities on 13th September, 2010.

WORKSHOP ATTENDED

2013 Workshop on Data Deluge in Biology- Use of High Performance Grid & Cloud Computing on 19th – 20th December, 2013 at Jorhat Medical College, Jorhat.

2011 Workshop on "Changing Paradigm in College Education- Problems and Challenges", on 29th October, 2011, organized by Meghalaya Economic Association, Meghalaya.

MEETINGS ATTENDED

2010 Attended the 5th Interactive meeting on North East Bioinformatics Centre held at Institute of Bioresources& Sustainable Development (IBSD), Imphal on 11-12th November, 2010.

Attended the National Annual Bioinformatics Network meeting at Department of Biotechnology, Indian Council of Agriculture Research, Port Blair, Andaman& Nicobar Island, India on 3rd – 4th February, 2010.

2011 Attended the 6th Interactive meeting on North East Bioinformatics Centre held at Department of

Biotechnology, Mizoram University, Aizawl, Mizoram on 11-12th November, 2011.

Attended the National Annual Bioinformatics Network meeting at Department of Biotechnology, Pondicherry University, Puducherry, India on 3rd – 4th February, 2011

2012 Attended the 7th Interactive meeting on North East Bioinformatics Centre held at Department of Life Sciences, Assam University, Silchar, Assam on 11-12th November, 2012.

Attended the First meeting of Coordinators of Colleges supported under STAR COLLEGE Scheme of DBT held on 30th – 31th May, 2012 at SGTB Khalsa College, University of Delhi, New Delhi

Attended the National Annual Bioinformatics Network meeting at Department of Biotechnology, Mata Vaishno Devi University, Katra, Jammu & Kashmir, India on 3rd – 4th February, 2012

Attended the Annual Institutional Biotech Hub meeting at -State Council of Science & Technology, Govt of Sikkim, on 18th – 19th June, 2012.

2013 Attended the National Annual Bioinformatics Network meeting at Bioinformatics Centre, National Institute of Oceonography (NIO) Goa, India on 27th – 28th February, 2013

Attended the STAR Coordinatormeeting of Colleges supported under STAR COLLEGE Scheme of DBT held on 5th – 7th August, 2013 at RamnarianRuia College, Matunga, Mumbai.

Attended the Annual Coordinator interactive of Institutional Biotech Hub at –College of Fisheries, Lembucherra,(CAU) Agartala on 21st& 22nd June, 2013

2014 Attended the 7th Interactive meeting on North East Bioinformatics Centre held at Nagaland University, Nagaland on 11-12th November, 2014.

Attended the National Annual Bioinformatics Network meeting at Bioinformatics Centre, National Botanical Research Institute Lucknow, India on 3rd – 4th February, 2014

Meeting with Dr SandhyaShenoy, Joint Director, Department of Biotechnology, CGO Complex, Govt. of India, New Delhi on 6th February, 2014

Attended the Annual Coordinator interactive of Institutional Biotech Hub at –State Biotech Hub, NEHU, Shillong on 21st& 22nd June, 2014

2015 Attended the National Annual Bioinformatics Network meeting at Bioinformatics Centre, Tirupati University, Tirupati, India on 3rd – 4th February, 2014

Attended the STAR Coordinator meeting of Colleges supported under STAR COLLEGE Scheme of DBT held on 5th – 6th July, 2015 at DBT Head Quarters, New Delhi for STAR STATUS

Attended the STAR Coordinator meeting of Colleges supported under STAR COLLEGE Scheme of DBT held on 19th – 20th November, 2015 at Venkateshwara College, New Delhi

Attended the 8th Interactive meeting on North East Bioinformatics Centre held at Tripura University, Tripura on 21st – 22nd November, 2015.

Attended the Annual Coordinator interactive of Institutional Biotech Hub at –NRC Mithun, Dimapur, Nagaland on 21st& 22nd June, 2015

Academic Activities

[2010-2015]

Individual Faculty Profile

Ms Baiakmenlang Manners

BAIAKMENLANG MANNERS

Educational Qualification	PhD [On-going], Gauhati University
	MSc [ALU, Coimbatore]
Designation	Assistant Professor
Specialization	Plant Molecular Biology
Date of Joining	01.05.2007
Teaching Experience	9yrs.
Research Experience	11 yrs.
Email:	oncidium_b@yahoo.co.in

Academic Positions

2010	Member of BUGS in Biotechnology, NEHU, Shillong
	Paper setter, NEHU Shillong
	Practical Examiner NEHU Shillong
2011	Paper setter, NEHU Shillong
	Practical Examiner NEHU Shillong
	Member of BUGS in Biotechnology, NEHU, Shillong
2012	Paper setter, NEHU Shillong
	Practical Examiner NEHU Shillong
2013	Examiner, UG Examination, NEHU, Shillong
	Practical Examiner NEHU Shillong
	Scrutinizer, NEHU, Shillong
2014	Examiner, UG Examination, NEHU, Shillong
	Practical Examiner NEHU Shillong
	Department Coordinator, STAR College Scheme (DBT, Govt. of India)
2015	Examiner, UG Examination, NEHU, Shillong
	Practical Examiner NEHU Shillong

WORKSHOPS ATTENDED

2012	Workshop on "Development of course book on indigenous practices of conservation and sustainability in North Eastern region" on 5th – 5th Dec, 2012 organized by NERIE Shillong.
2013	Participated in the Edmund Rice Capacity Building Programme held at St. Edmunds College, Shillong on the 10th and 11th February, 2012.
	Participated in a two day workshop on " Defining the role of Women Scientists and teachers in promotion and application of Science and Technology – Northeast India Perspectives" organized by The National Academy of Sciences, India, North-Eastern Region Local Chapter in collaboration with Lady Keane College, Shillong on May 8-9, 2013
2014	Participated in a one day Seminar cum Workshop on " Faculty Improvement Programme" at St. Edmunds College Shillong on the 17th October, 2014.

Participated in a one day sensitization workshop on "Technological Empowerment of Women through the SoRF Scheme of DST in collaboration with NASI" organized by National Academy of Sciences, India NER, local chapter, at NEHU, Shillong on the 30th June, 2014

ORIENTATION PROGRAM ATTENDED

2010 Orientation Programme in Information Technology from 5th Feb, 2010 – 4th March, 2010 organized by the Academic staff college, NEHU, Shillong

INVITED LECTURES/ TRAINING DELIVERED

2012 Course coordinator in the 5-day Workshop entitled " Hands on training in Basic Biotechnological Techniques" organized by the Institutional biotech Hub, Department of Biotechnology, St. Edmunds College Shillong from the 21st to the 25th August, 2012

2013 Delivered a lecture on a one day workshop entitled" Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" organized by the Institutional biotech Hub, Department of Biotechnology, St. Edmunds College Shillongon the 27th July, 2013.

2014 Participated as a Resource Person in the 5 day Workshop entitled " Training on basic Techniques in Genomics and Bioinformatics" organized by the Department of Biotechnology, St. Edmunds College Shillong from the 17th to the 21st November, 2014.

015 Delivered a lecture on a one day workshop entitled" Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" organized by the Institutional biotech Hub, Department of Biotechnology, St. Edmunds College Shillongon the 7th June, 2015

SEMINARS / WORKSHOPS ORGANIZED

2012 Was an organizing member of the 5-day Workshop entitled "Hands on training in Basic Biotechnological Techniques" organized by the Institutional biotech Hub, Department of Biotechnology, St. Edmunds College Shillong from the 21st to the 25th August, 2012.

2013 Helped organize a one day workshop entiltled "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" organized by the Institutional biotech Hub, Department of Biotechnology, St. Edmunds College Shillong on the 27th July, 2013.

2014 Was an organizing member in the 5 day Workshop entitled " Training on basic Techniques in Genomics and Bioinformatics" organized by the Department of Biotechnology, St. Edmunds College Shillong from the 17th to the 21st November, 2014.

2015 Was an organizing member on a one day workshop entiltled" Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" organized by the Institutional biotech Hub, Department of Biotechnology, St. Edmunds College Shillongon the 7th June, 2015.

LECTURES ATTENDED

2010	A lecture on Fundamentals of Bioinformatics by Ms. P. Priyadarshini, Research Fellow, IISC, Bangalore.
2011	A guest lecture on "Applications of Plant Biotechnology", by Dr.SumanKumaria, Associate professor, Centre for Advanced studies in Botany, NEHU, Shillong.
	An Interactive session with Prof. Michael Keusgen, Dean, Faculty of Pharmacy, Phillip's University, Marburg, Germany, 11th March, 2011
	Emerging role of Food Biotechnology" by Dr.SaikatDutta Mazumdar Chief Operating Officer, NutriPlus Knowledge Program, Agribusiness and Innovation Platform (ICRISAT); 5th May, 2011
	Guest lecture by Mr.Borve D. A. Kharsyntiew, Research Scholar, Department of Biotechnology, SRM University, Chennai, Tamil Nadu, 6th June, 2011 on the title Marine Biotechnology in India: Perspectives and Prospects"
	Recent Developments in Plant Biotechnology & their applications"Guest: Prof. S. R. Rao, Head Department of Biotechnology, North Eastern Hill University, Shillong, 7th July, 2011
2014	Popular lecture delivered by Prof S. V Eswaran Emeritus Scientist, CSIR, New DelhiDistinguished Faculty, St. Stephen's College, New Delhi on the theme "A Wandering Scientist / Do Science and See the World" 12th August, 2014
	Guest lecture delivered by Prof.PratapJyoyiHandique Dept. of Biotechnology, Guwahati University, Guwahati on the 25th July,2014on the title "Plant Biotechnology: tools and techniques".
	Popular lecture delivered by Prof S. V Eswaran Emeritus Scientist, CSIR, New DelhiDistinguished Faculty, St. Stephen's College, New Delhi on the theme "Excitement in Science- It Pays Too",11th August, 2014.
2015	Guest lecture delivered by Dr Lalmacchchuana, Documentation Officer, NEHU Central Library, Shillong,on the 24th October 2015, on the title Accessing Scholarly Web Resources.

