



**DEPARTMENT OF
DBT-ICT
CENTRE FOR
ENERGY
BIOSCIENCES**

ABOUT THE DEPARTMENT



PROFESSOR ARVIND MALLINATH LALI

B. Chem, M. Chem, Ph.D Tech.(Chem. Eng.)

Professor (Chemical Engineering)

Head, DBT-ICT-Centre for Energy Biosciences

ABOUT US:

The DBT-ICT Centre for Energy Biosciences (DBT-ICT-CEB) is a unique place that integrates basic and translational science capabilities for bioprocess development and scale up. Funded by The Department of Biotechnology, Ministry of Science and Technology, India, the Centre was established and formally

inaugurated in May 2009. Established at a total cumulative cost equivalent to more than USD 15 million, the Centre is a part of the Institute of Chemical Technology (ICT) at Matunga, Mumbai, which is a deemed University under Section 3 of UGC Act 1956. The Centre was set up as a result of vision and efforts of Dr. M. K. Bhan, Secretary DBT and Dr. Renu Swarup, Advisor, DBT, and functions under the leadership of Dr. G. D. Yadav, Vice Chancellor, ICT. The projects and technical programs at the Centre are coordinated by

Prof. Arvind Lali. The Centre is focused primarily at developing biotechnologies for deriving biofuels and other products from renewable resources for reducing India's rising dependence on petroleum and cut down greenhouse gas emissions. The Centre believes in building multidisciplinary capacity for development of integrated technology packages.

The Centre successfully completed its first phase of five years in 2013 and was awarded extension of five years by the Department of Biotechnology with the

extended mandate of upscaling and upgrading the platform technologies during the first phase.

The Centre for Energy Biosciences has attracted a large number of industrial and academic collaborations as a result of its reputation of conducting cutting edge research and delivering viable and scalable solutions to the biotech industry. The 10 Ton/day biomass pilot plant set up by Industry in the first phase has successfully validated all segments of the novel DBT-ICT Lignocellulosic Ethanol Technology in discontinuous mode. The second phase shall involve integration of all the segments at full capacity in a continuous non-stop flow mode from biomass size reduction to ethanol fermentation. Also during the first phase, the Centre has been able to create and develop cutting edge technologies in the areas of biorefinery development, separation sciences, analytical sciences, enzyme technology, fermentation technology, algal biotechnology and metabolic engineering. The Center aims to continue the work in an intensive mission mode aimed at translation of developed technologies. To achieve its objectives the Centre has entered collaborations with several Industrial Partners and several of the joint initiatives have received federal support exceeding 10 million USD.

The Centre is also part of several national and international academic collaborations (Indo-UK, Indo-Australia, Indo-German, Indo-US and several national projects) with grants amounting

to more than 10 million USD under various R&D schemes floated by Ministry of Science and Technology, Government of India. The Centre is in the process of expanding its state-of-art facility by procuring several high-end equipments and instruments that will not only lead to high level contemporary research but also an accelerated development of several more scalable technologies based on the knowledge base generated.

AIMS:

- Envisage the end goals as clearly as possible at all times
- Put all multiple disciplines to work in close co-ordination
- Combine expertise at two ends of the spectrum i.e. molecular biology and engineering sciences
- Scale up and apply evolving principles/ideas progressively alongside development in order to make sure that efforts are time efficient and not wasted and the technology zeroes to viability at a faster rate

RESEARCH GROUPS

BIOFUELS TECHNOLOGY

Objectives

- Developing second and next generation sustainable biofuel technologies
- Development of biorefinery concept through multiproduct processing
- Scaling up and implementing biofuel plants in decentralized manner

Approaches

- Innovative pre-treatment strategies
- Radical intensification for enzyme process
- Intensification of fermentation steps

Achievements

- Technology developed for pre-treatment of low & high lignin biomass
- Production of separate enzyme amenable cellulose and hemicellulose fractions along with lignin
- Novel two step continuous enzyme process with rapid reaction rates and reduction in enzyme dosage and reaction time
- More than 90 % yield of sugars from biomass
- High ethanol tolerant strains for C5 & C6 fermentation
- High cell density column fermenters
- More than 90 % theoretical yield
- Low cost Pervaporation & distillation system

Technology Highlights:

- Continuous process throughout; low CAPEX & low plant footprint
- Biomass to ethanol in less than 24 hours
- Ethanol yield > 300 L/Ton biomass
- Technology components patent protected worldwide
- IGL Pilot plant operational from April 2012 and first phase commissioned successfully



ENZYMATE TECHNOLOGY

Objectives

1. To develop viable processes for microbial/enzyme catalyzed bio-transformations
2. Develop stable immobilized biocatalyst preparations
3. Production and cost effective purification of expressed biocatalyst
4. Bioreactor designs for process scale-up
5. Engineer/develop specific enzymes with desired activity profiles
6. Develop suitable over-expression systems for selected biocatalysts

Approaches

- In silico biocatalyst structure-function relationship studies
- Reaction/ Biocatalyst engineering
- Integration of processes
- Process scale up
- Reactor engineering

FERMENTATION TECHNOLOGY

Objectives

- Identifying and designing microorganisms
- Lab scale optimization and production
- Large scale production

Approaches

- Modification of growth phases
- Media engineering
- Fermenter design
- Extractive fermentation
- Metabolomics & metabolic flux modeling

ALGAL BIOTECHNOLOGY

Objectives

- Explore algae as a source of biofuel feedstock/biodiesel/value added products
- Develop knowledge, technology and process strategies for sustainable production of algae as feedstock for fuel & chemicals
- Photo bioreactor/Raceway pond designing for efficient scale up of algae as biofuel feedstock

Approaches

- Screening & selection of algae
- Growth and media engineering, consortia design, CO₂ mitigation
- Strain improvement by genetic modification/metabolic engineering/hybridization
- Photo bioreactor/Raceway pond designing
- Harvesting and processing

SYNTHETIC BIOLOGY

Objectives

- Synthesis of drop in biofuels (butanol, biodiesel, biohydrocarbons)
- Large scale bioproduction of amino acids
- Synthesis of furanics from biomass

Approaches

- Pathway analysis for redirecting fluxes towards biofuel production
- Construction of synthetic metabolic pathways for production of high value compounds

- Vector construction for shuttle/transient/integrative cloning and expression of genes
- Recombinational methods for over expression / silencing of genes
- Alleviating product toxicity in biofuel production by directed evolution for tolerant strains

BIOPROCESS TECHNOLOGY

Objectives

- Thermodynamic and hydrodynamic characterization of various adsorbents for RPC, NPC, HIC, HCIC, IEX, Affinity, IMAC, SEC & mixed mode chromatography
- Design & development of separations of bio-based, natural, synthetic & semi synthetic products using adsorptive & chromatographic separation
- To improve the product purity, productivity and process economics (commercial viability) through designing of selectivity and process engineering
- Designing of membrane (UF, MF and NF) and extractive separation, crystallization and precipitation (use of smart polymers and poly/electrolytes) and to explore their possible integration with chromatographic separation
- Mechanistic and empirical models for adsorption and separation mechanisms

- Process monitoring through process optimization and product characterization
- Designing, engineering and scale up of chromatographic reactors (Packed bed, EBA, FBA, SMB, FMB, Segmented), skids as well as pilot and production plants

Approaches

- High Throughput Process Development (HTPD)
- Selectivity Engineering
- Process Integration and intensification
- Quality by Design (QbD)
- Reactor design and

- engineering
- PAT (Process Analytical Technology) and controls
- Design of adsorbents and affinity ligands
- Process and product characterization, Validation and risk analysis
- Computational fluid dynamics

IP MANAGEMENT TECHNOLOGY AND COMMERCIALIZATION UNIT

Objectives

- Capacity building within the centre in IP Management

- IP protection to technologies generated at the centre
- IP Management with regards to technology transfer and licensing

Approaches

- Filing of Indian, PCT's, and foreign patents
- Spreading awareness on IP issues
- Preparing MOUs, CDAs/ NDAs and MTAs

PRESENT SCENARIO

Currently the Centre has following human resource

Faculty	Professor	- 1	17
	Associate Professor	- 4	
	Assistant Professor	- 3	
	Research Scientist	- 4	
	Research Associate	- 5	
Ph. D Scholars	PhD Bioprocess Technology		45
	PhD Biotechnology		
	PhD Science		
	PhD in Chemical Engineering		
M. Tech Students	Bioprocess Technology		12
	Chemical Engineering		
Support Staff			20

