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Institute of Himalayan Bioresource Technology (IHBT), Palampur

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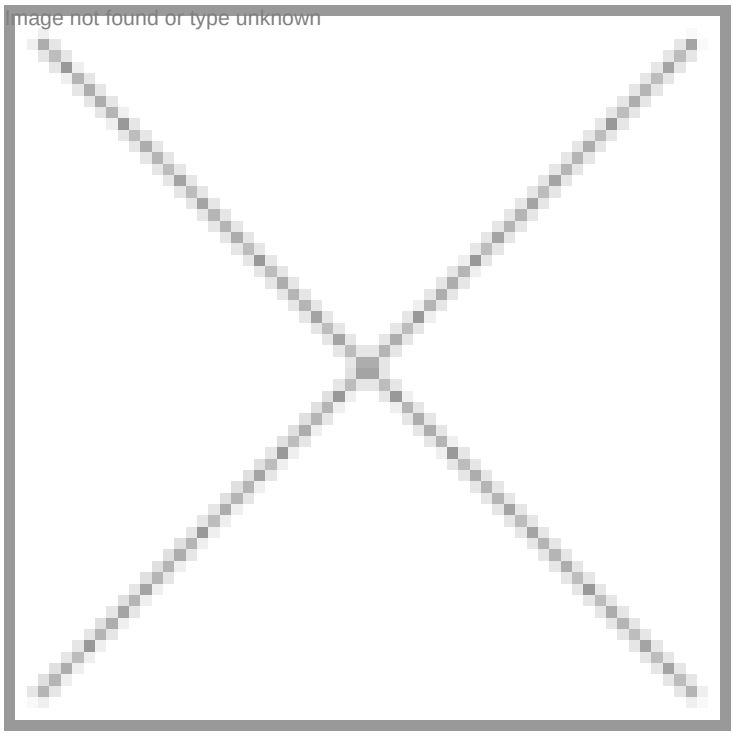

Institute of Himalayan Bioresource Technology (IHBT), Palampur

The IHBT is involved in the establishment, upgradation, and sustainable management of bioresources in the Himalayan region through agrotechnology, processing technology and biotechnology. The institute provides R&D services on economic bioresources in western Himalayan region leading to value added plants, products process for industrial, societal and environmental benefit.

It is engaged in research in three major areas: plant tissue culture; plant molecular biology; and plant physiology and biochemistry. Plant tissue culture aims at micro propagation of economically important plants like tea, bamboo, rose, ornamentals, and medicinal plants. Plant molecular biology focuses on DNA- fingerprinting, identifying cloning of genes, developing transgenics, etc. Plant Physiology emphasizes basic aspects of plant adaptations at high altitude, basis of dormancy, seed biology, and senescence in tea and ornamentals.

The plant tissue culture lab of the unit has a modern culture room with automated shakers, microscopes with CCD, an exclusive area for washing and media preparation, a series of greenhouses / polyhouses for hardening of tissue culture raised plants, a biolistic gun and containment facility for undertaking studies on transgenics and a bioreactor for carrying out studies on secondary metabolites. The Plant physiology and seed biology lab has a cryogenic facility.

The Plant molecular biology lab is well equipped to work on genomics and proteomics. The unit has PCRs, gel document systems, 2-D electrophoresis system, manual and automatic sequencer, phosphoimager, high-end equipments like QToF,

Spot cutter and Spot digester.

Indian Institute of Chemical Biology (IICB), Kolkata

The Institute was established in 1935 as the first non-official centre in India for biomedical research and was included within the aegis of CSIR in 1956. IICB today is engaged in research on diseases of national importance and biological problems of global interest, employing sophisticated state-of-the-art technology in keeping with the rapid and unprecedented momentum that life science research has gained globally over the last 50 years. The scientific staff has expertise in a variety of areas including chemistry, biochemistry, cell biology, molecular biology, neurobiology and immunology, which promotes productive interdisciplinary interaction. IICB is one of the major laboratories in India, which initiated, right from its inception, multidisciplinary concerted efforts for conducting basic research on infectious diseases, specifically leishmaniasis and cholera, along with the development of technologies for the diagnosis, immunoprophylaxis, and chemotherapy of the diseases. The institute has developed an oral vaccine for cholera, herbal products for controlling gastric ulcer, empirical treatment for vitiligo, diagnostic kits for malignancy and hormonal disorders, fungal enzymes of industrial importance, radio pharmaceuticals for evaluation of the functional status of renal and hepatobiliary systems and a device for early detection of Parkinson's disease. Although the strength of IICB has always been basic biomedical research, during the last decade emphasis has been on goal-oriented research directed towards commercial exploitability. Efforts are now on to convert the knowledge gained over the years through high quality basic research into wealth.

Central Salt & Marine Chemicals Research Institute (CSMCRI), Bhavnagar

The Central Salt & Marine Chemicals Research Institute was established in 1954.