OTHERS

2013	Was an organizing member for the felicitation programme of the position holders 2013 on 8th August, 2013.
	Was a Judge for Slogan writing competition on World Environment day 2013
2014	Was a Judge for Poster competition on World Environment day 2014.
	Committee Member of the Grievance cell of St. Edmunds College Shillong
	Teacher in charge of the Security group of College week 2014.
2015	Committee member of the Innovative and Best Practices cell of St. Edmund "s College Shillong

Academic Activities

[2010-2015]

Individual Faculty Profile

Dr Gopesh Paul

GOPESH PAUL

Educational Qualification	PhD [ ], NEHU, Shillong
	MSc [NEHU, Shillong]
Designation	Assistant Professor
Specialization	Animal Physiology & Biochemistry
Date of Joining	01.05.2010
Teaching Experience	05 yrs
Research Experience	6 yrs
Email:	paul84g@gmail.com

Academic Experiences:

- Member of College Discipline committee 2013-2014
- Departmental equipment purchase Committee 2013-till date
- Department Incharge, Science Mela 2014- 2015
- Faculty Incharge for Student tour (National) 2011-2015
- Department Co-ordinator for DBT Star College Scheme 2014 - till date
- Member of DST Central Instrumentation Facility 2014- till date
- Scrutinizer 2013
- Paper Examiner BscIst Year 2013- 2015
- Paper Examiner BscIInd Year 2012- 2015
- Paper Examiner BSc Ist Semester 2015
- Practical Examiner (Internal) BscIst Year 2014
- Practical Examiner (Internal) BscIInd Year 2011- 2015
- Practical Examiner (Internal) BSc Ist Semester 2015

Research Experience: 9 years

Professional Training attended: NIL

Seminar/ Workshop Organized:

2015

Organized a One – day Student Seminar under DBT Star College Scheme, for IInd year B.Sc (Biotechnlogy Honours) students on 13th of August, 2015.

Organized a One day Workshop on “Accessing Scholarly Web Resources” by Dr.Lalmachhuana, Documentation Officer, NEHU Central Library on 9th June, 2015 at Biotechnology department, St. Edmund’s College.

Invited Lectures:

2012 Presented a lecture at seminar on "Challenges in Biochemical research" organized by the Department of Biochemistry, NEHU, Shillong held in March 23, 2012

2014 Resource person in a 5 day Workshop entitled "Training on Basic Techniques in Genomics & Bioinformatics held from 17th – 21st November, 2014.

Seminar/ Workshops Attended:

2011 A 3- day seminar on "Developing intellectual capital skills for the learning economy" held at St. Edmund's College, Shillong from 31st January – 2nd February 2011.

2013 Participated in the National Conference on Contemporary Bioinformatics Researches in India, organized by Bioinformatics Centre, Assam University, Silchar on 10th November, 2013

2014 Attended a "Workshop on Capacity Building in Effective Management of Intellectual Property Rights (IPRs) in Biotechnology by Universities and Research Institutes in Meghalaya at St. Anthony's College, Shillong from September 22- 23, 2014

A one day seminar cum workshop on "Faculty Improvement Programme (FIP) at St. Edmund's College on the 17th October, 2014

2015 Attended a two day workshop on "Biosafety awareness and culture of responsibility" at ICAR NEH Region, Umiam on the 21st and 22nd August, 2015

Attended a seminar held at Avigna Clinical Research Institute, Bangalore on 8th December 2015

Meetings Attended:

2013 Attended the 6th NEBInet Coordinators' Meet in the Bioinformatics centre, Assam University, Silchar held during 11 & 12 November 2013

Other Activities:

2010 Member of Organizing Committee in The Workshop on " Bioinformatics – A computational Approach to Biological Information" during 27th – 29th July held at Bioinformatics Infrastructure Facility

Member of organizing committee for "National Seminar on Minor Research in Biological Sciences" on 4th December, St. Edmund's College.

2011 Member of organizing committee for "National Seminar on Minor Research in Biological Sciences" December, St. Edmund's College.

2012 Member of Organizing committee in a 5 day National Level workshop on "Basic Biotechnology techniques" on 21st – 25th, August held at Biotechnology department, St. Edmund's College.

2014 As Judge in a seminar on "Biodiversity of North-East India" organized by Department of Botany, St. Edmund's College, Shillong on 23rd August, 2014.

As Judge in a Seminar Presentation of B.ScIInd Year Biotechnology Honours student organized by Department of Biotechnology, St. Edmund's College on 28th August, 2014

Incharge for "KaunBanega Scientist Contest" during Science Mela 2014 organized under the STAR College scheme by the Department of Biotechnology, St. Edmund's College

2015 Incharge for "KaunBanega Scientist Contest" during "Ed Scientia 2015" organized under the STAR College scheme by the Department of Biotechnology, St. Edmund's College

Academic Activities

[2010-2015]

Individual Faculty Profile

Mr Koben John Nongkynrih

KOBEN JOHN NONGKYNRIH

Educational Qualification	MSc [NEHU] NET
Designation	Assistant Professor
Specialization	Microbiology
Date of Joining	01.05.2011
Teaching Experience	03 yrs
Research Experience	5 yrs
Email:	kobennongkynrih@yahoo.co.in

Programmes attended:

"Capacity building" programme organized by the college on the 10th and 11th February, 2012.

21st Orientation Programme ASC NEHU, 4th February 2013 to 3rd March, 2013.

"Called and gifted" at St. Joseph,s College, Kolkata from 25-28 August, 2014.

2 day workshop on "Effective Management of IPR in Biotechnology" organized by BCIL in St. Anthony's College, Shillong on 21st and 22nd September,2014.

ICAR NEH-ASM-SBS Biosafety Awareness Programme and Workshop on: "Culture of Responsibility", "Pathogen Inventory Management" and "Fundamentals of Working in Biosafety Cabinets" organized at ICAR- Research Complex for NEH Region, Umiam, Meghalaya.

Research project Guidance:

M.Sc. Thesis of Mr.PynshngainlangSawian on "Isolation , characterization and molecular studies of microbes in locally fermented alcoholic beverages and their interaction with biological compounds extracted from medicinal plants of Meghalaya". (2013)

"Isolation and Characterization of Microbial Population present in Swine Nasal Cavity" (2012-2013)

"Characterization of microbial population present in pig's feed" (2012-2013)

"Standardization of in vitro micropropagation of Citrus latipes" (2013-2014)

"Isolation and characterisation of potential probiotics from local wine of East Khasi Hills, Meghalaya" (2013-2014)

"A study on the antibacterial properties of 'psidiumguajava' leaves" (2013-2014)

"Analysis of bacterial species diversity in rotten cured Areca Catechu Linn. from East Khasi Hills ,Meghalaya" (2014-2015)

Other extracurricular involvements:

Deputed as Expert Adviser for the Recruitment of Assistant Lecturer through MPSC, Shillong on 16th November,2012.

Course coordinator in the 5-day workshop entitled "Hands on Training in Basic Biotechnological techniques" organized by the Department of Biotechnology, St. Edmund's College, Shillong from 21st to 25th August, 2012.

Invigilator for the Civil Service (P) Examination, 26th May, 2013.

Resource person for the "Capacity Building, Sensitization and Awareness programme in Biotechnology for Higher

secondary school Students of Shillong, 31st August,2013.

Member of the Interview panel for the selection of Research Associate at the Bioinformatics centre of the College, 30th October, 2013.

Member of the selection committee for the up gradation of salary of the research staff of the department on 16th October, 2015.

Incharge of various activities during the College games every year.

Deputed as Internal examiner for B.Sc. Biotechnology practical exams and Theory Paper Examiner for the Undergraduate Final Examinations conducted by NEHU.

Incharge of various practicals under "Star College Scheme" for undergraduate students which includes:

- Basic techniques in Microscopy
- Agarose Gel Electrophoresis
- Polymerase Chain Reaction
- Plasmid DNA isolation

Resource person in the 5-day Workshop entitled "Training on Basic Techniques in Genomics and Bioinformatics" from 17th to 21st November, 2014.

Academic Activities

[2010-2015]

Individual Faculty Profile

Ms Shekinah Challam

SHEKINAH CHALLAM

Educational Qualification	MSc [NEHU] NET [UGC] BET [DBT JRF]
Designation	Assistant Professor
Specialization	Plant Biotechnology
Date of Joining	01.08.2013
Teaching Experience	05 yrs
Research Experience	3yrs
Email:	shekinah.challam@gmail.com

Academic Experience:

2014 Examiner-NEHU Examinations
Internal Examiner- NEHU Practical Examination in Biotechnology
Member of Discipline Committee in the College
Faculty-in-charge of Departmental Examinations

2015 Examiner- NEHU Examinations
External Examiner for ISC Class 12 Practical Examination in Biotechnology under CISCE
Internal Examiner- NEHU Practical Examination in Biotechnology
Faculty-in-charge of Departmental Examinations

2016 Examiner- NEHU Examinations
External Examiner for ISC Class 12 Practical Examination in Biotechnology under CISCE
Internal Examiner- NEHU Practical Examination in Biotechnology

Professional Training Attended:

2010 Winter School in on "Vistas in Marine Biotechnology" organized by Central Marine Fisheries Research Institute ICAR, Cochin from 5th to 21st October, 2010

2012 Training on "Molecular tools in Biotechnology Teaching and Research" in the Department of Botany, NEHU from 19thto 30th March, 2012

"Hands on Training in Gene Cloning, Protein Purification and Crystallization" in Tata Memorial Centre,Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Kharghar, Navi Mumbai from 2nd- 13th July, 2012

2015 "Hands on Training on Plant Tissue Culture: Techniques and Applications" in the Dept. of Botany, NEHU, Shillong from 24th – 31st March, 2015

"Hands on Training in Gene Cloning, Protein Purification and Crystallization" in Tata Memorial Centre,Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Kharghar, Navi Mumbai from 29th June- 10th July, 2015.