Support Staff

Sr. No	Name	Designation
1.	Vibha Raut	Instrumentation Engineer (Electrical/Electronics)
2.	Akshay Kolge	Instrumentation Engineer (Electrical/Electronics)
3.	Padmini Iyre	Executive Assistant
4.	Mayur Khairat	Project Engineer
5.	Pankaj Shinde	Project Assistant

6.	Deepti Kataria	Typist cum Clerk
7.	Shreya Chopdekar	Typist cum Clerk
8.	Megha Pujari	Office Assistant
9.	Shilpa Tondlekar	Office Assistant
10.	Subhash Mandavkar	Project Attendant
11.	Nilesh Satve	Project Attendant
12.	Krishna Monde	Project Helper
13.	Sameer Gawade	Project Attendant
14.	Santosh Yadav	Project Attendant
15.	Sandeep Ghole	Project Attendant
16.	Suhas Chile	Laboratory Attendant
17.	Prashant Mohite	Laboratory Attendant
18.	Prashant Koli	Laboratory Attendant
19.	Imran Mohd. Mustaf Khan	Laboratory Attendant
20.	Mangesh Kesarkar	Helper
21.	Kalpesh Gugale	Helper

MAJOR INSTRUMENTAL FACILITIES

Complete facilities provided to work in areas of DNA, Microbial Proteomics, Metabolomics and Metabolic Engineering, Downstream Processing & Separation technologies, Enzyme Technology, Fermentation Technology, Bioinformatics and Molecular Modeling

Name of Equipment	Units
Robotic System-Cell Explorer	1
GC with headspace sampler	1
GC with inert XL EI/CI MSD with Triple-Axis Detector	1
HPLC systems with UV, DAD, RI, ELSD and CAD detectors	9
HPLC-MS/MS (Q-TOF; Triple-Quad; Ion Trap)	3
SELDI	1
Preparative HPLC	2
Moisture Analyzer	1
RO and Analytical balances	4
Karl-Fischer Autotitrator	1
Fluorescence Microscope	1
Infrared Spectrophotometer (FTIR)	1
UV-VIS Spectrophotometers	2
Complete ELISA station	1
Versa Doc and Gel Doc Imaging System	1
PCR and RT-PCR	1
Gel electrophoresis systems & Image analysis	1

Ion Chromatographic system with ECD and BioScan detectors	1
Spectrofluorometer	1
Nano Drop	1
Algal Stirred Photo Bioreactor	4
1000L and 5000L Raceway Ponds	1
Pulse Amplitude Modulated Fluorimeter (PAM)	1
Olympus Microscope Model IX51 with camera and software	1
Continuous Chromatography System. Simulated Moving Bed lab cum pilot scale high pressure Multicolumn System	1
Microwave reactor systems	2
Continuous microwave reactor system	1
3L to 10L Bioreactors	8
Parallel 3x1L Bioreactor Assembly	1
Multiple micro-Fermenter assembly	1
Off-gas analyzer for the fermentation systems	1
Gradient PCR	2
Thermal Activity Monitor	1
Anaerobic work stations	2
Elemental analyzer	1
Parr/High pressure reactors	3
Microbial Identification System	1
Phenotype Microarray System	1
Particle size analyzer	1
Mini-raceway ponds	10
Accelerated Solvent Extraction Systems	1

FACULTY



PROFESSOR ARVIND MALLINATH LALI

B. Chem, M. Chem, Ph.D Tech.(Chem. Eng.)
 Professor (Chemical Engineering)
 Head, DBT-ICT-Centre for Energy Biosciences

SUBJECTS TAUGHT DURING 2016-2017:

- Downstream processing in biotechnology
- Advances in adsorptive & chromatographic Separations
- Bioprocess simulation modeling and bioreactor design
- Instrumentation & process control
- Adsorptive separations
- Statistical methods

RESEARCH INTERESTS:

- Bioenergy, biofuels and biomass to other chemicals
- Purification of proteins,

nucleic acids & other biomolecules, natural & synthetic APIs high value organic/inorganic chemicals

- Continuous chromatography, modeling & adsorptive separations
- Biocatalysis & bio transformations
- Bioreactor design, mixing & dynamics of solid- liquid fluidized bed
- Dynamics of gas-solid circulating fluidized bed
- Process integration & intensification
- Process development, characterization & scale up

NUMBER OF RESEARCH STUDENTS:

Ph.D. (Tech)- 4 Ph.D. Sci.- 15
 Integrated Ph.D.- 1

PDF- 1 M. Tech.- 2

M. Chem. Eng.- 2

PUBLICATIONS:

International- 61 (so far)
 Conference Proceedings- 31 (so far)

Book Chapters- 2 (so far)

PATENTS:

International – 55 (filed), granted-16
 National- 34 filed, granted - 1

- Process integration & intensification
- Process development, characterization & scale up.

Ph.D. Tech. – 2
 Ph.D. Sci.– 2
 M.Tech.- 2

RESEARCH PUBLICATIONS:
 International- 15 (so far)

Conference Proceedings- 7 (so far)

PATENTS: National – 16
 International- 78 (so far)

RESEARCH STUDENTS:



DR. SANDEEP BHASKAR KALE

M. Sc. Tech. BPT, Ph.D. Tech (Chem. Eng.)
 Associate Professor

SUBJECTS TAUGHT DURING 2016-2017:

- Unit operations in bioprocessing
- bioanalytical techniques
- Advanced in adsorptive
- Chromatographic Separations

RESEARCH INTERESTS:

- Design and development of downstream processes for biopharmaceuticals, biological, natural products and synthetic

- API (extraction, biotransformation adsorptive and chromatographic separations, filtration, crystallization, lyophilisation, & drying)

- Protein stabilization process characterization
- Process integration and intensification, optimization and controls, QbD,
- Analytical method development and

characterization, Validation, enzyme technology and biocatalysis, fermentation, scale-up

RESEARCH STUDENT:

Ph. D Tech- 6 Ph. D Sci. – 6
 Integrated Ph. D. – 2
 M.Tech.- 4

RESEARCH PUBLICATIONS:

International- 23 (so far) National – 2 (so far)
 Conference Proceedings- 7 (so far)

PATENTS: 20 (so far)



DR. ANNAMMA ANIL ODANETH

B.Sc. Microbiology, M.Sc. Technology
P.G. Diploma in Bioinformatics,
Ph.D. Applied Chemistry
 Associate Professor

SUBJECTS TAUGHT DURING 2016-2017:

Protein and Enzyme Engineering
 Biocatalysts and Enzyme Technology

RESEARCH INTERESTS:

- Extractive bio transformation
- Design & engineering of enzymes

- Selective isolation & capture of natural bioactive molecules
- Secondary agriculture & its products



DR. REENA PANDIT

B.Sc. Zoology, M.Sc. Marine Biology,
Ph.D Marine Biotechnology
 Research Scientist

SUBJECTS TAUGHT DURING 2016-2017:

- Biochemistry
- Green Biotechnology

RESEARCH INTERESTS:

- Algal growth engineering for production of biofuel and biochemicals

- CO₂ sequestration and waste water management using micro and macroalgal systems

- Genetic engineering of cyanobacteria for value added compounds

RESEARCH STUDENTS:

Ph. D Tech- 1
Ph. D Sci. - 3
M.Tech.- 2

RESEARCH PUBLICATIONS:
International - 12

Conference Proceedings- 20 (so far)
PATENTS: National- 3(so far)



DR. GUNJAN PRAKASH

*B.Sc. General, M.Sc. Biosciences,
Ph.D Plant Biotechnology & Fermentation*
Associate Professor

SUBJECTS TAUGHT DURING 2016-2017:

- General Microbiology

RESEARCH INTERESTS:

- Genetic engineering of microalgae for increasing the photosynthetic efficiency, abiotic stress

resistance and value added compounds.

- Fermentative production of value added compounds From microorganisms, marine protist and microalgae.

