Department of Biotechnology
Ministry of Science & Technology
Government of India

NORTH EASTERN REGION
BIOTECHNOLOGY PROGRAMMES

North Eastern Region
Biotechnology
Programme Management Cell
(NER-BPMC)
(A programme of the Department of
Biotechnology, Government of India)

Managed by
BCIL
Biotech Consortium
India Limited
NORTH EASTERN REGION BIOTECHNOLOGY PROGRAMMES

A Step Towards Biotech based Development in NER

The North East Region (NER) of India is a treasure house of exceptional natural beauty, floral and faunal biodiversity and abundant mineral, water and forest resources. It has been identified as one of the world’s biodiversity hotspots. The rich bioresources spread across diverse ecosystems and nurtured by indigenous communities, provide ample opportunities for biotechnology based developments in the region.

Programmes

To realize the identified priorities, the NER-BPMC is proactively engaged in conceptualizing and implementing innovative programmes/schemes including setting up of specialized capacity building centres and implementing specific R&D & translational programmes. The key initiatives and achievements in the prioritized sectors are summarized below.

SECTORAL PRIORITIES

CAPACITY BUILDING

Human Resource Development

- 205 NER scientists awarded overseas fellowships
- 126 biotech hubs established in institutions across NER
- Establishment of Biotech Laboratories (BLISS) at 88 NER senior secondary schools
- 15 colleges recognized as star colleges in NER
- M.Sc./M. Tech. in biotechnology supported in 5 universities
- 30 senior scientists awarded visiting research professorship
- Training for “enhancing capacity building in genomics-driven research in human health & disease” by NIBMG, Kalyani; 50 researchers trained
- Biotech Industrial Training Program (BITP) for NER students; 235 PG students trained
- Establishment of training center for NER Researchers at ACTREC, Mumbai; >80 NER researchers trained
- >500 researchers trained in grant writing skills and management of IPR in biotechnology
- Establishment of center for empowerment of human resources at NEHU, Shillong
- A workshop for demonstration of low cost fieldscope (microscope) for NER students & researchers in Guwahati
- 50 researchers from NER trained at National Institute of High Security Animal Diseases (NIHSAD), Bhopal on pathogen handling
- >500 training programmes organised by biotech hubs

Infrastructure Development

- DBT-AAU Center at Assam Agricultural University (AAU), Jorhat established and fully functional
- DBT autonomous institute IBSD in Imphal & Regional Center in Sikkim
- DBT-NER center for advanced animal disease diagnostic and management consortium (ADMac) established in NER involving major subject area institutions across India
- Establishment of facility for advanced biotech R&D on Yak and Mithun
- Establishment of facility for augmenting clean pork production and value addition at NRC Pig
- Center of excellence on fisheries and aquaculture biotechnology (FAB-CoE) at College of Fisheries, Agartala, Tripura
- Regional animal house facility at Dibrugarh being established
- 22 Molecular diagnostic laboratories established in 11 medical institutions across NER
- Establishment of comprehensive facility for diagnosis and management of genetic disorders at AMC, Dibrugarh, Assam
• Created advanced diagnostic facility at NEIGRIHMS, Shillong
• Setting up of molecular diagnostic facility for cancer in Aizwal, Mizoram

FLAGSHIP R&D & NETWORK PROGRAMMES

• 480 twinning projects implemented
• 32 mid-career scientists trained under Units of Excellence (U-Excel)
• First time in India, a network programme on chemical ecology of NER implemented
• >1000 scientific manpower trained
• >500 research papers published in peer reviewed journals
• Network programme on MDR-TB in North East India: A genomics driven approach
• Network programme initiated on NER-Duck Improvement involving 20 investigators
• Network programme initiated on NER-Scented Rice involving 28 institutions from NER and other parts of the country
• Network programme initiated on NER-Banana involving >80 scientists from NER and other states
• Project on Integrating Herbal Medicine of NER With contemporary approaches to develop therapeutic strategies for metabolic syndrome involving five institutes initiated.

TWIMMING R&D PROGRAMME

More than 480 projects under Twinning R&D Programme implemented in collaboration with labs in NER and institutions across India

AGRICULTURE AND FOOD PRODUCTIVITY

• A network programme on eco friendly farming using bioinputs; scientists, KVKs and 1400 farmers participated
• Production facility for value chain development in citrus
• A project towards value addition in jackfruit
CLEAN ENVIRONMENT, SUSTAINABLE UTILIZATION AND CONSERVATION OF BIODIVERSITY

- Utilization and conservation of selected medicinal & aromatic plants (MAPs) of NER
- Impact assessment of jhumming on plant and soil microbiota & restoration of sustainable jhum agro-ecosystem