2016 34th Orientation Programme organised by the UGC-HRDC, NEHU from the 25th Jan- 21st Feb, 2016

Seminar/ Workshop Organised:

2014 One Day Student Seminar for Students of 2nd year Biotechnology

One Day Synopsis Presentation for Students of 3rd Year Biotechnology

2015 One Day Student Seminar for Students of 2nd Year Biotechnology

One Day Synopsis Presentation for Students of 3rd Year Biotechnology

Invited Lectures Delivered

Resource Person- "Workshop on "Training on Basic Techniques in Genomics and Bioinformatics" from 17th November-21st 2014 in St. Edmund's College, Shillong.

Resource Person- "Capacity Building, Sensitization and Awareness in Biotechnology fro Higher Secondary Science Students of Shillong" on the 21st June 2014

Resource Person- Practical Classes under DBT-Star College Scheme on the 22nd August, 2014

Resource Person- "Educational Outreach Programme for Popularising Biotechnology under DBT-Star College Scheme"

Research Guidance-

1. Antibacterial Properties of Medicinal Plants available in the state of Meghalaya.
2. Micropropagation of Cucurma longa sp available in North East.
3. Identification, isolation of antibacterial properties of secondary metabolites present in Urtica Species found in Shillong.

Workshops and Seminars Attended

2013 Workshop on Biological Techniques and Tools in St. Anthony's College, Shillong, from 19th – 26th July 2013

2014 Workshop on "Capacity Building in Effective Management in IPR in Biotechnolgy by Universities and Research Institutes in Meghalaya" in St. Anthony's College, Shillong, from 22nd -23rd September, 2014

Workshop on "Faculty Improvement Programme" at St. Edmund's College on the 17th October, 2014

Others

2014 Organised the Introductory Session for 1st year BSc Students of the College

Organised Felicitation Programme for Meritorious Students on 25th June, 2014

Master of Ceremonies for Department and College Functions

Editor of the Department Magazine ScientiaPotentiaEst

Teacher in-charge of Inter- College Volley Ball team for Tournament organised by NEH

Teacher in-charge of College Security for Edblazon 2014.

2015 Judge at the One Day Students seminar under DBT-Star College Scheme on 13th August,2015.

Judge at the Inter- College Debate competition organised by the Department of Mass Communication and Video Production, St. Anthony's College, Shillong on World Photography Day on the 19th August, 2015.

Teacher in-charge of Women's Basket Ball during Edblazon 2015

2016 Convener and Editor of the 10 year Anniversary Edition of the Department Magazine ScientiaPotentiaEst

Academic Activities

[2010-2015]

Individual Faculty Profile

Mr Nangkyntiewbor Jungai

NANGKYNTIEWBOR JUNGAI

Educational Qualification	MSc [NEHU]
	NET
	BET
Designation	Senior Research Fellow
Specialization	rDNA Technology
Date of Joining	01.05.2013
Teaching Experience	01 yrs
Research Experience	3 yrs
Email:	njungai@gmail.com

POSITIONS HELD

2013 till present	SRF, Institutional Biotech Hub, Department of Biotechnology, St. Edmund's College, Shillong.
2012 - 2013	Lecturer, Department of Biotechnology, St. Edmund's College, Shillong

HANDS ON TRAINING/WORSHOP ORGANIZED

2014	5 day Workshop on "Training on basic Techniques in Genomics and Bioinformatics" on 17th to the 21st November, 2014. As COURSE CO-ORDINATOR
2012	5-day National Workshop on "Hands on training in Basic Biotechnological Techniques" on 21st to the 25th August, 2012. As COURSE CO-ORDINATOR

AWARENESS PROGRAMME ORGANIZED

2014	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 24th May, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 28th June, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 26th July, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 30th August, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 27th September, 2014
	1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for

Higher Secondary Science students of Shillong" 25th October, 2014

2013 1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 29th April, 2013

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 27th September, 2013

POPULAR /GUEST LECTURES ORGANIZED

2014 A Wandering Scientist / Do Science and See the World
1 Day, 12th August, 2014
Prof S. V Eswaran
Emeritus Scientist, CSIR, New Delhi
Distinguished Faculty, St. Stephen's College, New Delhi

Excitement in Science- It Pays Too
11th August, 2014
Prof S. V Eswaran
Emeritus Scientist, CSIR, New Delhi
Distinguished Faculty, St. Stephen's College, New Delhi

Genetic Engineering- tools & techniques
1 Day, 18th October, 2014
DrTusha Sharma, Department of Biochemistry,
University College of Medical Sciences & GTB Hospital, New Delhi

RESEARCH TRAINEE

2015 Ms.PhinmanlinKharlyngdoh, St. Edmund's College, Shillong Duration: 6 months

Ms Angela Lalmunthalang, St. Edmund's College, Shillong Duration: 6 months

Ms MonishaBhattacharjee, St. Edmund's College, Shillong Duration: 6 months

Mr Ankit Kumar Dubey, St. Edmund's College, Shillong Duration: 6 months

2014 Mr KhrawpyrkhatNongrum, St. Edmund's College, Shillong Duration: 6 months

2013 Mr Andrew Lallawma, St. Edmund's College, Shillong Duration: 6 months

Ms , St. Edmund's College, Shillong Duration: 6 months

Ms Angela Lalmunthalang, St. Edmund's College, Shillong Duration: 6 months

RESEARCH PUBLICATIONS [PEER REVIEWED]

2015 BikashThakuria, Nangkyntiewbor Jungai, and SamratAdhikari(2015); Catalytic Site Prediction of Azoreductase Enzyme of E. coli with Potentially Important Industrial Dyes Using Molecular Docking Tools; International Journal of Bioscience, Biochemistry and Bioinformatics; Vol. 5, [doi: 10.17706/ijbbb.2015.5.2.91-99 [Peer Reviewed]

Nangkyntiewbor Jungai and SamratAdhikari (2015); Genetic Diversity of Free Living Filamentous Cyanobacteria Isolated from a Variety of Coal Mining Areas of Jaintia Hills District, Meghalaya, India; 3;12. Pp 26-34 [IF:2.921]

INVITED LECTURE DELIVERED

2015 External expert for Project viva voce conducted for undergraduate honours students of Biotechnology as partial fulfillment of the degree course under North Eastern Hill University, Shillong on 23rd April, 2015, at the Institutional Biotech Hub, St. Edmund's College as a programme initiated under STAR scheme under sponsorship from Department of Biotechnology, Government of India

2014 Delivered a guest lecture in one day workshop on "Capacity Building, Sensitization and Awareness in Biotechnology for Higher Secondary Science Students of Shillong" at Department of Biotechnology, St. Edmund's College, Shillong on the 26th July, 2014.This programme was organized by Institutional Biotech Hub Facility (Funded by DBT, Govt. of India) in collaboration with IQAC, St. Edmund's College.

WORKSHOP ATTENDED

2014 Actively participated in the "Workshop on Capacity Building in Effective Management of Intellectual Property Rights (IPRs) in Biotechnology by Universities and Research Institutes in Meghalaya" at St. Anthony's College, Shillong from September 22-23, 2014 sponsored by Department of Biotechnology, Government of India, organized by Biotech Consortium India Limited (BCIL), New Delhi.

SEMINAR ATTENDED

2011 Attended the lecture on "Emerging trends on Food Biotechnology" delivered by Dr. S.D. Mazumdar, COO, Nutriplus, ICRISAT, Hyderabad, organized by the Department of Biotechnology, St. Edmund's College, Shillong, Meghalaya, (an initiative under DBT Star College Scheme), funded funded by DBT, Govt. of India, on the 28th May, 2011.

2008 Participated in the National Seminar on "Toxicity of Chemicals and their Hazards with special reference to Heavy Metals" held on the 23rd& 24th October 2008 at St. Edmund's College, Shillong.

2009 Attended as Volunteer in the National Workshop on "Computer Interfacing of Physics Experiments" held on the 11th – 13th May, 2009. The Workshop was organized by the Department of Physics, St. Edmund's College, Shillong in collaboration with the Inter University Accelerator Centre, (An Autonomous Research Centre Under UGC) New Delhi.

EXTENSION ACTIVITIES

2013 UGC – NET Examination Dec, 2013 – Invigilator

UPSC Civil Service Examination Aug, 2013 – Invigilator

Academic Activities

[2010-2015]

Individual Faculty Profile

Mr BikashThakuria

BIKASH THAKURIA

Educational Qualification	MSc Bangalore University
Designation	Research Associate (Department of Biotechnology, Govt. of India]
Specialization	Bioinformatics
Date of Joining	01.05.2013
Teaching Experience	1 yrs.
Research Experience	4yrs.
Email:	btbikash@gmail.com

RESEARCH AND STUDY

- A one year project on "Vermicomposting" under the partial fulfillment of B.Sc. Biotechnology under North Eastern Hill University curriculum. (1st June,2010 – 19th December, 2010).
- A two months project on "Isolation and Screening of cellulose producing bacteria from Pseudomonas species" in SangenomicsPvt. Ltd., Bangalore. (1st June, 2011 – 31st July, 2011).
- DBT traineeship in St. Edmund's College on bioinformatics (Domain analysis of proteins present Smilax aspera) for six months. (3rd January, 2013 – 19th June, 2013).
- Research Associate, Bioinformatics Infrastructure Facility (BIF), Department of Biotechnology, St. Edmund's College, Shillong (since 4th November, 2013).

PAPER PUBLISHED

- B. Thakuriaand S. Adhikari. 2015. Homology modeling of functional proteins of Smilax asperaplant and its docking study with p53 protein. InternationalJ Ext. Res. 5:72-78. (IF – 2.6)
- B. Thakuria, N. Jungai and S. Adhikari. 2015. Catalytic site prediction of Azoreductase enzyme of E. coli with potentially important industrial dyes using molecular docking tools. International journal of Bioscience, Biochemistry and Bioinformatics. 5(2): 91-99. (Peer reviewed Journal)
- B. Thakuria, et al. 2015. Functionally and catalytic active sites prediction and docking analysis of azoreductase enzyme in Pseudomonas putidawith a variety of commercially available azo dyes. African Journal of Biotechnology. Vol. 14(26): 2162-2169. (IF – 0.5)
- B. Thakuria, P. Diengdoh and S. Adhikari. 2015. An in silico study on the hydrogen peroxide binding of homology modeledcyanobacterial catalase-peroxidase enzyme from Cyanobacterium aponinum and Synechococcus sp. NKBG042902. International J. Ext. Res. 10:7-16. (IF – 2.6)
- BikashThakuria, PhiralangDiengdoh and SamratAdhikari. 2016. Homology modeling, docking studies and functional site analysis of various accessory interacting proteins of MnSOD of Nostoc PCC7120 and FeSOD of Thermosynechococcuselongatus. International Journal of Science and Research. 5(4): 1150-1157. (IF – 6.3)

EXPERIENCE

- Served as a Resource Person in a five days national level workshop on "Training on Basic techniques in Genomics and Proteomics" sponsored by Department of Biotechnology, Govt. of India, organized by

Department of Biotechnology and Internal Quality Assurance Cell (IQAC), St. Edmund's College, Shillong (November 17-21, 2014).