RESEARCH STUDENTS:

Ph.D (Sci.)- 2
M. Tech. - 4

RESEARCH PUBLICATIONS:
International-13 (so far)
National -2 (so far)
Conference proceeding- 30
Book Chapter-1
PATENTS: National- 3



DR. POOJA JOSHI

*B.Sc. General, M.Sc. Biosciences,
Ph.D. Plant Biotechnology*
Research Scientist

SUBJECTS TAUGHT DURING 2015-2016:

Patents and IPR

RESEARCH INTERESTS:

- Plant Biotechnology

- IP Protection & Policy

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:
International -3 National- 1

Book Chapter-1

PATENTS: Nil



DR. SHAMLAN M. S. RESHAMWALA

M.Sc, Ph D.
Assistant Professor

SUBJECTS TAUGHT DURING 2016-2017:

- Bioinformatics and statistical methods,
- Recombinant DNA Technology,
- Patents and IPR (along with Dr.Pooja Joshi)

RESEARCH INTERESTS:

- Overexpression and secretion of recombinant proteins

- Enzyme engineering for improved catalysis and robustness
- Utilization of diverse feed stocks of biosynthesis of Value added molecules

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS: 4

PATENTS: National-3



DR. MANJU BISHAN SHARMA

*B.Sc. General, M.Sc. Microbiology,
Ph.D. Microbiology*
Assistant Professor

SUBJECTS TAUGHT DURING 2016-2017 : Nil

RESEARCH INTERESTS:

- Anaerobic Digestion of lignocellulosic biomass for enhanced and rapid methane production
- Anaerobic Microbiology:

Mining of efficient microbes, Consortium Design & study of syntrophic interactions amongst the consortium members

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:

International-6 ,
Book Chapter-2,
Conference Proceedings- 12 (so far)

PATENTS:
National - 1 (filled)

**MR. SANDIP KISAN KALE**

*P.G. Diploma in Patent Law,
M. Sc. (Organic Chemistry)*
Research Associate

SUBJECTS TAUGHT
DURING 2016-2017: Nil

RESEARCH INTERESTS:

- IPR, Patent drafting and prosecution
- Freedom to operate (FTO)

analysis

- Infringement analysis
- Patent validity/invalidity analysis
- Technology landscaping analysis

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:

Nil

PATENTS: 1

**DR. SANJEEV K. CHANDRAYAN**

Ph.D.
DBT-Energy Biosciences Overseas Fellow

SUBJECTS TAUGHT
DURING 2016-2017: Nil

RESEARCH INTERESTS:

- Thermophiles and Thermozyyme for Industrial application, Enzyme: Discovery,

Production, engineering and application,

- Microbiology of extremophiles

RESEARCH STUDENTS:
Ph.D. (Sci) -1

M.Tech-2
Ph.D. -1 (co-guide)

RESEARCH PUBLICATIONS:
International -21

PATENTS:
National -1 (provision filled)

**MR. DEEPAK SARMA**

M.Tech. (Bioprocessing Technology)
LLB
Research Associate (IPM &TC Unit)

SUBJECTS TAUGHT
DURING 2016-2017: Nil

RESEARCH INTERESTS:

- Intellectual Property Rights
- Patent Search
- Patent Drafting
- Patent & other IP filing
- Patent Prosecution
- Trademark, Copyright

• Legal- NDA/MoU
RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS: Nil
International -1
PATENTS:

**DR. HITESH PAWAR**

Ph.D. Sci. Chemistry
Assistant Professor

SUBJECTS TAUGHT
DURING 2016-2017: Nil

RESEARCH INTERESTS:

- Conversion of bio-based sugars to value added chemicals
- Photocatalytic hydrogen production
- Novel homogeneous, heterogeneous and transition metal catalysis

- Synthesis of ionic liquids, deep eutectic solvents
- Study of reaction kinetics and reaction mechanism
- Designing and development of industrial catalyst
- Process intensification and integration
- Process development, characterization and scale -up

- Chromatographic separation & purification of small molecules
- Computational chemistry and molecular modeling
- Effluent treatment

RESEARCH STUDENTS: 5
RESEARCH PUBLICATIONS:
4
PATENTS: 10

**DR. SHALINI DEB**

Ph.D. Sci. Biotechnology
Research Scientist

SUBJECTS TAUGHT
DURING 2016-2017:
Molecular biology and biotechnology

RESEARCH INTERESTS:

- Metabolic engineering
- Synthetic biology
- Protein engineering

RESEARCH PUBLICATIONS:
2
PATENTS: 2

RESEARCH STUDENTS: Nil

3	Asodekar Bhupal	University of Mumbai	Isolation of cellulose from lignocellulosic feedstock and its catalytic conversion to platform chemicals	Prof. A.M. Lali
4	Singh Nitesh Kumar	UDC, University of Mumbai, Mumbai	Isolation, characterization and valorization of phenolics from lignocellulosic biomass	Prof. A.M. Lali
5	Sarnaik Aditya	Mumbai University	Genetic and growth engineering of cyanobacteria for the production of hydrocarbons	Prof. A.M. Lali
6	Dargode Priyanka	K.T.H.M. College, Nasik	Consortia design by bio-augmentation for improved anaerobic digestion	Prof. A.M. Lali
7	Gore Suhas	Pune University	Improved biogas production from complex substrates	Prof. A.M.Lali
8	Bellary Suveera	S.I.E.S College, Mumbai	Designing microbial conversion of lignin	Prof. A. M.Lali
9	Patil Parmeshwar	PAU, Ludhiana	Hemicellulose characterization & its relation to biomass deconstruction process	Prof. A.M. Lali
10	Kumari Sujata	I.A.R.Institute, New Delhi	Microalgal chloroplast genetic Engineering for the production of carotenoids	Dr. G. Prakash
11	Upadhyay Priya	St. Xaviers College, Mumbai	Engineering Pseudomonas putida KT2440 for catechol biosynthesis using Lignocellulosic biomass hydrolysate	Prof. A.M. Lali
12	Khadye Vishwanath	V. G Vaze college	Production of Beta-glucosidase in Bacillus subtilis	Prof. A.M. Lali
13	More Pooja	The Institute of Science, Mumbai	Biphasic Fermentation for Triacyl Glycerol production from pretreated lignocellulosic biomass hydrolysates using mixed microbial cultures	Prof. A.M.Lali
14	Pandey Preeti	Savitribai Phule Pune University, Pune	Photocatalytic solar water splitting	Prof. A.M.Lali
15	Ukarde Tejas	Savitribai Phule University Pune, Pune	Catalytic thermo liquefaction of plastic waste	Prof. A.M.Lali
16	Daware Sachdeo	Ahmednagar College of Arts, Science and Commerce, Ahmednagar	Chemical strategies for derivatization of natural product	Dr. S.B. Kale

17	Tiwari Richa	Ahmednagar College of Arts, Science & Commerce, Ahmednagar	Synthesis of dendrimer for catalysis and chromatographic separation	Dr. S.B. Kale
18	Rao S. P. Poornima	St. Xaviers College, Mumbai	Improved production of acetic acid by Escherichia coli and Moorella thermoacetica	Prof. A.M.Lali
19	Sonawane Anup	P.V.P College, Pravaranagar.	Development of sustainable biorefinery processes for secondary agriculture	Dr. S.B. Kale
20	Patel Bhavin	ARIBAS, Vallabh Vidhyanagar, Gujarat	Production, purification and modification of bioactive peptide	Dr. S.B. Kale
21	Vanza Meghna	Department of Biotechnology, Veer Narmad South Gujarat University, Surat, Gujarat	Designing strategies for purification and stabilization of plasma proteins (Factor VIII, Fibrinogen, AAT)	Dr. S.B. Kale
22	Choudhari Vikram	School of life Sciences, S.R.T.M. University, Nanded	Study on enzymatic deconstruction of lignocellulosic biomass	Dr. A. Anil
23	Rodrigues Valerie	Mumbai University	Holistic approach towards mining of organisms associated with green macroalgae Ulva spp. for ulvan lyases	Dr. A. Anil
24	Mahadik Chinmayee	St. Xaviers College, Mumbai	Enzymatic synthesis of saccharides from lignocellulosic biomass	Dr. A. Anil
25	Shaikh Kurshedaktar	Ramniranjan Jhunjhunwala College, Mumbai	Developing Yarrowia lipolytica as a platform host for production of cellulases	Dr. A. Anil
26	Kothari Shruti	Ramnarin Ruia College, Matunga	Production of value added products from Fatty acids using Yarrowia lipolytica	Dr. A. Anil
27	Mhatre Akanksha	St. Xaviers (Autonomous) College, Mumbai	Growth engineering of Ulva lactuca for improved and sustainable biomass production.	Dr. R. Pandit
28	Agarwal Akanksha	Vellore Institute of Technology	Sustainable microalgal production: exploiting alternate carbon sources and nutrient recycling.	Dr. R. Pandit