ENTREPRENEURSHIP DEVELOPMENT

- Setting up of Biotech Park at Guwahati, Assam
- Comprehensive entrepreneurship development programmes in NER organized
- Technology incubation centre for entrepreneurship development in mushroom culture and farming established

BIOINFORMATICS AND SPECIALIZED DATABASES

- Network of 30 bioinformatics centers established as NEBINet
- DBT e-library (DeLCON) facility established at 18 NER Institutions
- An online database of Biotechnology and Bioinformatics Human Resources of NER developed (BABRONE- www.babarone.edu.in)

DAILAB

In order to promote close and effective cooperation between India and Japan, the Department of Biotechnology (DBT), Govt. of India and National Institute of Advanced Industrial Science and Technology (AIST, Japan) established a joint International research laboratory, as DAiLAB. The essence of DAiLAB has been to train young talent to nurture for advanced R&D and translational processes. IIT Guwahati and Sikkim University are part of DAiLAB in addition to RCB and IIT Delhi.
CENTER OF EXCELLENCE (COE) IN NER

DBT-AAU Center for Agriculture Biotechnology, established at AAU, Jorhat is engaged in developing skilled human resources, generating bio-inputs to assist eco-farming in NER, documentation & genetic cataloguing of bioresources for IP management alongwith research in various areas. So far, transgenic chickpeas & blackgram lines have been generated, 750 rice germplasms have been genotyped, 9 Ph.Ds awarded, drought tolerant rice variety (Ranjit) & 9 innovative projects are in progress.

For strengthening fisheries & aquaculture R&D, DBT has also established FAB-COE at College of Fisheries, Agartala, Tripura.

NER Overseas Associateships

- Boston Children’s Hospital, Harvard Medical School
- Cornell University
- University of Georgia
- Washington State University
- University of Texas
- United State Department of Agriculture (USDA)
- University of California
- University of Wisconsin
- The Vaccine Research Institute of San Diego
- National Institute of Health (NIH)

- University of Glasgow
- University of Strathclyde Science
- The Food and Environment Research Agency
- University of Aberdeen
- University of Wolverhampton

- Uppsala University, Sweden
- Ghent University, Belgium
- University of Regensburg, Germany
- Institute of Farm Animal Genetics, Germany
- IFAPA Center, Alameda Del Obispo, Spain
- Laboratoire Interactions Plants
- Microbes, CNRS-INFRA, France

- Lakehead University
- Concordia University
- University of British Columbia

- National Institute of Biomedical Innovation, Japan
- CSIRO, Canberra, Australia
- Sun Yat-sen University Cancer Center, China
- University of Southern Queensland, Australia
- Invermay Agriculture Center, New Zealand

A major network project in a consortium mode on “NER-Scented Rice” has been implemented in NER. NER possess a rich diversity of aromatic rice which are high value both in terms of their unique medicinal and delicious edible properties. The aromatic rice of NER especially Joha and Black rice are of premium value because of their aroma and medicinal characteristics. Twenty eight (28) institutions from NER and other parts of the country are part of this consortia project.

Another consortium mode project on “NER-Banana” has also been initiated in NER. Banana is one of the topmost horticultural crop in NER of India especially Assam. In order to address the need to conserve, characterize and expand the germplasm stock, a consortium based banana research programme has been initiated to cater to the biotechnological needs of banana production in NER.
NETWORK PROGRAMME ON CHEMICAL ECOLOGY OF NER

This network programme involves scientists from institutions in Bangalore & NER and focuses on identification of the origins and compositions of plant, insect & vertebrate pheromones and semi-chemical analysis and (re)engineering of molecular, structural, behavioral, neural, biochemical, genetic and physiological mechanisms governing interactions between flora and fauna of NER.

VALUE ADDED PRODUCTS

Value added products from Jackfruit and Citrus

The programme has identified more than 40 elite jackfruit genotypes for culinary or table purposes, organized training workshops for farmers on existing jackfruit technologies and produced value added products like pickle, curry, bhaji, tikki, chips, squash, wine, jam, papad, etc.

The Value Chain Development in Citrus programme aims at using modern technologies for mass production of citrus plants and value-added citrus products.
WORKSHOPS ON GRANT WRITING SKILLS & IPR MANAGEMENT IN BIOTECHNOLOGY

Series of 3 day capacity building workshops were organized for NER researchers, students & faculty in different NER states, wherein >500 participants were trained in grant writing & IPR management through group exercises.

FOLDSCOPES

A frugal microscope developed by an Indian researcher Dr. Manu Prakash at Stanford University, USA, is assembled from simple components, including a sheet of paper and a lens. It is acting as a tool connecting students & science from the region, with the rest of the country.

BIOTECH HUBS

125 biotech hubs have been established in NER by providing necessary infrastructure in universities/colleges/institutions for motivating students to pursue science; >1000 specialized training programmes conducted and >1500 students trained by these Hubs