- Served as an External Expert for conducting Viva voce for undergraduate students of Biotechnology as a partial fulfillment of bachelor degree under North Eastern Hill University (NEHU), Shillong at Institutional Biotech HUB Facility, St. Edmund's College funded by DBT, Govt. of India. (April 23rd, 2015)
- Served as a Resource Person in one day workshop on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science Students of Shillong" organized by Institutional Biotech HUB Facilty (Funded by DBT, Govt. of India) in collaboration with the Internal Quality Assurance Cell (IQAC), St Edmund's College, Shillong (June 6th, 2015).
- Served as an External Expert for conducting Viva Voce for projects of undergraduate students of Biotechnology under North Eastern Hill University (NEHU), Shillong, at Bioinformatics Infrastructure Facility (BIF), Department of Biotechnology, St. Edmund's College, Shillong (March 18th, 2016).

CONFERENCES/ WORKSHOPS/ SEMINARS ATTENDED

- National Symposium on "Emerging trends in Biotechnology" organized by KSG College of Science and Technology, Coimbatore (November, 2011).
- A national level workshop on "Entrepreneurship in life sciences" organized by Department of Life Sciences, KristuJayanti College, Bangalore, India and National Entrepreneurship Network, India (Oct 10-11th ,2011).
- A national level workshop on "Effective Management of Intellectual Property Rights in Biotechnology by Universities and Research Institutes in Meghalaya" organized under DBT, Ministry of Science and Technology, Govt. of India in association with BCIL by St. Anthony's College, Shillong (September 22-23, 2014).
- A national level workshop on "Molecular Docking and Virtual Screening" jointly organized by Bioinformatics Infrastructure Facility, Department of Biotechnology, Mizoram University, Mizoram and Schrödinger, Bangalore, sponsored by Department of Biotechnology, Govt. of India, New Delhi (October 02-04, 2014).
- Attended a national level workshop cum seminar on "Faculty Improvement Program (FIP)" organized by St. Edmund's College, Shillong as an initiative of STAR COLLEGE Departments, funded by DBT, Govt. Of India. (Oct 17th, 2014).
- Attended a national level workshop in College of Veterinary Science (Assam Agriculture University) on " Homologymodelling, Computer Aided Drug Designing and Molecular Docking" sponsored by BTIS program (March 17-21, 2015).
- Attended a NER training course on "Gene cloning, Protein biochemistry, Structural biology and Bioinformatics" organized by DBT Biotechnology/Bioinformatics Training Centre, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Kharghar, Navi Mumbai. (July 13-24th, 2015).

HANDS ON TRAINING/ WORKSHOP ORGANISED

2014	5 day Workshop on "Training on basic Techniques in Genomics and Bioinformatics" on 17th to the 21st November, 2014. As RESOURCE PERSON.

AWARENESS PROGRAMME ORGANISED

2014 1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 24th May, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 28th June, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 26th July, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 30th August, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 27th September, 2014

1 Day Programme on "Capacity Building, Sensitization and awareness in Biotechnology for Higher Secondary Science students of Shillong" 25th October, 2014

POPULAR/ GUEST LECTURES ORGANIZED

2014

A Wandering Scientist / Do Science and See the World
1 Day, 12th August, 2014
Prof S. V Eswaran
Emeritus Scientist, CSIR, New Delhi
Distinguished Faculty, St. Stephen's College, New Delhi

Excitement in Science- It Pays Too
11th August, 2014
Prof S. V Eswaran
Emeritus Scientist, CSIR, New Delhi
Distinguished Faculty, St. Stephen's College, New Delhi

Genetic Engineering- tools & techniques
1 Day, 18th October, 2014
Dr Tusha Sharma, Department of Biochemistry,
University College of Medical Sciences & GTB Hospital, New Delhi

THESIS GUIDANCE [M. Tech]

2014 Ms. Abhilasa Mehra, Banasthali University, Rajasthan; Duration 6 months

Ms. Sangrika Mishra, Banasthali University, Rajasthan; Duration 6 months

Mr Baniateilang Diengngan, JNU, New Delhi: Duration 2 months

RESEARCH TRAINEE

2014 MrPhiralangDiengdoh, Kuvempu University, Karnataka Duration: 7 months

Programmes Organized By the Department

[2010-2015]

Outreach Activities

OUTREACH ACTIVITIES

2012

Outreach activities	Development of Online Library access facilities in secondary Schools
Sponsoring Agency	Department of Biotechnology, Govt. Of India
Coordinator	Dr Samrat Adhikari Coordinator Bioinformatics Centre, St. Edmund's College
Nature of activity	Installation of computers with database facility
Schools	Mawprem Modern High School Gorkha Pathsala School St. Edmund's School

2014

Outreach activities	To Popularize Bioscience asacareer
Collaborator	Department of Botany, St. Edmund's College, Shillong
Sponsoring Agency	Department of Biotechnology, Govt. Of India
Coordinator	Dr SanjibanGoswami Associate Professor Department of Botany, St. Edmund's College
Dates	21stAugust,2014
Resource person	Dr SanjibanGoswami, Departmentof Botany, St. Edmund'sCollege Dr VikiManners,DepartmentofBotany,St. Edmund'sCollege Prof DebulmanSyiemiong, Departmentof Botany, St. Edmund'sCollege
Schools	OasisEnglish Secondary School, Nongpoh, RiBhoiDistrict,Meghalaya
Location	Rural
No of Participants	80

Outreach activities	To Popularize Bioscience asacareer
Collaborator	Department of Botany, St. Edmund's College, Shillong
Sponsoring Agency	Department of Biotechnology, Govt. Of India
Coordinator	Dr SanjibanGoswami Associate Professor Department of Botany, St. Edmund's College
Dates	21stAugust,2014
Resource person	Dr Sanjiban Goswami, Department of Botany, St. Edmund'sCollege Dr Viki Manners,Department of Botany, St. Edmund'sCollege Prof Debulman Syiemiong, Department of Botany, St. Edmund'sCollege

Schools	Alpha English Secondary School, Nongpoh, RiBhoiDistrict,Meghalaya
Location	Rural
	105
Outreach activities	To Popularize Bioscience asacareer
Collaborator	Department of Botany, St. Edmund's College, Shillong
Sponsoring Agency	Department of Biotechnology, Govt. Of India
Coordinator	Dr Sanjiban Goswami
	Associate Professor
	Department of Botany, St. Edmund's College
Dates	21stAugust,2014
Resource person	Dr Sanjiban Goswami, Department of Botany, St. Edmund's College
	Dr Viki Manners,Department of Botany, St. Edmund's College
	Prof Debulman Syiemiong, Department of Botany, St. Edmund's College
Schools	Nongkwar Secondary School, Mawlai, Shillong, East Khasi Hills, Meghalaya
Location	Rural
	78

Programmes Organized By the Department

[2010-2015]

Research Activities

RESEARCH ACTIVITIES

Topic: Molecular Identification of cyanobacterial species isolated from various coal mining areas of Jaintia Hills, Meghalaya using 16S rRNA profiling.

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction: Cyanobacteria are the simplest and the oldest prokaryotic organisms to have evolved on earth. They can be used as experimental and model strains for studying the diversification of prokaryotic cells and the physiological processes occurring within the cell. They are classified under gram negative bacterial phyla and occupy the diverse range of habitats. They show a wide range of morphological diversity ranging from unicellular to colonial and filamentous. Cyanobacteria are photosynthetic microorganisms by which they are capable to grow photo-autotrophically in a manner similar to those of eukaryotic algae and plants. They also have the unique ability to fix atmospheric nitrogen. Cyanobacterial ecology can be best understood by matching isolated strains and their counterparts in nature. However, many species of cyanobacteria in culture produce anomalous morphologies that differ from those that are characteristic in nature. Thus, classifications based on phenotypic characteristics do not exactly represent natural grouping when analyzed at the genetic level. To study the taxonomy of cyanobacteria, the base composition is an important genetic character. At all taxonomic levels above species, the sequence analysis of genes encoding small-subunit ribosomal RNA (16S rRNA) is currently the most promising approach for the phylogenetic classification of cyanobacteria. The comparative analysis of 16S ribosomal RNA sequence has been used for the identification and construction of cyanobacterial phylogeny. This work has yielded the submission of 40 nucleotide sequences to NCBI in the GenBank database under accession numbers KR709104-KR709143.

(This work has been done in full collaboration with the BIF Centre, St. Edmund's College)

Topic: A study of SOD activity in cyanobacterial cells in response to dye stress.

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction: Superoxide dismutase (SOD, EC 1.15.1.1) belong to a large and ubiquitous family of metalloenzymes that catalyzes the dismutation of a highly toxic and reactive superoxide radical (O_2^-), to hydrogen peroxide (H_2O_2) and oxygen (O_2) molecule through a cyclic oxidation-reduction mechanism. It is an antioxidant enzyme that is found in virtually all O_2 respiring organisms and acts as the first line of defense to alleviate oxidative stress (McCord and Fridovich, 1969). Generally, SODs have been classified into four main canonical forms depending on the catalytic metals they use. They are FeSOD, MnSOD, Cu/ZnSOD and NiSOD. Besides these four, a cambialistic Fe/MnSOD also exists (Meier et al, Amano et al ,Sugio et al, Hiraoka et al).