29	Gayatri Mohan	Edinburgh Napier University	Effect of carbon and titanium dioxide nanoparticles on mouse Sertoli cell toxicity	Dr. R. Pandit
30	Kadalag Nikhil	S.I.E.S College, Sion-West, Mumbai	Terpene production from microalgae	Dr. G. Prakash
31	Sathe Sneha	Ramnarain Ruia College, Matunga, Mumbai.	Thermostzymes for biomass hydrolysis	Dr. S.K. Chandrayan

ONGOING STUDENTS FOR INTEGRATED PH. D

Sr. No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
1.	Das Arijit	Heritage Institute of Technology, Kolkata	Metabolic & fermentation engineering of thermophilic microorganisms for the enhanced 2,3-Butanediol production	Prof. A.M. Lali
2.	Agarwal Snehal	D.Y. Patil University, Mumbai	Integrated chromatographic & membrane processes for purification of bioactives	Dr. S.B. Kale
3.	Singh Naina	Gujarat Technological University, Gujarat	Designing strategies for stabilization of biomolecules using saccharides, salts and amino acids	Dr. S.B. Kale

ONGOING STUDENTS FOR M. TECH

Sr. No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
1.	Pokhriyal Prashant	Bipin Tripathi Kumaon Institute of Technology, Uttarakhand	Flux balance analysis of microbial systems	Prof. A. M. Lali
2.	Wannere Priyanka Sanjay	Maharashtra Institute of Technology, Pune (Pune University)	Extraction, Isolation and Purification of proteins from Natural sources having amylase inhibiting activity used as anti-obesity agents in food supplements	Dr. S. Kale
3.	Chougale Shaktisinha Prasad	Kolhapur Institute of Technology's College of Engineering, Kolhapur	Designing of Continuous Chromatography	Dr. S. Kale

4.	Sorte Sneha Kamalakar	Priyadarshini Institute of Engineering and Technology, Nagpur	Design and evaluation of Solid-Liquid contactor for efficient Adsorption and Chromatography	Dr. S. Kale
5.	Khatkhatay Abdul Basit	D.Y. Patil School of Biotechnology and Bioinformatics	Processing and Purification of oleochemicals for production of value added products using biological systems	Dr. A. Odaneth
6.	Rane Divyata Vilas	Thadomal Shahani Engineering College, Mumbai (Mumbai University)	Production of Oleochemicals from oleaginous yeast	Dr. A. Odaneth
7.	Gharat Krushna Kanchan	Thadomal Shahani Engineering College, Mumbai (Mumbai University)	Oil extraction from Microalgae	Dr. R. Pandit
8.	Nambissan Vishnu Damodaran	S.I.E.S. Graduate School of Technology, Nerul (Mumbai University)	Commercial extraction of Carotenoids from Microalgae	Dr. R. Pandit
9.	Athalye Shreya M.	SIES, GST, Nerul, Mumbai	Phosphate capture and recovery from waste water using microalgae	Dr. R. Pandit
10.	Laddha Hrishikesh Govardhan	Tatyasaheb Kore Institute of Engineering and Technology	Fermentative production of value added product by using Thraustochytrids	Dr. G. Prakash
11.	Bhattad Tanmay	SRM University	Production of Paramylon and Tocopherol from Euglena	Dr. G. Prakash
12.	Sheth Rutuja Rajan	Mahatma Gandhi Mission's College of Engineering and Technology, Mumbai (Mumbai University)	Enzyme engineering for bio-transformation of sugars	Dr. S. K. Chandrayan

ONGOING STUDENTS FOR M. CHEM. ENGG.

Sr. No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
1.	Gotmare Akshay	Visvesvaraya National Institute of Technology (VNIT), Nagpur	Catalytic upgradation of biocrude oil for enhancing its blendability in transport fuel	Prof. A.M. Lali

ONGOING RESEARCH PROJECTS

Sr. No.	Title	Funding Agency	Amount (INR Lakhs)	Duration
Government Projects				
1	DBT-ICT Centre for Energy Biosciences (CEB) Technology for turning distillery solid waste into energy	DBT, India	1045.72	
2	Biphasic fermentation for triacyl glycerol (TAG) production from pretreated lignocellulosic biomass	DBT, India	39.84	2017-2020
3	Pilot scale translational facility for value added chemicals from biomass	DBT-CEB-BIPP	50.00	2016-2017
4	Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas	DST-KGDS	61.35	2015-2018
5	Integrated biorefinery for production of sorghum Grain protein Phase II	DBT-AISRF, India	113.74	2015-2017
6	Design of selective nanoporous membrane bioreactor for efficient production of bio-butanol from lignocellulosic sugar (SeNaMeB)	IGSTC,DST, India	115.40	2014-2017
7	Green enzymatic fat-splitting technology for production of fatty acids and Acyl Glycerols	DST, India	847.53	2014-2017
8	Macroalgal biorefinery for CO ₂ sequestration and production of biofuel and value added compounds	DSIR,DST, India	85.00	2014-2016
9	DBT-ICT Centre for Energy Biosciences: New and extension proposals	DBT, India	1763.26	2013-2018
10	Improved production of biogas and bio-CNG from lignocellulosic biomass	MNRE, India	267.16	2013-2016
11	Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production	DBT- BBSRC/ SuBBSea	201.672	2014-2017
12	Engineering enzymes, bacteria and bioconversion processes for advanced biofuels from waste grain straw	DBT- BBSRC/ Ricefuel	152.00	2013-2016
13	Integrated technologies for economically sustainable bio-based Energy	AISRF Indo-Australia Grand Challenge Program, DST, India	700.30	2014-2017
14	Development and characterization of alternative affinity adsorbent for purification of therapeutic antibodies	DBT, India	68.468	2013-2016
15	Energy Biosciences Overseas Fellowship & Chairs	DBT, India	1472.21	2009-2020

Private Projects

Sr. No.	Title	Funding Agency	Amount (INR Lakhs)	Duration
1	Engineering, procurement, construction, installation, commissioning & operation & maintenance service in the entire hydrocarbon chain with offerings across upstream, midstream & downstream and pipeline projects (DBT-ICT 2G Ethanol Technology)	L&T Hydrocarbon Engineering Ltd.	500.00	2017-2027
2	Developed of improved animal feed ingredient from seed meals	Godrej Agrovet Ltd.	100.00	2014-2017
3	Purification of Glycerin	InNow LLC USA	25.00	2015-2016
4	Tea Alcohol Project	Bacardi & Co. Ltd.	95.60	2015-2016
5	Mass cultivation of algae for aqua feed	Godrej Agrovet Pvt. Ltd.	115.00	2014-2016

PATENTS GRANTED

Sr. No.	Inventor	Title	Country/Application No. and Date
1	Lali Arvind Mallinath; Odaneth Anamma Anil; Vadgama Rajesh; Warke Mrunal; Bhat Anuradha	Enzymatic process for fat and oil hydrolysis	Patent No.: AU2013213921, Issued notice of acceptance, 2017
			Patent No.: JP2014-553823, Issued notice of acceptance, 2017
			Patent No.: US9512451, 2016
2	Lali Arvind Mallinath, Nagwekar Pooja Devidas, Varavadekar Jayesh Suman, Wadekar Prathamesh Chandrashekher, Gujarathi Swapnali.	Method for production of fermentable sugars from biomass	Philippines Patent Application no. 1-2011-502465/31st March 2016-09-30

PATENTS FILLED

Sr. No.	Inventors	Title	Application no.
1	Deb Shalini Subir; Reshamwala Shamlan Mohammed Shafi; Lali Arvind Mallinath	Ammonia assimilation by recombinant microorganism	Indian Application No: 201721023070
2	Lali Arvind Mallinath; Odaneth Anamma Anil; Pawar Pratik Prashant; Warke Mrunal Anil; Vadgama Rajeshkumar Natwarlal; Chourasia, Vallari Ramesh	Extractive production of microbial oil using oleaginous yeasts	Indian Application No: 201721013545

