GLOBAL INITIATIVE OF ACADEMIC NETWORK (GIAN)

Ministry of Human Resources Development
Government of India
COURSE ON

Metabolic Engineering of Microbial Biocatalysts for Production of Fuels and Chemicals: Principles and Practice

20th – 24th March, 2019

Venue:
JNTUH College of Engineering,
Kukatpally, Hyderabad.

About GIAN:

Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India which initially include all IITs, IIMs, Central Universities, IISc Bangalore, IISERs, NITs and IIITs, also subsequently cover good State Universities where the spinoff is vast. The GIAN website may be visited for detailed information.

Overview:

The finite nature of fossil fuels and the environmental impact of their use have raised interest in alternate energy sources. A large fraction of petroleum is used by the transportation sector that depends on energy-rich liquid fuels. To satisfy this energy demand by the transportation industry alternate bio-based liquid fuels are being developed as petroleum replacement. These biofuels are produced from renewable biomass resources either by thermochemical or biochemical processes.

The biochemical process depends on releasing sugars fro m lignocellulosic biomass that is followed by fermentation of the sugars by appropriately engineered microorganisms. Metabolic engineering of microorganisms is critical for the success of the bio-based renewable fuels production. In addition, microorganisms can be engineered to produce various chemicals that serve as feedstock for chemical and plastics industry. Research at both academia and industry is focused on engineering improved microbial biocatalysts that produce fuel or chemical at high productivity, titre and yield. The basic principles of microbial physiology and biochemistry are crucial to achieve this goal. In this course, we present and discuss construction of microbial biocatalysts that integrate these principles.

Number of participants is limited to fifty

Benefits of Attending the Course (Course Objectives):

Candidates attending the course will have an insight into the basic principles of microbial physiology and biochemistry; energetics and kinetics, and their contribution to successful pathway engineering. It helps in understanding the aerobic and anaerobic metabolic processes and the regulation of these processes towards optimizing the fermentation characteristics of the organism. Recognize the role of redox balance and energy charge, and their contribution to successful metabolic engineering of microorganisms, problem-solving in metabolic engineering strategies using various case-studies

Who should attend:

This course is intended for Engineering and science faculty and students at all levels (B.Tech, M.Sc, M.Tech, Ph.D). Faculty from other academic and technical institutions, Engineers, researchers, and managers from R&D laboratories and government organizations are also welcome.

For participation in the course, registration with GIAN is mandatory.

Registration to the portal is one-time affair and will be valid for the lifetime of GIAN. Once registered in the portal, an applicant will be able to apply for any number of GIAN courses as and when necessary. One-time Non-refundable fee of Rs.500/- will be charged for this service.

For registration, please visit the webs
www.gian.iitkgp.ac.in/GREGN/index

Course Fee:

The participation fees for the course is as follows:

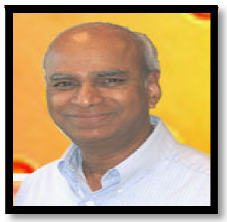
Participants from abroad (US dollars)	**: $500**
Industry/ Research Organizations	**: Rs.5000/-**
Academic Institutions	**: Rs.3000/-**
Full time Students	**: Rs.1000/-**
Full time SC/ST students	**: Rs.500/-**

There will be a concession of 50% of the fee for faculty working in the constituent and affilia colleges of JNTUH. The above fee includes instructional materials, computer use for tutorials assignments, laboratory equipment usage charges, hours free internet facility, tea, snacks, lunch.

Evaluation and Grading:

There will be evaluation at the end of each module on understanding of the concepts by the participant dur the course. Based on the evaluations a final letter gr will be awarded to the participant. A complet certificate shall also be issued.