Studies in unicellular organisms have revealed a complex role of superoxide dismutase (SOD) in aerobic cell metabolism. A compromise in SOD activity can have broad ramifications on cell function, ranging from defects in amino acid metabolism to increases in oxidative damage to DNA. From the studies on organisms genetically defective for SOD, it appears that at least three basic functions can be assigned to this ubiquitous metal-binding enzyme: (1) SODs protect biomolecules against the damage from O2−; (2) Oxidation by O2− of iron-sulfur clusters becomes problematic in cells lacking SOD; and (3) damage to these clusters can inactivate key enzymes involved in amino acid and sugar metabolism and also lead to a mobilization of free iron and an increase in iron-related toxicity. It is noteworthy that from studies in

yeast, all the cellular damage resulting from loss of SOD can be reversed by alterations in the homeostasis of the transition metals copper and manganese. Currently, it remains unclear as to whether these metals are functionally substituting for SOD at the level of $O2^{-}$ scavenging, metal buffering, or maintaining the reduced environment of the cell.

Topic: Development of suitable bioremediation technique for detoxification of dyes.

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction: Worldwide, dye wastewater has become one of the main sources of severe pollution problems due to the greater demand for textile products and the proportional increase in production and applications of synthetic dyes. It is estimated that over 10,000 different dyes and pigments are used industrially and over 0.7 million tons of synthetic dyes are produced annually worldwide. In the textile industry, up to 200,000 tons of these dyes are lost to effluents every year during dyeing and finishing operations as a result of inefficiency in the dyeing process. Unfortunately, most of these dyes escape conventional wastewater treatment processes and persist in the environment as a result of their high stability against light, temperature, water, detergents, chemicals, and microbial attack. Notwithstanding, industries are required to eliminate color from their effluents containing dyes, before disposal into water bodies, due to environmental legislation.

Among the many different groups of synthetic dyes, triarylmethane (also called triphenylmethane) dyes are one of the most commonly used in the textile industries. Their usage constitutes about 30%–40% of the total consumption of dyes, and they are applied extensively on nylon, cotton, wool, and silk. They are also used for coloring food, oils, fats, waxes, varnishes, cosmetics, paper, leather, and plastics as well as for staining specimens in bacteriological and histopathological processes. With dye tinctorial value usually high, less than 1 ppm of dye in water produces obvious coloration, and the extensive use of these dyes have resulted in highly colored effluents that may affect gas solubility in water bodies and significantly decrease photosynthetic activity in aquatic life because of reduced light penetration. In addition to their visual effect, triarylmethane dyes are generally believed to be toxic and carcinogenic or prepared from other known carcinogens. Several reports have also shown that textile dyes and effluents have toxic effects on plants which perform important ecological functions such as providing a habitat for wildlife, protecting soil from erosion, and providing the organic matter that is so significant to soil fertility. Consequently, it is pertinent to develop efficient treatment strategies for removal of color from dye wastewater.

Various physicochemical methods, such as adsorption on activated carbon, electrocoagulation, flocculation, froth flotation, ion exchange, membrane filtration, ozonation, and reverse osmosis have been used for decolorization of dyes in wastewater. However, these methods are less efficient, costly, of limited applicability, and produce wastes, which are difficult to dispose of. On the contrary, biological processes provide a low-cost, environmentally benign, and efficient alternative for the treatment of dye wastewater.

In this study, cyanobacterial strains, capable of decolorizing triarylmethane dyes were isolated from textile industrial wastewater using the selective enrichment method. The effects of various parameters (such as culture agitation, initial dye concentration, pH, and temperature) on dye decolorization by the bacterial strain were investigated and the toxicity of the products formed after decolorization was determined using plant assay.

Topic: Genetic diversity of azoreductase gene using molecular phylogeny tools in cyanobacterial species.

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction:Azo dyes are organic colorants characterized by the presence of one or more azo groups. They are used widely in textile, printing, cosmetics, pharmaceutical, food, and other industries because of their ease of synthesis and chemical stability. In addition, azo compounds are also the most commonly used drugs in the treatment of inflammatory bowel disease. However, the release of these compounds into the environment is undesirable, not only because of their color, but also because many azo compounds and their breakdown products are toxic and/or mutagenic. Biological treatment of azo dyes by the use of bacteria has been studied widely recently.Enzymes that catalyze the reduction of azo groups are termed azoreductases. Utilizing NADH and/or NADPH as an electron donor, azoreductase can decolorize azo dyes into corresponding aromatic amines by reductive cleavage of azo bonds. The decolorization was regarded as the rate-limiting step, which was followed by the aerobic mineralization of the colorless aromatic amines. Initially, acyl carrier protein phos phodiesterase of E. coli, encoded by acpD, was partially purified, and its N-terminal sequence was obtained. Further study demonstrated that AcpD is a flavin mononucleotide (FMN)-dependent NADH-azoreductase having no acyl carrier protein phosphodiesterase activity. It catalyzes the reductive cleavage of the azo bond in methyl red via a ping-pong mechanism. The acpD gene was thus redesignated azoR. In this study, the azoR gene from various isolates were studied and compared at the molecular level. The sequences of azoR genes are to be submitted to NCBI after further BLAST results analysis. Phylogenetic tree construction of the sequences will be done with different statistical parameters.

Topic: Cloning and expression of azoR gene from cyanobacteria and its proteomics study.

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction:Azo dyes are regarded as pollutants because they are not readily reduced under aerobic conditions. Bacillus sp. OY1-2 transforms azo dyes into colorless compounds, and this reduction is mediated by a reductase activity for the azo group in the presence of NADPH. A 1.2-kbp EcoRI fragment containing the gene that encodes azoreductase was cloned by screening the genomic library of Bacillussp. OY1-2 with digoxigenin-labeled probe designed from the N-terminal amino acid sequence of the purified enzyme. An open reading frame encoding the azoreductase, consisting of 178 amino acids, was predicted from the nucleotide sequence. Escherichia coli-expressing recombinant azoreductase gave a ten times greater reducing activity toward azo dyes than the originalBacillus sp. OY1-2This is the first report describing the sequencing and characterization of a gene encoding the azo dye-reducing enzyme, azoreductase, from aerobic bacteria and its expression in E. coli.Synthetic azo dyes are extensively used in the textile, food, and cosmetics industries.More than 7×10^5 tons of these dyes are produced annually worldwide. Most azo dyes are released into the environment as waste from the textile, food, cosmetic, and dyestuff manufacturing industries. They are frequently found in a chemically unchanged form even after waste-water treatment, so they are regarded as pollutants. The treatment system of colored waste-water, based on physical or chemical procedures, is effective but suffers from such shortcomings as high cost, formation of hazardous byproducts, and intensive energy requirements. In

contrast, biological degradation of these dyes does not have similar problems. To establish biological waste-water treatment of azo dye, it is essential to discover the microorganisms that carry the azo dye-degrading enzymes.To accomplish this; we have isolated cyanobacterial strains that reduce azo dyes from soil and sewage samples. These strains were identified as Nostoc sp., Anabaena sp. The enzymes produced by these cyanobacteria catalyze the reduction of Methyl Red and produce dimethyl p-phenylenediamine and o-aminobenzoic acid. Molecular cloning of the gene encoding this enzyme is essential for further characterization as well as for technological applications of this enzyme. In this report, we show the molecular cloning and characterization of the gene encoding the azoreductase from cyanobacterial species and present the characteristics of recombinant azoreductase expressed in E. coli.

Topic: A study on the molecular marker profiling of a variety of fresh water cyanobacteria isolated from East Khasi Hills District of Meghalaya.

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction: Cyanobacteria are a morphologically diverse group of bacteria ranging from unicellular, colonial and filamentous forms. The latest taxonomic reclassification of cyanobacteria separatedthemin six orders:Gloeobacterales,Chroococcales,Pleurocap-sales, Oscillatoriales, Nostocales and Stigonematales.

Traditionally, the classification of cyanobacteria has been based on morphological characters such as trichome width, cell size, division planes, shape and arrangement, pigmentation and the presence of characters such as gas vacuoles and a sheath. Beyond the considerable expertise required to identify species by such characters, the subjective judgment by operators can lead to errors, resulting in incorrect assignment of isolates. Reports have have estimated that more than 50% of the strains in culture collections are misidentified. Moreover, some diagnostician features, such as gas vacuoles or akinetes, can present variations with different environmental or growth conditions and even be lost during cultivation. Such limitations of phenotypic characters highlighted the requirement of more reliable methods and promoted molecular approaches in cyanobacterial taxonomy, including DNA base composition, DNA and RNA hybridizations, genes sequencing, and PCR fingerprinting. As axenic cultures are difficult to obtain, cyanobacterial specific methods not requiring them revealed to be of utmost importance.

Repetitive sequences constitute an important part of the prokaryotic genome. Regardless of their unknown function, and how these are maintained and dispersed, their presence, widespread distribution and high conservation make them methodologically important for DNA fingerprinting and allow their use as an alternative for the identification of species or strains and diversity studies. In the particular case of cyanobacteria, a family of repetitive sequences, the short tandemly repetitive repeats (STRR) sequences, has been described.Theseheptanucleotide sequences have been identified in several cyanobacterial genera and species, so far mostly in heterocystouscyanobacteria.Furthermore, a 37bp long tandemly repetitive repeats (LTRR) sequence hasn also been identified in some cyanobacterial species. Analysis of STRRs and LTRRs has been described as powerful tools for taxonomic studies. Moreover, the specificity of these sequences has made the STRR useful even for non-axenic cyanobacterial cultures. A universal marker for DNA fingerprinting is the oligonucleotide csM13. It has been already tested in a small number of cyanobacteria to demonstrated ability to differentiate strains at intra-specific level. On the other hand, techniques based on

enterobacterialrepetitiveintergenic consensus (ERIC) have also been used for identification and differentiation purposes in some cyanobacteria.