3	Lali Arvind Mallinath; Pandit Reena; Sarnaik Aditya; Rai Peeyush Shekhar	Genetically modified micro-organism and process for production of zeaxanthin therefrom	Indian Application No: 201721011982
4	Lali Arvind Mallinath; Pawar Hitesh Suresh	Process for treating liquid industrial effluents to produce clean water and recovering pollutants for value addition	Indian Application Number: 201721002215
5	Kale Sandeep Bhaskar; Lali Arvind Mallinath; Patel Bhavin Manubhai Jha Pamela; Gupta Vinod; Kohli Ashwani Kumar; Mital Vineet	Process for purification and refining of glycerol	Indian Application No.: 201621000574
			PCT Application No.: PCT/IN2017/050013
6	Lali Arvind Mallinath; Sharma Manju; Pawar Hitesh Suresh; Gore Suhas	A process for generation of biogas from organic matter via its liquefaction to biocrude	Indian Application Number: 201621030327
7	Lali Arvind Mallinath; Odaneth Annamma Anil; Victoria Juliet Joanna; Choudhari Vikram Gunvant; Mahadik Chinmayee Ramray; Sawant Sneha Chandrakant; Khairat Mayur Basavraj; Birhade Sachinkumar Hiranman	Enzymatic hydrolysis process for production of fermentable sugars	Indian Application Number: 201621030093
8	Lali Arvind Mallinath; Pawar Hitesh Suresh; Shravan sreenivasan.	A catalytic liquefaction (CTL) method for production of bio-crude oil using ionic liquid catalyst and preparation thereof	Indian Application Number: 201621025317
			PCT Application No.: PCT/IN2017/050303
9	Lali Arvind Mallinath; Chandrayan Sanjeev Kumar, Sathe Sneha, Soni Suarabhi.	A novel glucose tolerant glucosidase enzyme (MbgI)	Indian Application Number: 201621022859

PUBLICATIONS

Sr. No.	Author and Title	Journal/Book	Vol. No.	Page	Year
1	Reshamwala S. M. S., Deb S. S., Lali A. M. "A shortened, two-enzyme pathway for 2,3-butanediol production in Escherichia coli"	J Ind Microbiol Biotechnol	-	-	2017
2	Sujata Gaikwad, Reena Pandit, Arvind Lali, "Improved lipid productivity of Chlorella Saccharophila with urea and acclimated stress under natural light for biofuels"	Journal of International Academic Research for Multidisciplinary	5 (1)	-	2017

3	Smita Patil, Reena Pandit, Arvind Lali, "Photosynthetic acclimation of Chlorella saccharophila to heat stress"	Phycological Research	65 (2)	160-165	2017
4	Smita Patil, Reena Pandit, Arvind Lali, "Responses of algae to high light exposure: prerequisite for species selection for outdoor cultivation"	Journal of Algal Biomass Utilization, 2017	8(1)	75-83	2017
5	Lakshmi, DS, Trivedi N and Reddy, CRK, "Synthesis and characterization of seaweed cellulose derived Carboxymethyl cellulose"	Carbohydrate Polymers	157	1604-1610	2017
6	Aditya Sarnaik, Reena Pandit, Arvind Lali, "Growth engineering of Synecococcus elongates PCC 7942 for mixotrophy under natural light conditions for improved feed-stock production"	Biotechnology Progress	DOI 10.1002/btpr.2490		2017
7	Monali Kavadia, Manish Yadav, Annamma Odaneth and Arvind Lali. "Production of Glyceryl Monostearate by Immobilized Candida Antarctica B Lipase in Organic Media"	Journal of Applied Biotechnology & Bioengineering	DOI: 10.15406/jabb.2017.02.00031		
8	Valerie Rodrigues, Onime L, Huws SA, Annamma Odaneth and Arvind Lali. "Diversity of Ulvan and Cellulose Depolymerizing Bacteria Associated With the Green Macroalgae Ulva Spp"	Journal of Applied Biotechnology & Bioengineering	DOI: 10.15406/jabb.2017.02.00037		
9	Rutuja Vaze, Annamma Odaneth and Arvind Lali "Controlled Protein Hydrolysis with Immobilized Alkaline Endo-Protease"	Journal of Applied Biotechnology & Bioengineering	DOI: 10.15406/jabb.2017.02.00048		
10	Sachinkumar Birhade, Mukesh Pedneker, Shilpa Sagwal, Annamma Odaneth and Arvind Lali "Preparation of Cellulase Concoction Employing Differential Adsorption Phenomenon"	Preparative Biochemistry & Biotechnology	DOI: 10.1080/10826068.2016.1275009		
11	Juliet Victoria, Annamma Odaneth and Arvind Lali, "Influence of cellulase cocktails favouring hydrolysis of cellulose"	Preparative Biochemistry & Biotechnology	DOI: 10.1080/10826068.2016.1275006		

SEMINARS/ LECTURES/ CONFERENCES/ SYMPOSIA/WORKSHOPS/ SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ ORAL OR POSTER PRESENTATIONS

FACULTY

Professor A.M. Lali

1. Participate in The Clean Energy Ministerial 8 (CEM8) & Second Mission Innovation (MI2) Summit at Beijing, China on 6th – 8th June 2017.
2. Participate in Rice Research Summit: What can we learn from each other? Organized by University of York, UK on 23rd -24th February 2017.
3. Attended SAFEHERB workshop on “The Sustainable production of environmentally-friendly herbicides” at ICGEB, New Delhi on 6th -8th February 2017.
4. Invited has an Advisory Committee Member and deliver talk for International Conference on Bioenergy at Modern College, Pune on 3rd -4th February 2017.
5. Attended seminar on “Biological Conversion of Hydrocarbon to Methane” at ONGC Energy Centre, New Delhi on 2nd December 2016.
6. Attended workshop on “Biomass Supply Chain” at ICRISAT organized by Ministry of Petroleum & Natural Gas, Department of Bio Technology & ICRISAT, Hyderabad on 15th-16th November 2016.
7. Attended workshop on “Creating Investment Avenues on setting up of Second Generation (2G) Ethanol project by Oil PSUs” on 3rd November 2016.
8. Awarded The Science & Technology “Eminent Scientist” Award by KG Foundation, Coimbatore on 13th October 2016.
9. Attended one day UK India workshop on Industrial Biotechnology in Mumbai on 12th September 2016 organized by UK Science and Innovation Network (S&IN), India.
10. Participate in World Biofuel Day celebration conference at Vigyan Bhawan, New Delhi on 10th August 2016.
11. Invited has a speaker at UK-India workshop on Industrial Biotechnology on 12th September 2016, Mumbai organized by UK Science and Innovation Network (S&IN), India.
12. Participate at World Biofuel Day Celebration Conference on “Energy Security for India Creating a Biofuel Economy at Vigyan Bhawan, New Delhi on 10th August 2016.

Dr. Sandeep Kale

1. Attended The Annual Symposium of the Indian Biophysical Society -2017 at IISER, Mohali on 22nd -25th March 2017.
2. Invited as a speaker at University of Pune sponsored seminar on

- “Advances in Molecular Biology and Biotechnology organized by Sinhgad College of Pharmacy, Pune on 2nd-7th February 2017.
3. Invited has a speaker at Planova workshop organizing by Asahi Kasei Medial Co. Ltd. on 9th February 2017.
4. Attended “Bioprocessing India 2016” conference at Centre for Innovation and Applied Bioprocessing, Mohali on 15th-17th December 2016.
5. Attended International Conference “Bioprocessing Asia-2016” at Phuket, Thailand on 5th- 8th December 2016.

