



Birla Institute of Scientific Research, Jaipur

Spoke



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The Centre undertakes goal oriented applied research in the frontier areas of Science and Technology. Besides in-house initiatives, government and industry sponsored projects are also undertaken. It also organizes quality improvement and customized training programs. It has established effective linkages with industry, educational and other institutions. It organizes conferences, symposia, workshops and scientific meetings in the areas of strategic needs of the country.

Birla Institute of Scientific Research, Jaipur



Dr Krishna Mohan has a Masters and Doctoral degree in microbiology from G B Pant University of Agriculture and Technology, Pantnagar. Just after completing PhD he joined Tata Energy Research Institute, and has been associated with the Microbial Biotechnology group in various capacities for over a decade. He has been a member of an International group that worked on innovative bioprocesses for energy generation from solid wastes. He was also involved in designing an UASB reactor for treating the liquid wastes of a food-processing unit. He was an active member of the much-acclaimed TERI project on GREEN INDIA 2047. He has worked as consultant to public as well as private sector organizations for their solid waste management programs. Since 1997 he has been with the biotechnology group at BISR. Continuing the environmental mitigation work he handled a project on decolorization of textile dye effluents. He was actively involved in microbial exopolysaccharide production technology, its demonstration and transfer of technical know-how to a private sector company. Presently he is involved in assessing Microbial Biodiversity of salt lakes and deserts following the principles of polyphasic taxonomy and still keeps his interest alive on lignin biodegradation. He co-edited a book on Wealth from waste. He has been one of the editors of Indian Journal of Microbiology from 1993-1996. He is presently the Vice-President of Mycological Society of India. He completed/coordinated >20 Major research projects and guided many doctoral and post doctoral students. Member of various scientific committees, Dr Krishna Mohan has more than 30 years of research and administrative experience.

Spoke Coordinator, DIC-RU



Prof. M. Krishanmohan

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Research Areas & Projects

Medical Biotechnology

- Detection of mutations in the genes for telomerase reverse transcriptase (TERT) & Measurement of telomere length in patients apparently acquired aplastic anemia
- Whole Exome sequencing reveals rare variants linked to congenital pouch colon
- Study of pouch colon affected pro-bands in Rajasthan
- Computational peptidology: computational approaches to understanding cellular regulatory events
- Whole Exome sequencing of prostate cancer subjects specific to India
- Genetics of type 2 Diabetics in India: A multi-centric population specific family genetic study
- Rapid multiplex PCR based detection of water borne human bacterial pathogens
- Role of weak interactions in protein complexes.
- Peptide Inhibitor design targeting Bcl2.
- Metagenomics studies of clinical samples involved in Rheumatoid Heart Disease (RHD)
- Systems Biology and Control theoretic studies involved in Carbon partitioning.
- Machine Learning and Deep Learning approaches to studying protein-peptide and protein-protein interactions.
- Deep Learning in Medical Image Analysis.
- Whole Exome Sequencing of Prostate Cancer Subjects specific to India
- Lnc-EPB41-Protein Interactions Associated with Congenital Pouch Colon
- Systems Genomics of Thigh Adipose Tissue From Asian Indian Type-2 Diabetics Revealed Distinct Protein Interaction Hubs
- Validation of Gene sets identified from Transcriptome data of Adipose tissue of Asian Indian Type 2 Diabetes Mellitus patients
- Dissecting Vitamin K Pathways in human subjects using next generation sequencing (NGS)

Microbial Biotechnology

- Microbiological analysis of drinking water of South-Eastern parts of Jaipur city
- Chitinase production and enzyme hydrolyzed product analysis of chitin
- Development of dielectric barrier discharge (DBD) based plasma system for potable water purification
- Screening, characterization and identification of rhizobacterial strains having potent antifungal properties associated with economically important crops of Rajasthan



- Molecular profiling of rhizobacterial communities associated with healthy and wilt infected cumin plants
- Biological control of Fusarium wilts of cumin with a newly isolated broad spectrum chitinolytic bacterium *Brevibacillusformosus* BISR-1
- Effect of metal ions and chemical compounds on chitinase produced by a thermotolerant *Paenibacillus* sp. BISR-047 and its shelf life
- Biotechnology Information System Sub-Distributed Information Centre
- Increased guar gum production, disease suppression and plant development by treatment of Rhizobacteria in cluster bean to enhance the economy of Rajasthan
- Bacterial profiling of Bisalpur drinking water distribution system: A comparative study from the source to the tap
- To develop a rank based tool to design desired PCR primers
- To develop an algorithm for online analysis of different oligonucleotide frequencies at genome level
- To develop an online tool to study interaction specificity in protein ligand complex
- Development of a microbial process to convert chitin into N-acetylglucosamine

Natural Resource Management

- Controls of runoff parameters on water balance of Bisalpur reservoir, Rajasthan, and GIS based catchment management protocol
- National wasteland change analysis 2015-2016
- Creation of Geo-database under Rajiv Gandhi National drinking water
- Thematic mapping on 1:10K scale under space based information support for decentralized planning
- Creation of Geo-database under Rajiv Gandhi National drinking water, Mission Project Phase-IV
- Satellite data processing and content generation
- Land Degradation (2nd cycle)
- Second phase of development of web based DSS for natural resource development by open source tools
- Monitoring of Integrated Watershed Programme (IWMP) watersheds using Geospatial Technologies
- Landuse/Landcover analysis (3rd cycle)
- Empowering Panchayati Raj Institutions Spatially (EPRIS)
- Database analysis of two and half decade (1990-2015) of Earth Science research in India
- Controls of geomorphology, neotectonics and landcover-landuse on groundwater recharge under climate change forcing scenario in semi-arid drainage basin, Rajasthan
- A protocol for groundwater recharge capability assessment using multi-thematic parameters in Khari-Mashi drainage basin, Rajasthan



Birla Institute of Scientific Research, Jaipur

Infrastructure

- Bioprocessing Laboratory
- Microbiology and Molecular Biology Laboratory
- Advanced Bioinformatics Centre & BTIS Sub-DIC
- Plant Tissue Culture Laboratory & Green House
- Remote Sensing and Environmental Laboratory
- Library



Training and Courses

- National Workshops on matters related to Biotechnology & Natural Resources
- Organize workshops in thrust areas of Bioinformatics & Geoinformatics.
- Summer Training – One Month duration
- PG Dissertations – Six Months duration
- Ph.D. in Biotechnology

Future Plan

- To enhance research effort in Biotechnology and Natural Resource Management and Promote Technology Development & Transfer
- Conduct more customized training program in the thrust areas of Biotechnology for teachers, researchers and students to promote human resource development