The restriction fragment length polymorphisms (RFLPs) of particular PCR products can provide signature profiles specific to the genus, species, or even strains. Genetic characterization of cyanobacterial strains has been undertaken using restriction fragment length polymorphisms of the 16S rRNA gene (16S PCR-RFLPs) and of the intergenic transcribed spacer region (ITS-ARDRA). Furthermore, the amplification of the 16S-23S rRNA internal transcribed spacer (ITS) that have shown to be polymorphic in length in cyanobacteria, can also be used has an identification tool.

A sequential polyphasic approach was used in this study. The isolates were identifiedby observation of their morphological features. A hierarchical analysis with STRR and LTRRPCR fingerprinting patterns was performed and representatives of the clusters obtained wereidentified by a phylogenetic analysis carried out using two genes, one coding for the smallsubunitrDNA (16S rRNA gene) and the other for the DNA-dependent RNA polymerase subunit(rpoC1).Subsequentcharacterizationof all isolatesby M13andERICfingerprintsallowedthe differentiationof strains, revealing also thetraceabilitypotentialoftheselastmethodsforroutinefreshwatersmonitoring.Furthermore,adiagnostickey was constructedfortheidentificationofcyanobacterialspecies, basedontheuseof16SPCR-RFLPs,ITS dimensionandITS-ARDRA.

Topic: A study on the bioactive compounds from cyanobacteria isolated from various habitats of Meghalaya

Project Investigator: Mr Nangkyntiew Jungai and Dr Samrat Adhikari

Introduction: Cyanobacteria are a very old group of organisms and represent relics of the oldest photoautotrophicvegetation in the world that occur in freshwater, marineand terrestrial habitats.Cyanobacteria, the blue green algae are an assemblage of gram negative eubacteria widely distributed throughout the world. Cyanobacteria are rich sources of structurally novel and biologically active metabolites. Recent studies indicate the presence ofsome bioactive compounds in the freshwater blue green algae which are shown to exhibit anticancer, antimicrobial, antifungal or anti-inflammatory and other pharmacological activities. In general isolation of bioactive compounds from cyanobacteria is done with two objectives. One is to discover new compounds for pharmaceutical, agricultural or biological application. The other is for the better understanding of the interactions of individual organisms within their natural communities. For each of these purposes, there is a need to screen new organisms. Biologically active substances were proved to be extracted from microalgae. Various strains of cyanobacteria are known to produce intracellular and extracellular metabolites with diverse biological activities such as antialgal, antibacterial, antifungal and antiviral activity. Temperature of incubation, pH of the culture medium, incubation period, medium constituents and light intensity are the important factors influencing the production of antimicrobial agents.Screening of cyanobacteria for antibiotics and other pharmacologically active compounds, has received ever-increasing interest as a potential source for newdrugs. Cyanobacteria from local habitats seem to be a source of potential new active substances that could contribute to reduction of the number of bacteria, fungi, viruses and other microorganisms.The aim of the present work was to study the antimicrobial activity of cell extracts of various cyanobacteria in vitro against some selected Grampositive, Gram-negative bacteria and pathogenic fungi.

Topic: CIoning and expression of DNT from Bordetellabronchiseptica

Project Investigator: Mr Nangkyntiew Jungai and Dr SamratAdhikari

Introduction:The genus Bordetella is composed of several closely related species, which are all respiratory pathogens (38). Bordetella pertussis and B. parapertussis are human pathogens which cause whooping cough and pertussis-like disease, respectively. B. avium causes rhinotracheitis of birds, and B. bronchiseptica is a pathogen of several animal species, being particularly associated with atrophic rhinitis in pigs and kennel cough in dogs.

Bordetellabronchiseptica is one of the etiologic agents causing atrophic rhinitis and pneumonia in swine. It produces several purported virulence factors, including the dermonecrotic toxin (DNT), which has been implicated in the turbinate atrophy seen in cases of atrophic rhinitis. The purpose of these experiments was to clarify the role of this toxin in respiratory disease by comparing the pathogenicity in swine of two isogenic mutants to their virulent DNT^+ parent strains. Two separate experiments were performed, one with each of the mutant-parent pairs. One-week-old cesarean-derived, colostrum-deprived pigs were inoculated intranasally with the parent strain, the dnt mutant strain, or phosphate-buffered saline. Weekly nasal washes were performed to monitor colonization of the nasal cavity, and the pigs were euthanized 4 weeks after inoculation to determine colonization of tissues and to examine the respiratory tract for pathology. There was evidence that colonization of the upper respiratory tract, but not the lower respiratory tract, was slightly greater for the parent strains than for the dnt mutants. Moderate turbinate atrophy and bronchopneumonia were found in most pigs given the parent strains, while there was no turbinate atrophy or pneumonia in pigs challenged with the dnt mutant strains. Therefore, production of DNT by B. bronchiseptica is necessary to produce the lesions of turbinate atrophy and bronchopneumonia in pigs infected with this organism.Because of the difficulties with purification and the absence of cloned, recombinant DNT (rDNT), progress in determining the molecular mode of action of the toxin or its role in disease has been relatively slow. It was, however, reported that DNT inhibited elevation of alkaline phosphatase activity and reduced the accumulation of type 1 collagen in an osteoblast-like cell line, suggesting that the toxin might impair the ability of cells to differentiate. In addition, DNT stimulated DNA and protein synthesis in these cells, leading to polynucleation, and induced the assembly of actin stress fibers and focal adhesions. DNT is believed to cause these effects by directly modifying the small GTP-binding protein RhoA.The aim of this work was to clone and express the DNT gene from B. bronchiseptica in E. coli.

Title:Homology modeling of functional proteins of Smilax aspera plant and its docking study with p53 protein.

Project Investigator: Mr BikashThakuria and Dr Samrat Adhikari

Secondary metabolites from Smilax aspera plant, also known as Sarsaparilla possesses vital proteins which are capable of treating various ailments and are of great medicinal value. Interestingly this plant has been less exploited for medicinal properties and hence the present study is based on the in silico approach to characterize the important functional proteins and its role in inhibiting the proliferation of the p53 protein during cancer cells proliferation. Twenty two proteins important functional proteins from this plant have been reported but only five proteins were selected due to the availability of their complete sequences. These five sequences were further explored for the putative domain content, homology modeling, computation of the physiochemical properties and finally docking analysis with the p53 protein using PATCHDOCK server. The results suggest that among the five proteins, Ribulose 1, 5-bisphosphate carboxylase oxygenase with the template of 1WDD

has the highest docking score followed by the other proteins from this plant. The analysis further reveals that these structurally important functional proteins may probably be engineered for developing suitable agents for anti-cancer therapy.

Title: An in silico study on the hydrogen peroxide binding of homology modeledcyanobacterial catalase-peroxidase enzyme from Cyanobacterium aponinum and Synechococcus sp. NKBG042902.

Project Investigator: Mr BikashThakuria and Dr SamratAdhikari

Hydrogen peroxide is one of the frequently occurring reactive oxygen species which occurs as a result of aerobic metabolism. Its stepwise degradation by the catalase-peroxidase enzyme is therefore of crucial importance. Homology modeling of catalase and peroxidase with the Synechococcus sp. PCC 7942 catalase-peroxidase using Swiss-Model server was attempted and the protein models were validated using ProCheck through Ramachandran Plot analysis. In order to study the binding activities of H_2O_2 in each of the catalase and peroxidase models, docking analysis was carried out using the SwissDock server. Two docking models each corresponding to a catalase and peroxidase with minimal energy scores were obtained. This present study will be helpful in understanding the binding interactions of hydrogen peroxide in cyanobacterial processes.

Title: Catalytic site prediction of Azoreductase enzyme of E. coli with potentially important industrial dyes using molecular docking tools.

Project Investigator: Mr BikashThakuria and Dr Samrat Adhikari

Azoreductase is an FMN-dependent and NADH dependent enzyme of Escherichia coli. This enzyme is responsible for the degradation of azo dyes. In this study, we retrieved the crystal structure of the enzyme from PDB and 18 azo dyes from NCBI PubChem compound. These azo dyes were then docked with the FMN-dependent NADH-azoreductase enzyme to analyze the binding affinity of the azo dyes with the enzyme and predict the catalytic sites. In this approach, we identify the catalytic residues of FMN-dependent and NADH dependent enzyme of Escherichia coli which were then evaluated in terms of properties including function, conservation, hydrogen bonding, B-factor and flexibility. The results indicate that Phe-172, Glu-174, Lys-145, Asp-146 and Lys-169 play an important role as catalytic site residues in the enzyme. It is hoped that this information will provide a better understanding of enzyme mechanisms and also used to improve the designing strategies for dyes detoxification. In this study, the approach emphasizes on a better understanding of the biodegradation of some of the commercially important azodyes mediated by azoreductase from E. coli. Furthermore, the catalytic site residues information is essential for understanding and altering the substrate specificity and for the design of a harmless azodye.

Title: Functionally and catalytic active sites prediction and docking analysis of azoreductase enzyme in Pseudomonas putida with a variety of commercially available azo dyes.

Project Investigator: Mr BikashThakuria and Dr Samrat Adhikari

The initial critical step of reduction of azo bond during the metabolism of azo dyes is catalyzed by a group of NADH and FAD dependent enzyme called azoreductases. Although several azoreductases have been identified from microorganisms and partially characterized, very little is known about the structural basis of the substrate specificity and the nature of catalysis. Azoreductase enzyme of Pseudomonas putida has a wider broad spectrum of substrate specificity and capable of degrading a wide variety of azo dyes. In the present study, the crystal structure of the enzyme from PDB and 10 azo dyes from NCBI PubChem compound were retrieved and their interactions were studied. These azo dyes were then docked with the FMN-dependent NADH-azoreductase enzyme to analyze the binding affinity of the azo dyes with the enzyme and predict the catalytic sites. Consequently, the catalytic residues of FMN dependent and NADH dependent enzyme were then analyzed in terms of properties including function, hydrogen bonding and flexibility. The results suggest that Ala-114, Phe-172 and Glu-174 play a predominant role as catalytic site residues in the enzyme. Furthermore, the approach emphasis on predicting the active sites of this enzyme where substrates can bind in order to give a better understanding of the biodegradation of some of the commercially important azodyes mediated by azoreductase. These results will pave way for further increase in azoreductase activity and for better understanding of the dye degradation pathway.