Dr. Annamma Anil

1. Participate in The Clean Energy Ministerial 8 (CEM8) & Second Mission Innovation (MI2)
2. Summit at Beijing, China on 6th – 8th June 2017.
3. Invited as a Resource Person at the State Level seminar on “Role of Biotechnology in Sustainable Development” and to delivered lecture on “Biodiversity and Role of Biotechnology in Biodiversity Conservation” organized by Pillai College of Arts, Commerce & Science, Navi Mumbai on 20th February 2017.
4. Invited as a speaker at the seminar on “Biofuels Future and Challenges” organized

- by Siddaganga Institute of Technology, Tumkur, Karnataka on 16th -17th March 2017.
5. Attended SAFEHERB workshop on “The Sustainable production of environmentally-friendly herbicides” at ICGEB, New Delhi on 6th -8th February 2017.
6. Invited has a speaker by Associate of Biotechnology Led Enterprises, New Delhi on 29th November 2016.
7. Attended the International conference on “Sustainable Utilization of Tropical Plant Biomass: Bioproducts, Biocatalysts and Biorefinery (SutB4) at Tamil Nadu University, Coimbatore on 17th &18th November 2016.
8. Attended on day UK India workshop on Industrial Biotechnology in Mumbai on 12th September 2016 organized by UK Science and Innovation Nerwork (S&IN), India.
9. Participate in World Biofuel Day celebration conference at Vigyan Bhawan, New Delhi on 10th August 2016.
10. Invited has a speaker at one day UK –India workshop on Industrial Biotechnology organized by UK Science and Innovation Network (S & IN), Mumbai on 12th September 2016.
11. Participated in World Biofuel Day on “Energy Security for India- Creating a Biofuel Economy organized by Ministry of Petroleum & Natural Gas at Vigyan

- Bhawan, New Delhi on 10th September 2016.
12. Invited has a speaker on “Academic Referencing and Research Skills” at Gorodia International Centre for Learning, Mumbai on 29th September 2016.

Dr. Reena Pandit

1. Invited as a speaker at International Conference on Bioenergy at Modern College, Pune on 3rd -4th February 2017.
2. Awarded the prestigious Bioenergy-Awards for Cutting Edge Research (B-ACER) Fellowship supported by Department of Biotechnology (DBT) & Indo-US Science & Technology Forum (IUSSTF) at Arizona State University, USA on August 2017 to October 2016.
3. Poster: Akanksha Mhatre, Reena Pandit, Arvind Lali , “Growth engineering of Ulva lactuca for year round cultivation in photobioreactors ” in International conference on ‘Advances in Algal Biotechnology’ at Vellore Institute of Technology during August 2016.

Dr. Shamlan Reshawala

1. Attended Synthetic Biology Conference called IBEM New Delhi on 26th – 28th March 2017.
2. Attended SAFEHERB workshop on “The Sustainable Production of Environmentally –Friendly Herbicides” at ICGEB, New Delhi on 6th -8th February

- 2017.
3. Attended on day UK India workshop on Industrial Biotechnology in Mumbai on 12th September 2016 organized by UK Science and Innovation Network (S&IN), India.
4. Invited has a speaker at UK-India workshop on Industrial Biotechnology on 12th September 2016, Mumbai organized by UK Science and Innovation Network (S&IN), India.

Dr. Gunjan Prakash

1. Invited has a speaker at UK-India workshop on Industrial Biotechnology on 12th September 2016, Mumbai organized by UK Science and Innovation Network (S&IN), India.
2. Attended one day workshop on “Advances in Algal Biotechnology at IIT Bombay on 21st November 2015.
3. Poster: Gunjan Prakash, Chaitali Vira, Jayant P. Rathod, Bhavya Shukla, Arvind M. Lali. “Genetic engineering of algae towards increased production of biofuels and bioproducts”. Advances in Algal Biotechnology, IIT Bombay, India, 21st November 2015.
4. Poster: Smita Patil, Gunjan Prakash, Arvind Lali, “Biophysical and biochemical characterization of light harvesting antenna of high light grown Chlamydomonas reinhardtii”, International

conference on IIT Bombay- December 2015.

Dr. Sanjeev K Chandrayan

1. Attended The Annual Symposium of the Indian Biophysical Society -2017 at IISER, Mohali on 22nd -25th March 2017.
2. Attended on day UK India workshop on Industrial Biotechnology in Mumbai on 12th September 2016 organized by UK Science and Innovation Network (S&IN), India.

Dr. Manju Sharma

1. Participate and deliver a talk in The Interactive Programme on Shimadzu TOC analyser at Shimadzu (Asia Pacific) Pte. Ltd. Singapore on 8th - 12th February 2017.

Dr. Pooja Joshi

1. Invited as a Resource Person in the workshop on "Concept of Prior Art-Patent Filing" and delivered lecture organized by Mithibhai College, Mumbai on 6th March 2017.

Dr. Shalini Deb

1. Attended Synthetic Biology Conference at Jawaharlal Nehru University (JNU), New Delhi on 26th - 28th March 2017.

Mr. Sandip Kale

1. Attended IP Seminar on "IP-Ideas to Innovation" at The Hyatt Regency, Mumbai on 3rd May 2017.

Mr. Deepak Sarda

1. Attended IP Seminar on "IP-Ideas to Innovation" at The Hyatt Regency, Mumbai on 3rd May 2017.

Dr. Shalini Deb

1. Participated in 'International Biological Engineering Meeting', a conference on synthetic biology held at Jawaharlal Nehru University, New Delhi on March 26 -28 2017.
2. Participated in a workshop on 'Sustainable Production from C1 Gas of Safer Herbicides for Developing Countries' organised by University of Nottingham and held at International Centre for Genetic Engineering and Biotechnology, New Delhi on February 6 -8 2017.
3. Participated in "Development and improvement of strains for biomolecule production" a workshop held at International Centre for Genetic Engineering and Biotechnology, New Delhi on September 8 -10 2016.

STUDENTS

POSTER PRESENTATION

1. **Meghna Vanza**, Anup Sonawane and Sandeep Kale, on title "Anthocyanins : Extraction, Purification and Stabilization" in International Conference on "Bioprocessing India - 2016" at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December 2016
2. **Sushmita Koley** and Sandeep Kale, "Evaluating ChromSpeed Q and AEX media for negative

- chromatographic purification of polyclonal antibodies from human plasma" in International Conference on "Bioprocessing India- 2016" at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December 2016.
3. **Jagruti Jadhav**, Yogita Pal, Bhavin Patel, Amit P Pratap and Sandeep Kale, "Production of sophorolipid biosurfactant: Media engineering and optimization" in International Conference on "Bioprocessing India 2016" at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15th -17th December 2016.
4. **Sushitha T. Nair** and Sandeep B. Kale, "Fermentative production of glycerol for food application" in International Conference on Bioprocessing India 2016 at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December, 2016
5. **Anup Sonawane** and Sandeep Kale, "Chromatography For High Volume Products: From Bench Top to Commercialization" in International Conference on Bioprocessing India 2016 at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December 2016.
6. **Gargi D. Redkar** and

- Sandeep Kale*, "Chromatography coupled with Salt aided precipitation for isolation of Calcium Sennosides" in International Conference on "Bioprocessing India 2016" at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December, 2016.
7. **Vikram Choudhari**, Annamma Odaneth and Arvind Lali. "Customised cellulases for optimum cellulose hydrolysis". Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
8. **Kurshedaktar Shaikh**, Annamma Anil, and Arvind Lali, "Genome scale engineering of Escherichia coli for recombinant production of cellulases. , Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
9. **Ranjana Juneja**, Annamma Odaneth and Arvind Lali. "Forward osmosis approach for concentration of protein solutions". Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
10. **Parmeshwar Patil**, Annamma Odaneth and Arvind Lali. "High throughput pre-treatment screening and compositional analysis system for biomass compositional analysis" 5th International Conference on Sustainable Utilization of Tropical Plant Biomass: Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
11. **Sneha Sathe**, Arvind Lali and Sanjeevkumar Chandrayan. "Overexpression, Biochemical Studies And Application Of A Novel Glucose Tolerant Gh1 Beta-Glucosidase For Biomass Hydrolysis". 5th International Conference on Sustainable Utilization of Tropical Plant Biomass: Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.