The Faculty:



Dr. K.T.Shanmugam:
Professor in Microbiology Cell Science from Centre Renewable Chemicals and Fu (FCRC), University of Flori Gainsville, Florida did his Pl in Microbiology from Univers of Hawaii. He was honored w Robert G. Eagon Award for his outstanding service accomplishments in microbial physiology from Sou Eastern branch of American Society for Microbiolo Dr.Shanmugam's research at FCRC is focused towa metabolic engineering of bacterial biocatalysts production of chemicals and liquid fuels at high yield purity. His subjects of interest are biomass conversior

fuels and chemicals, global gene expression and control, physiology of Dihydrogen metabolism in fermentative bacteria and Dinitrogen metabolism.

Dr.AshishMisra:
Assistant Professor from Department of Biochemical Engineering and Biotechnology, IITD. He did his MS and Ph.D in Chemical and Biochemical Engineering from Rutgers, the State University of New Jersey. He did post doctoral research from University of Maryland and having 16years experience in teaching and research. He has given presentations in various annual meetings held by American Institute of Chemical Engineers and Biomedical Engineering Society. His areas of research interest include Metabolic Analysis and Engineering. He was honored with Sapna Loria Young Faculty Incentive Fellowship, UGC Faculty Recharge Programme, DBT-ICT Energy Bioscience Overseas Fellowship and NSF postdoctoral research associate.

Dr. A. Uma:
Head and Assistant Professor, CBT, IST, Jawaharlal Nehru Technological University Hyderabad. She has completed her M.Tech degree from IIT-Delhi and Doctoral degree from S.V.University, Tirupati in 2006, worked as Research Associate(IIT-Delhi), Assistant Professor in SPPMVV, Tirupati, DST- Fast track fellow at CCMB before joining as Assistant Professor in the Centre for Biotechnology. Having twenty three years of PG teaching including fifteen years of research experience, she has five patents and eighty one research publications in various International and National journals. She completed eight major and one minor research projects backed by CSIR, AICTE, DBT and UGC respectively. Currently, she is working on three projects which are being supported by DBT, FIST and AICTE-MODROBS. She has active collaboration with HPCL, ICRISAT, IICT, IIMR, CCMB, NIN & Shiv Nadar University.

Dr. Archana Giri:
Associate Professor, CBT, IST, Jawaharlal Nehru Technological University Hyderabad. She obtained her PhD in the area of Medicinal Plant Biotechnology from CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, India in 1995. She worked as CSIR RA, DST young Scientist and CSIR pool officer before joining as Assistant Professor at CBT, JNT University, Hyderabad, India in 2006. Her research areas include *in vitro* production of bioactive compounds from medicinal plants using biotechnological approaches. She got training in functional genomics of secondary metabolites at Plant Biotechnology Institute (PBI), Saskatoon, Saskatchewan, Canada. Dr Archana's research program is focused upon development and integration of plant biotechnological approaches for *in vitro* production of secondary metabolite s of pharmaceutical value, cloning and over expression of genes of secondary metabolic pathways, production of high value recombinant proteins in plant cell cultures and screening of biological activities medicinal plants viz. antimicrobial, antioxidant and anticancer properties.

About the JNTUH:
The J.N.T University was in existence since 1972. It is a teaching and research oriented University consisting of 4 constituent engineering colleges JNTUH College of Engineering, Hyderabad (JNTUHCEH), JNTUH College of Engineering, Jagityala (JNTUHCEJ), JNTUH College of Engineering, Manthini(JNTUHCEM), JNTUH College of Engineering, Sultanpur(JNTUHCES) and more than 400 affiliated colleges. In addition to the constituent colleges, the other units of JNTUH are School of Information Technology (SIT), Institute of Science and Technology (IST), School of Management Studies (SMS) and Academic Staff College (ASC). The University has numerous collaborative, teaching and research programs with universities from abroad and within India and w industries in the state of Telangana. The University of engineering programs at both UG and PG level and m science and humanities programs at PG level. In additi University also offers Ph. D. in engineering, science humanities disciplines.

Contact Information:

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