Title: Homology modeling, docking studies and functional analysis of various azoreductase accessory interacting proteins of Nostoc sp.PCC7120

Project Investigator: Mr BikashThakuria and Dr Samrat Adhikari

Azo dyes have become a threat to public health because of its toxicity and carcinogenicity. Azoreductase enzyme plays a pivotal role in the degradation of azodyes released by industrial effluents and other resources. The degradation pathway has to be studied in detail for increasing the activity of azoreductase and for better degradation of azo dyes. But the data available on cyanobacterial azoreductase enzyme and its degradation pathway are still very less. Therefore the present work explored the azoreductase pathway of the cyanobacterium Nostoc sp. PCC7120 for better understanding of the degradation pathway and the other accessory interacting proteins involved. The accessory interacting proteins of azoreductase from cyanobacterium Nostoc sp. PCC7120 were obtained from STRING database. The proteins do not have a comprehensive three dimensional structure and are hypothetical. The secondary structure and functional analysis indicated that the proteins are all soluble proteins, without disulphide bonds and have alpha helices only. The structural prediction and docking study showed that alr2106, alr1063 and alr2326 have best docking result which tally with the STRING database confidence score and thus these proteins could possibly enhance the azoreductase activity and better dye degradation. These results will pave way for further increase in azoreductase activity and for better understanding of the dye degradation pathway.

Title: Homology modelling and functional sites prediction of azoreductase enzyme from the cyanobacterium Nostoc sp. PCC7120.

Project Investigator: Mr BikashThakuria and Dr Samrat Adhikari

Industrial dyes such as azodyes are potential environmental pollutants causing deleterious health hazards complications. These dyes are potentially degraded by azoreductase enzyme which is widely distributed in bacteria and also cyanobacteria. The azoreductase enzymes from cyanobacteria have not been explored in detail. Hence this enzyme from Nostoc sp. PCC 7120 has been addressed in detail in the present study considering to explore the physico-chemical properties, evolutionary relationships, functional sites and structural properties using various bioinformatics tools. Four conserved regions were obtained from the multiple sequence analysis. The multiple sequence alignment showed conserved regions at different stretches from 1–11, 40–57, 82–120 and 161–177 amino acid residues. These regions could be used for designing degenerate primers or probes for PCR-based amplification or hybridization-based detection of azoreductase sequences from different source organisms. Domain analysis and functional site prediction showed the presence of functional sites and domain such as flavodoxin like fold responsible for enzyme activity. 3D model was constructed and the best model was selected and validated. Superimposition of the final structure and the template showed variations in certain regions which might be involved in the accommodation of various dyes. Our results may be helpful for further investigations like docking studies as well as in vivo and in vitro conditions although these predictions still need to be studied.

TITLE: A study on the genetic diversity of Myrica species in Meghalaya.

Project Investigator: Prof B. Manners

Myrica sp has been a very important plant for the traditional practitioner in context to Meghalaya where it is used as a local medicine for treating many diseases. Moreover the the genetic improvement of any organism depends on the existence, nature and extent of the genetic variability available for manipulation. The partitioning of variability between and within populations will influence the breeding strategy to be adopted. So far there have been no reports on the genetic variability within the gene pools of M. esculenta and between M. esculenta and M. nagi to show genetic variability among plants of a population or between species. Henceforth this project emphasises to evaluate the genetic pool parameters of the plants which are diversely distributed in this region.

Title : Decolourization and adsorption of monoazo dye Solochrome Black by cyanobacteria

Project Investigator: Dr Gopesh Paul

Azodyes, used in textile industries are toxic to most organisms. They are degraded through microbial activity after discharge as industrial effluent. Decolourization and biosorption of azodyes by cyanobacteria is becoming an attractive option for the biological treatment of textile effluents. Very few studies have focused attention on the use of cyanobacteria for treatment of toxic effluents contaminated with dyes (Omar 2008). Solochrome black (SB) is one of the dyes used commonly in textile industries. To our knowledge, microbial degradation of this monoazo dye has not been studied. In order to evaluate the potential of cyanobacteria for bioremediation of solochrome black dye from industrial effluents, the present study is carried to test four cyanobacterial strains namely Nostoccalcicola, Anabaena cycadae, Anabaena variabilis and Nostocmuscorum for their capacity to decolorize Solochrome Black (SB) in dye amended cyanobacterial culture medium.

Title: Stimulatory effects of azo dyes - Congo red and Solochrome black on antioxidant enzymes of cyanobacteria.

Project Investigator: Dr Gopesh Paul

Toxicity of dyes creates various physiological stresses on cyanobacterial cells leading to generation of free radicals which in turn induces the production of reactive oxygen species (ROS). Under normal circumstances, the concentration of oxygen radicals remains low because of the activity of antioxidant enzymes such as superoxide dismutase (SOD) that provide a defense system for survival of cyanobacteria. Malondialdehyde (MDA) is a cytotoxic product of lipid peroxidation and an indicator of free radical production and consequent tissue damage. Cyanobacterial cultures treated with various concentrations of dyes under stress show considerable increase in their antioxidant enzymes.

Title: A broad prospective role of cyanobacteria in biodiesel production.

Project Investigator: Dr Gopesh Paul

Algae (cyanobacteria) may prove to be an economical choice for biodiesel production because of its availability, low cost, easy to cultivate and which reduces carbon dioxide pollution in the environment. Present research work may also lead to an understanding on the influence of cultural conditions on biodiesel production; the alga can beexploited for outdoor cultivation.

Extra Courses Conducted By the Department

[2010-2015]

Student Research Projects

LIST OF UG STUDENT PROJECTS

2010

Project Title	Toxicity of Ruthenium to cyanobacterium Anabaena cycadae"
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Toxicity of Gadolinium to cyanobacterium Anabaena cycadae
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Bioremediationof dyes usingcyanobacteria
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Microbiologyqualityofmilkandprevalenceof microbes in cowsheds
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Isolation of Algae from drains in Shillong
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A symbiotic germination of orchids for their conservation
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Toxicity of salt to cyanobacterium Nostoc muscorum
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Effect of dyes in diazotrophic cyanobacteria
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Bioremediation of dyes using marine cyanobacterial strain
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Web based analysis in BLAST, proteinmodeling and phylogenetic analysis
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Isolation of microorganism form dairy productsand their characterization
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	A symbiotic germination of rare andendangered species of orchids
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Isolation and characterization of probiotic microorganism from dairy products
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Monoclonal antibodies & its production
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

2011

Project Title	Toxicity of dyes to variety of marinecyanobacteria
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Homology modeling of various enzymesinvolved in bioremediation using bioinformatics
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Toxicity of salt to cyanobacteria Nostocmuscorum
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Microbiology quality of milk and prevalence ofmicrobes in cowsheds
Duration	6 months

Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Asymbiotic germination of orchids for theirconservation using plant biotechnology tools
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

2012

Project Title	Study on the effect of Zanthoxylumkhasianumon bacteria causing dental caries
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Effect of garlic extract on Alternariasolani
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Isolation and characterization of microbes isolated from Swine (pig) nasal cavity
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	An evaluation on the toxic behaviorofSolochrome Black in the marine cyanobacterium minutes (BDU20373) andPlectonematerebrans
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Isolation and characterization of microbesisolated from pig's feed
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the toxicity of diazodye "congo red" in marine cyanobacterium phormidium angustisimum (BDU11391) and its bioaccumulation
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the conserved domains andphylogenetic tree of Hemocyanin protein
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Biodegradation potential of marinecyanobacteriumLyngbyaconfervoides (BDU142001) on methylene blue
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	An evaluation on the toxic behavior ofBismarck Brown Y in the marine cyanobacterium Chroococcus minutes (BDU203730) andPlectonematerebrans (BDU92192)
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	A study of the effect of uranyl acetate on thegrowth, physiological and biochemical assays of freshwater cyanobacteria
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the effect of thallium on the growth,physiology and biochemical assays on heterocystous freshwater Cyanobacteria
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

2013

Project Title	Study of antibacterial property of extracts ofsome locally available medicinal plants and stimulation of in vitro production of the activecomponents
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	A study on the antimicrobial property andgenetic diversity of Myrica species inMeghalaya
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	Isolation and characterization of potential probiotics from locally fermented wine ofShillong
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Project Title	A study on the Antioxidant properties of the Cyanobacterium Nostoc Calcicola and Anabaena variabilis with a variety of Dyes -Malachite green, Eosin Yellow, Carmein and Erichrome Black T
Duration	6 months

Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the bioactive compounds from cyanobacteria isolated from various habitats of Meghalaya.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the molecular marker profiling of a variety of fresh water cyanobacteria isolated from East Khasi Hills District of Meghalaya
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A broad prospective role of cyanobacteria in biodiesel production
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	In silico based approach to study the interaction of commercially important dyes with azoreductase enzyme retrieved from Pseudomonas putida
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

2014

Project Title	Comparative analysis of antibacterial property of traditionally used medicinal plant of East Khasi Hills
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Antibacterial property of locally available plants
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Phylogenetic analysis of ERIC, HIP, M13 and rpo genes in a variety of freshwater cyanobacteria isolated from Jaintia Hills of Meghalaya
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Antibacterial and Phytochemical analysis of leaf extract of Zanthoxylum armatum

Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	An in silico based study on barophycin, docastatin, cryptophycin and its effect on P53 molecule causing an anti-cancer effect
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Analysis of bacterial species in rotten cured Areca catechu Linn from East Khasi Hills, Meghalaya.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the isolation of cyanobacteria from lichens and its potential role in fixing atmospheric nitrogen in rice field.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Antibacterial and Phytochemical analysis of leaf extract of Myrica esculenta.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Micropropagation of Cucurma longa
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