12. **Chinmayee Mahadik**, Annamma Odaneth and Arvind Lali. "Process for Production of Non- Digestible Cello-oligosaccharides from Agri- Processing waste." 5th International Conference on Sustainable Utilization of Tropical Plant Biomass: Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
13. **Valerie Rodrigues**, Annamma Odaneth, and Arvind Lali. "Polysaccharide breakdown capability Pseudoalteromonas carrageenovoraisolated from the green macroalgae Ulva spp." 5th International Conference on Sustainable Utilization of Tropical Plant Biomass: Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
14. **Pratik Pawar**, Annamma Odaneth and Arvind Lali. "High cell density cultivation of non convestional yeast" 5th International Conference on Sustainable Utilization of Tropical Plant Biomass: Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
15. **Surabhi Soni**, Sanjeevkumar Chandrayan and Annamma Odaneth. "Production of a thermostable monoacylglycerol lipase" 5th International Conference on Sustainable Utilization of Tropical Plant Biomass: Bioprocessing India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.
16. **Manish Yadav**, Monali Kavadia, Annamma Odaneth and Arvind Lali "Eco-friendly and low-cost synthesis route for large scale production of oil based chemicals". Presented at Technology Showcase during IKMC 2016: Accelerating Innovation conference, Hyderabad on 24-25 October, 2016.
17. **Chinmayee Mahadik**, Juliet Victoria, Annamma Odaneth and Arvind Lali "Easy and Scalable process for production of oligosaccharides". Presented at Technology Showcase during IKMC 2016: Acceleration Innovation conference, Hyderabad on 24-25

October, 2016

- 18. Rajesh Vadgama**, Ankita Pawar, Annamma Odaneth and Arvind Lali "Production of CLA enriched milk and milk products". Presented at Technology Showcase during IKMC 2016: Acceleration Innovation conference, Hyderabad on 24-25 October, 2016
- 19. Sandeep Patle**, Naina Singh Next generation bioprocessing for biopharmaceuticals: Implementation of continuous chromatography in downstream processing of biopharmaceuticals, Vortex-The Chem Fest September, 2016
- 20. Akanksha Agarwal**, Reena Pandit, Arvind Lali, "Taking algal cultivation towards sustainability: use of alternate nutrient sources" in International conference on 'Advances in Algal Biotechnology' at Vellore Institute of Technology during August 2016.
- 21. Akanksha Mhatre**, Reena Pandit, Arvind Lali, "Growth engineering of *Ulva lactuca* for year round cultivation in photobioreactors" in International conference on 'Advances in Algal Biotechnology' at Vellore Institute of Technology during August 2016.
- 22. Surabhi Soni**, Sanjeev K. Chanrayan, Annamma Anil, Arvind Lali. "Designing of Lipase Nanoreactors as Biocatalysts". SSBSS,

International Synthetic and Systems Biology Summer School 2016, Volterra, Tuscany, Italy, 9 -13 July, 2016.

ORAL PRESENTATION

- 1. Sushmita Koley** and Sandeep Kale, "Affordable alternative to Protein-A: Characterization of novel pseudo-affinity adsorbent and purified antibodies" in International Conference on "Bioprocessing Asia 2016" at Pullman Phuket Arcadia, Phuket, Thailand during 5-8 December, 2016.
- 2. Snehal Agrawal**, Vinod Amritkar and Sandeep Kale, "A Novel Hybrid and Scalable Process Design for Production of Artemisinin from *Artemisia Annua*" in International Conference on "Bioprocessing India 2016" at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December, 2016.
- 3. Sharad Narnaware**, Prashant Kumar, Arvind Lali and Sandeep Kale, "Purification of Second Generation Anticancer Isothiocyanate from Broccoli" in International Conference on "Bioprocessing India 2016" at Center of Innovative and Applied Bioprocessing (CIAB), Mohali during 15-17 December, 2016.
- 4. Parmeshwar Patil**, Annamma Odaneth and Arvind Lali. "High-Throughput system for Biomass compositional analysis". Bioprocessing

India 2016 Sustainable Bioprocessing Products for Food, Nutrition, Health and Environment held at IISER Mohali, 15 - 17 December 2016.

- 5. Akanksha Agarwal**, Reena Pandit and Arvind Lali, "Taking algal cultivation towards sustainability: use of alternate nutrient sources" in International conference on 'Advances in Algal Biotechnology' at Vellore Institute of Technology during August 2016. Awarded the "Best Young Innovator" for the oral presentation.

EVENTS ORGANIZED

- The Kick-off meeting for the BBSRC granted project titled "Cascade processes for integrated bio-refining of agricultural waste in India and Vietnam (CAPRI-BIO) on 30th - 31st May 2017.
- The 4th Oversight committee meeting was conducted on 22nd - 23rd May 2017.
- Workshop on "Valorisation of CO₂ & CH₄ from Anaerobic Digestion, Landfill and other Biological Processes" on 9th - 10th January 2017.

COLLABORATIONS

INDUSTRIAL COLLABORATION

- Agilent Technologies, India
- Wipro GE Healthcare Private Limited, India
- India Glycols Limited, India
- Privi Organics Private Limited, India

- Kirloskar Integrated Technologies Limited, India
- Privi Biotechnologies Private Limited, India
- Kanoria Chemicals & Industries Limited, India
- The Coca Cola Company, USA
- Atech Innovations, GmbH, Germany
- ACME Synthetic Chemicals Private Limited, Mumbai
- Camlin Fine Sciences Ltd, Mumbai.
- Godrej Agrovet Private Ltd, Mumbai
- Godrej Industries Ltd, India

- Advanced Bioenergy Research, New Delhi, India
- CSIR-National Institute for Interdisciplinary Science & Technology, Trivandrum, India
- The Energy and Resources Institute (TERI), New Delhi
- CSIR-Central Salt & Marine Chemical Research Institute (CSIR-CSMCRI), Bhavnagar, India

INTERNATIONAL

- Centre for Tropical Crops and Biocommodities, Queensland University of Technology, Brisbane, Australia
- Centre for Energy, The University of Western Australia, Perth, Australia
- Department of Chemical Engineering, Curtin

- University, Perth, Western Australia
- Clostridia Research Group/ Life Sciences, University of Nottingham, UK
- Institute of Biological, Environmental and Rural Sciences, Aberystwyth University, Aberystwyth, UK
- CNAP, Department of Biology, University of York, UK
- Institute for Cell and Molecular Biosciences, Newcastle University, UK
- Faculty Health & Life Sciences, Oxford Brookes University, UK

ACADEMIC COLLABORATIONS

NATIONAL

- DBT-ICGEB Centre for

CONSULTATION LIST:

a)	Characterization of natural colours and improving protein content in oats	General Mills INC
b)	Enzymatic and Microbial Biotransformation and bio-based chemicals	Privi Organics Pvt Ltd, Navi Mumbai
c)	Lignocellulosic Ethanol	India Glycols Ltd. Kashipur
d)	Biotransformation and Purifications of Fatty Acids	Acme Synthetic Chemicals
e)	Adsorptive and Chromatographic Separations	Mitsubishi Chemicals India Pvt. Ltd., Delhi
f)	Natural Products Purification and Qualification	Abhay Cotex Pvt. Ltd., Jalna
g)	Camlin Fine Sciences Ltd.	Enzymatic Production of Ascorbyl Palmitate
h)	Kanoria Chemicals and Industries Ltd.	Soy Protein Pilot Plant

PH. D. STUDENTS THESIS SUBMITTED

Sr. No.	Research Scholar (Beginning with Last name)	Course	Project	Supervisor
1	Bajwa Singh Arjun	Ph.D. (Tech.)	Engineering of corynebacterium glutamicum for the production of L-amino acids	Prof.A.M. Lali

2	Degweker Gautam	Ph.D. (Tech.)	Design of high productivity fermentation systems	Prof.A.M. Lali
3	Pillai Vijita	Ph.D. (Sci.)	Production of organic acids and cobalamin using Propionibacterium	Prof.A.M. Lali
4	Krishnan Archana R.	Ph.D. (Sci.)	Designing microbial cell factory for IPP pathway engineering	Prof.A.M. Lali
5	Sawant Sonal	Ph.D. (Sci.)	Engineering microbial host strains for heterologous production of value added chemicals	Prof.A.M. Lali
6	Maurya Ritu	Ph.D. (Sci.)	Reactive separation of organic acids from fermentation broth	Prof.A.M. Lali
7	Nainan Lucy	Ph.D. (Sci.)	Engineering Escherichia coli for the production of C-3 metabolites	Prof.A.M. Lali
8	Yadav Manish	Ph.D. (Sci.)	Strategies for enzyme mediated synthesis of fatty acid esters	Prof.A.M. Lali
9	Chavan Manoj	Ph.D (Tech.)	Valorization strategies for agro based products	Dr. S.B. Kale
10	Vaze Rutuja	Ph.D. (Sci.)	Controlled protein hydrolysis for growth stimulating peptides	Dr. A. Anil

M. TECH. STUDENTS THESIS SUBMITTED

Sr. No.	Name	Course	Title of Project	Supervisor
1	Dhivya S	M.Tech. (BPT)	Purification of biomolecules by polyelectrolyte precipitation and membrane separations	Prof. A. M. Lali
2	Patle Sandeepkumar	M.Tech. (BPT)	Designing strategy for purification of protein sweetener from crude extract.	Dr. S.B. Kale
3	Kadam Aakanksha	M.Tech. (BPT)	Adsorptive chromatographic purification of biomolecules on porous polymeric adsorbents	Dr. S.B. Kale
4	Kokate Mahesh	M.Tech. (BPT)	Purification of ovalbumin from chicken egg white	Dr. S.B. Kale
5	Yelne Payal	M.Tech. (BPT)	Evaluation and basic engineering of unit processes for biomolecules	Dr. S.B. Kale
6	Dubey Apoorwa	M.Tech. (BPT)	Fractionation of ULVA into value added products	Dr. A. Anil
7	Chourasia Vallari	M.Tech. (BPT)	Production of Microbial oil by oleaginous yeasts using Lignocellulose derived feedstocks	Dr. A. Anil
8	Karle Vaishali	M.Tech. (BPT)	Development of fermentation strategies to produce omega-3-fatty acids from thraustochyrids	Dr. G. Prakash

9	Rai Peeyush	M.Tech. (BPT)	Microalgal growth engineering for enhanced carotenoid production	Dr. R. Pandit
10	Ranvir Vikas	M.Tech. (BPT)	Expansin and expansin appended enzymes	Dr. S.K. Chandrayan
11	Ghorband Sainath	M.Tech. (Green Tech.)	Effective bioremediation of industrial effluents using microalgae	Dr. R. Pandit

M. CHEM. ENGG. STUDENTS THESIS SUBMITTED

Sr. No.	Name	Course	Title of Project	Supervisor
1	Juneja Ranjana	M.Chem. Engg	Forward osmosis for concentration of biomolecules	Prof. A. M. Lali

PH. D. STUDENTS WHO WERE AWARDED M. TECH DEGREE

Sr. No.	Name	Course	Title of Project	Supervisor
1	Pednekar Mukesh	Ph.D. (Tech.)	Controlled chemo-enzymatic hydrolysis of polysaccharides	Prof. A. M. Lali
2	Rao Suruchi	Ph.D. (Tech.)	Cloning, expression and functional characterization of cellulose specific carbohydrate binding modules (CBMs)	Prof. A. M. Lali
3	Rathod Jayant	Ph.D. (Sci.)	Molecular cloning, overexpression of stress responsive genes in microalgae under high light conditions for improved growth	Prof. A. M. Lali
4	Gangal Swanand	Ph.D. (Sci.)	Designing strategies to improve microalgal lipid production for biofuels	Prof. A. M. Lali
5	Deb Shalini	Ph.D. (Sci.)	Construction of genome editing tools and metabolic engineering of escherichia coli for production of isobutanol	Prof. A. M. Lali
6	Shukla Hiral	Ph.D. (Sci.)	Integrative butanol fermentation	Prof. A. M. Lali
7	Warke Mrunal	Ph.D. (Sci.)	Biotransformation of ricinoleic acid into value added products	Dr. A. Anil
8	Victoria Juliet	Ph.D. (Sci.)	Saccharification of holocellulose	Dr. A. Anil
9	Sawant Sneha	Ph.D. (Sci.)	Strategies of reducing glucose intolerance in β -glucosidases	Dr. A. Anil
10	Palkar Juilee	Ph.D. (Sci.)	Dynamics of microalgal physiology with sewage as a sustainable fertilizer for biofuels	Dr. R. Pandit

11	Patil Smita	Ph.D (Sci.)	Study of photosynthetic efficiency of microalgae in response to environmental and designed condition	Dr. R. Pandit
12	Gaikwad Sujata	Ph.D. (Sci.)	Deployment of nutrient regulation strategy for generation of sustainable oleaginous microalgae feedstock	Dr. R. Pandit

M. TECH. STUDENTS WHO WERE AWARDED PH.D. DEGREE

Sr. No.	Name	Course	Title of Project	Supervisor
1	Sreenivasan Shra- van	M.Tech (BPT)	Catalytic liquefaction of municipal solid waste for generation of energy dense biocrude oil	Prof. A. M. Lali
2	Choudhary Milan	M.Tech (BPT)	Selective extraction and purification of small biomolecules	Dr. S. B. Kale
3	Alam Md. Shoaib	M.Tech (BPT)	Strategies of itegration in down-stream processing for purification of biomolecules	Dr. S. B. Kale
4	Shaikh Mahboob	M.Tech (BPT)	Bioprocess strategies for production and recovery of terpenes from fermentation broth	Dr. S.B.Kale
5	Barewar Chhotelal	M.Tech (BPT)	Microbial synthesis of oleochemicals	Dr. A. Anil
6	Kesare Rahul	M.Tech (BPT)	Extraction and characterization of proteins from natural sources	Dr. A. Anil
7	Parekh Priyanka	M.Tech (BPT)	Extraction and purification of carotenoids from micro-organisms	Dr. R. Pandit
8	Mehta Ketan	M.Tech (BPT)	Enhancement of carotenoid production in phaffia rhodozyma	Dr. G. Prakash
9	Ram Deepan	M.Tech (BPT)	Fermentative production and docosahexanoic acid (DHA) from Thraustochytrids	Dr. G. Prakash
10	Tijore Amay	M.Tech (BPT)	Isoprene production in Bacillus subtilis by overexpressing MEP pathway or introducing heterologous MVA pathway	Dr. S.K. Chandrayan
11	Chaudhary Venus	M.Tech (Green Tech.)	Exploring algal feedstock and alternative carbon sources for production of nanocellulose	Dr. R. Pandit
12	Mhatre Apurv	M.Tech (Green Tech.)	Multiproduct integrated process for algal feedstock : converting Co2 to value added products	Dr. R. Pandit

M. CHEM. ENGG. STUDENTS WHO WERE AWARDED M. CHEM. DEGREE ENGG.

Sr. No.	Name	Course	Title of Thesis	Supervisor
1	Navale Mahesh	M. Chem. Engg.	Design of photobioreactor for algae cultivation	Prof. A. M. Lali
2	Karwar Dnyaneshwar	M. Chem. Engg.	Chromatographic separations using simulated moving bed	Prof. A. M. Lali

MEMBERSHIP OF IN-HOUSE COMMITTEES:

Prof. Arvind .M. Lali

- I. Head, DBT-ICT Centre for Energy Biosciences
- II. Chairman, TEQIP Industry Institute Interaction Cell
- III. Chairperson : Research Recognition Committee (Bioprocess Technology)
- IV. Chairperson: Research Recognition Committee (Biological Sciences)

ACADEMIC AND CENTRE MANAGEMENT

Sr. No.	Committee	Members
1	F&A	Dr. Reena Pandit
2	Admission and Academics	Dr. Sanjeev K Chandrayan
3	GB/SAC/Chair fellow	Dr. Gunjan Prakash
4	General Administration	Dr. Reena Pandit
5	BPT/Lectures lode	Dr. Sandeep B. Kale
6	Stores/Electronics/Communication	Dr. Sanjeev K. Chandrayan
7	Softwares/Licensing	Mrs. Vibha Raut
8	RRCs	Dr. Shamlan Reshawala
9	Projects Management	Dr. Manju Sharma
10	General upkeep & discipline	Dr. Annamma Anil
11	Attendant/Clerks/Accountant/Non-teaching staff management	Dr. Reena Pandit
12	Instruments & Maintenance	Mrs. Vibha Raut Mr. Akashay Kolge
13	Lab Upkeep + Safety + Disposal	Dr. Sandeep Kale Dr. Shamlan Reshamwala

DBT-ICT CENTRE FOR ENERGY BIOSCIENCES



The Kick-off meeting for the BBSRC granted project titled "Cascade processes for integrated bio-refining of agricultural waste in India and Vietnam (CAPRI-BIO) on 30th - 31st May 2017.



The 4th Oversight committee meeting was conducted on 22nd - 23rd May 2017.



Progress 2016-17
2G-Ethanol, Renewables and Clean Energy

Oversight Committee Meeting
May 2017

at
DBT-ICT Centre for Energy Biosciences
Institute of Chemical Technology
Mumbai, India