2015

Project Title	Phylogenetic analysis of ERIC, HIP, M13 and rpo genes in a variety of freshwater cyanobacteria isolated from Jaintia Hills of Meghalaya
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A bioinformatics approach to increase the activity of the chromophoric proteins of cyanobacteria by ligand docking study.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	A study on the role of antioxidant enzymes and proline in cyanobacteria under salt and pH

	stress
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Antibacterial and Phytochemical analysis of leaf extract of Zanthoxylum armatumga
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	The effect of benzopyrene and chrysene on P53 molecule and its relative effects
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Homology modelling, functional site location and molecular docking analysis of skin proteins with chemical ingredients commercially available in fairness cosmetic creams.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Molecular characterization of Rubredoxin protein and its role in photosynthetic system using in silico approach.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant
Project Title	Antibacterial and Phytochemical analysis of leaf extract of Myrica esculenta.
Duration	6 months
Sponsoring Agency	DBT, New Delhi Under STAR SCHEME & College Grant

Extra Courses Conducted By the Department

[2010-2015]

STAR Practicals

STAR PRACTICAL CONDUCTED BY THE DEPARTMENT

Year	2010	
UG Class	Title of the Practical	Mode of presentation
BScI	Estimation of Protein by Lowry's method.	Hands on
	ABO Bloodtyping	Hands on
	Polytenechromosomestudy	Hands on
	Estimationoflipids	Hands on
BSc II	Agarosegel electrophoresis.	Hands on
	SDS PAGE	Hands on
	Bloodsmear identificationby Giemsastain	Hands on
	Estimationof ureainblood	Hands on
BSc III	Isolation ofplasmidDNA	Hands on
	Restriction digestion ofDNA	Hands on
	Bioinformatics Practical's	Demonstration
	2011	
BScI	EstimationofProteinby Lowry'smethod.	Hands on
	ABO Bloodtyping	Hands on
	Polytenechromosomestudy	Hands on
	Estimationoflipids	Hands on
BSc II	Agarosegel electrophoresis.	Hands on
	SDS PAGE	Hands on
	Bloodsmear identificationby Giemsastain	Hands on
	Estimationof ureainblood	Hands on
BSc III	Isolation ofplasmidDNA	Hands on
	Restriction digestion ofDNA	Hands on
	Bioinformatics Practical's	Demonstration
	2012	
BScI	Estimation of Protein by Lowry's method.	Hands on
	EstimationofDNAby DPA method	Hands on
BSc II	Agarosegel electrophoresis.	Hands on
	SDS PAGE	Hands on
	Bloodsmear identificationby Giemsastain	Hands on
	Estimation of urea in blood	Hands on

BSc III	Isolation ofplasmidDNA	Hands on
	Restriction digestion ofDNA	Hands on
	Bioinformatics Practical's	Demonstration
	2013	
BScI	Analysis of lipids using chromatography techniques	Hands on
	Alpha amylase activity	Hands on
	Determination of Km & Vmax of an enzyme kinetics reactions	Hands on
BSc II	Isolation of DNA from animal tissues and its quantification	Hands on
	Oucterlony double diffusion technique	Hands on
	Immunoelectrophoresis	Hands on
BSc III	Preparationofcompetentcells	Hands on
	CloninginpBR322vector	Hands on
	Screening of recombinant colonies by IPTG method	Hands on
	2014	
BScI	Basics ofInternet	Hands on
	Basic Microscopy Technique	Hands on
BSc II	Bioinformatics for Dummies	Hands on
	Agarose GelElectrophoresis	Hands on
	Bioinformaticsandretrievalofsequences	Hands on
BSc III	PlasmidDNA Isolation&Quantification	Hands on
	Use of Graphic display tools in Bioinformatics	Hands on
	PolymeraseChainReaction	Hands on

Extra Courses Conducted By the Department

[2010-2015]

E – Lectures

E LECTURES

Year	Topic of e lectures	Delivered by	Duration
2014	Excitement in Science	Prof S.V Eswaran Distinguish Faculty & Emeritus Scientist (CSIR) St. Stephen College New Delhi	1.5 hrs
	A wandering Scientist – Do Science & see the world	Prof S.V Eswaran Distinguish Faculty & Emeritus Scientist (CSIR) St. Stephen College New Delhi	1.5 hrs
	Plant Biotechnology – tools & techniques	Prof P. J Handique Department of Biotechnology Gauhati University, Assam	1.5 hrs
	Gene & Environment	Prof B. D Banerjee Department of Biochemistry University College of Medical Sciences & GTB Hospital	2 hrs
	Basic of R package	DrParathiSarathi Das Research Fellow Bioinformatics Centre Vidyasagar University, West Bengal India	2.5 hrs
2015	Accessing scholarly web resources	DrLalmachhuana Documentation Officer NEHU Central Library, Shillong	1.5 hrs
	Sequence submission to NCBI databases	Mr Nangkyntiew Jungai Senior Research Fellow Biotech Hub St. Edmund's College, Shillong	1 hrs
	Tutorial for using Docking analysis	Mr BikashThakuria Research Associate Bioinformatics Centre St. Edmund's College, Shillong	1.5 hrs

Extra Courses Conducted By the Department

[2010-2015]

List of External Students Trained

LIST OF EXTERNAL STUDENTS WHIM TRAINED BY THE DEPARTMENT

Sl. No	Name	Degree	University	Date of Joining	Date of Leaving	Duration	Research Topic	Funding Agency	Present Status
1	Mr BaniateilangDiengngan	M.Tech (Bioinformatics)	JNU, New Delhi	1-11-2014	31-12-2014	2 months	Molecular dynamics simulation of azoreductase enzyme of Nostoc PCC 7120 with a variety of toxic dyes	DBT	DSP, Meghalaya Police
2	Mr PhiralangDiengdoh	MSc (Bioinformatics)	Kuvempu University, Karnataka	1-11-2014	31-3-2016	8 months	In silico modelling of SOD enzymes from Cyanobacteria	DBT	
3	Ms AbhilasaMehra	MTech (Bioinformatics)	Banasthali University, Rajasthan	1-7-2014	31-12-2014	6 months	In Silico based study of Metallothien protein in cyanobacteria with respect to their active sites	DBT	Pursuing PHD
4	Ms Sangrika Mishra	MTech (Bioinformatics)	Banasthali University, Rajasthan	1-7-2014	31-12-2014	6 months	In Silico based study on the various SOD enzymes in cyanobacteria under heavy metal stress	DBT	Pursuing PHD
5	Ms Dolly Sewa	MSc Biotechnology	NEHU, Shillong	1-01-2013	30-06-2013	6 months	Fingerprinting profile of Cyanobacterial strains.	DBT	Pursuing PhD
6	Mr Jahnu Saikia	MSc Industrial Microbiology	LPU, Punjab	1-01-2013	31-03-2013	3 months	Kinetic modelling of dye absorption in cyanobacteria with response to dyes.	DBT	Pursuing PhD in IIT, Guwahati
7	Ms SelinaNongkhlaw	MSc Biotechnology	Bangalore University	1-04-2013	30-06-2013	3 months	Fingerprinting profile of Cyanobacterial strains.	DBT	School Teacher
8	Mr BikashThakuria	MSc Biotechnology	Bangalore University	1-01-2013	30-06-2013	6 months	Functional and catalytic sites of prediction of the proteins present in Smilax aspera plant and its activity as cancer inhibitor.	DBT	Research Associate, BIF Centre, SEC
9	Mr PynshngainlangSawian	MSc Biotechnology	SHIATS, Allahabad	1-01-2013	30-06-2013	6 months	Isolation and characterization of microbes from locally available	DBT	SRF, Biotech Hub, St.

							wine in Shillong		Mary's College.
10	Ms PhilemPriyaDarshini Devi	MSc Biotechnology PGDCB, Bangalore	NEHU Shillong	1-05-2011	30-09-2013	28 Months	Dyes Bioremediation using bioinformatics tools.	DBT	Pursuing PhD, Ohio State University, New Zealand
11	Mr Harold Pyngrope	MSc Botany	NEHU, Shillong	1-06-2011	31-12-2011	6 Months	In Silico based study on the Factor VIII & IX on Haemophila	DBT	Pursuing PhD in NUS, Singapore
12	Ms IbansuklangKharmujai	MSc Biotechnology	NEHU, Shillong	1-06-2011	31-12-2011	6 Months	Toxicity of ruthenium on cyanobacteria and its effective bioremediation activities.	'DBT	School Teacher
13	Mr SamudraSutradhar	MSc Biotechnology	NEHU, Shillong	1-08-2011	31-01-2012	6 Months	Catalytic site prediction of azoreductase enzyme.	DBT	System Analyst, Invitrogen
14	Ms MandakiniKsoo	MSc Biochemistry	NEHU, Shillong	1-11-2011	30-04-2012	6 months	Fingerprinting profile of Cyanobacteria strains.	DBT	Pursuing PhD, NEHU, Shillong

SWOT Analysis

[2010-2015]

Strength

Weakness

Opportunity

Threats

SWOT Analysis

STRENGTH

- ✓ Excellent infrastructure like cyanobacteria repository facility, Plant Tissue culture laboratory, Institutional Biotech Hub, Bioinformatics laboratory, workstation facility.
- ✓ Better Teacher to student ratio
- ✓ Student to equipment ratio (3: 1)
- ✓ Ample availability of chemicals and glassware's to students for their practical's and project work
- ✓ Free internet facility to all students
- ✓ E- books repository facility to all students
- ✓ Educational trips to industries for exposure
- ✓ Mentoring of students
- ✓ Team work among the faculty.
- ✓ Cleaning drive by students & staff
- ✓ Availability of SOP for practical's sessions.
- ✓ ICT enabled classrooms
- ✓ Use of interactive board for effective teaching learning
- ✓ Drinking water facility
- ✓ Parents teacher meeting
- ✓ Feedback of students every year
- ✓ Department library facility
- ✓ Research facility for UG students and also motivation for publishing papers
- ✓ Summer training for students in reputed laboratories

WEAKNESS

- ✓ Non availability of high end instruments for research
- ✓ Dropout rate of students for higher studies
- ✓ Less no of sanctioned post

OPPORTUNITY

- ✓ Good funding from governmental agencies
- ✓ Unlimited internet
- ✓ Digitalized library
- ✓ Guest lectures
- ✓ Seminar for students
- ✓ Group discussions

THREATS

- ✓ None as such