Currently the research and development activities of the institute dwell around three areas: Inorganic chemicals, catalysis and new materials; Membrane science and separation technology; and biosalinity. The aquaculture of economically important seaweeds and recovery of phycocolloids and other important products from seaweeds; wasteland development through cultivation of desert economic and halophytic plants in arid, semi-arid and saline lands and recovery of important products from them are some its important focus areas in field of life sciences.

The mission of the Institute and its people is to work in partnership with sponsors and collaborators to generate the knowledge and innovations required for efficient utilization of our coastal wasteland, seawater, marine algae, solar power and silicates. The Institute plans to harness its capabilities in biosciences, chemical transformation, process engineering, environmental monitoring, separation science and analysis to address focused needs of industries and organizations in the region and beyond.

Regional Research Laboratory (RRL), Jorhat

The Regional Research Laboratory (RRL), Jorhat was established in 1961 and its major thrust of R&D activities has been to develop indigenous technologies by utilizing the immense natural wealth of India. The North Eastern Region of the country being bestowed with an abundance of material resources like petroleum, natural gas, minerals, tea as well as aromatic and medicinal plants, the laboratories undertake research for development of know-how for a wide a range of industries and extension works. In the life sciences arena, the focus is on research on aromatic and medicinal plants, exploration of microbes and screening them for novel metabolites for biotechnology-based processes. Over the years, the laboratory has generated more than 100 technologies in the areas of agro technology, biological and oil field chemicals of which about 40 percent were of commercial success culminating in setting up of various industries through out the country. The laboratory also developed expertise in the areas like natural products chemistry, drug and drug intermediates, VSK cement, plant technology, agro-technologies, petroleum microbiology and petrochemicals, crude oil transportation, paper and paper products, beneficiation chemicals, ecology and environmental studies, geotechnical investigations, foundation design engineering, soil and building materials etc.

Regional Research laboratory (RRL), Thiruvananthapuram

RRL, Thiruvananthapuram is engaged in R&D programs in the area of agroprocessing, chemical sciences, materials and minerals, biotechnology and process engineering and environmental science and technology. The programs have a blend of basic research and technology development and commercialization; have specific thrusts on frontier areas of research, National Mission Projects, regional resource-based activities and R&D-Industry-Academia linkages. The laboratory has excellent collaborative programs with major national and international agencies too. In the biotech arena the institute focuses on development of biocatalysts, bioactive compounds, secondary metabolites and other value added products from plants and microorganisms utilizing the regional resources for various industrial applications with special reference to healthcare and green technologies.

The Specific areas of R&D are: Microbial/Enzyme/Bioprocess Technology; Microbial Genomics; Persistent organic pollutants research; Development of bioprocess for the production of alcohol from cassava; Development of laboratory bioprocesses for the production of industrial and therapeutic enzymes, which include glucoamylase, alpha amylase, protease, lipase, L-glutaminase, xylanase, phytase, and inulinase; Development of laboratory bioprocess for the production of L-glutamic acid, citric acid, aroma compounds and mushrooms; Solid-State Fermentation (SSF) processes and systems; Process development for bioconversion of agro-industrial residues, in particular those available in the region; Quality improvement of alcohol produced by a distillery with increased productivities; Laboratory process on the development of two-stage anaerobic up-flow bioreactor for the treatment of digestion of natural
rubber effluent.

Indian Institute of Chemical Technology (IICT), Hyderabad

IICT offers globally competitive and environmentally viable technologies for drugs and drug intermediates, organic and inorganic chemicals, agrochemicals, catalysts, polymer coatings, adhesives, oils and many other technologies. IICT also offers wide-ranging knowledge based services in analytical testing and characterization, new molecule and product development, process upgradation and restandardization, process safety studies, design-engineering and project viability studies. In the biotech arena, it focuses on high quality basic and applied research in bioinformatics, entomology and toxicology besides developing specialty chemicals, biodiesel and nutraceuticals.

IICT 's basic objectives have always been to carry out research in the chemical sciences leading to innovative processes for a variety of products necessary for human welfare such as food, health and energy and the conduct of R&D work is fully geared to meet the requirements of technology development, transfer and commercialization. Process development work, particularly for bulk chemicals is carried out at appropriate pilot plant scale to collect techno economic and design data. With the help of excellent design and engineering expertise available, the institute has been providing engineering designs for commercial plants with standard commercial guarantees. More than 150 technologies developed by IICT are now in commercial production. With over 450 highly professional and dedicated scientists and technical officers/technicians, excellent laboratory and instrument facilities for research in chemical sciences and technology and allied sciences, IICT is known nationally as well as internationally for its contributions both in basic and applied research.

Regional Research Laboratory, Jammu

RRL, Jammu is a multidisciplinary research institute engaged in R&D on Bioprospecting of natural molecules; Biotechnology-fermentation and enzyme technology, microbial bodiversity, molecular biology and gene cloning; Natural products chemistry; Cultivation and Utilization of drugs and essential oil bearing plants and Chemical Engineering and Design backup for packaging of technologies. It is engaged in two major areas of research namely-drug design and development and microbial biotechnology.

The division of biotechnology at Regional Research Laboratory, Jammu is an established centre for fermentation, molecular biology and genetic engineering in microbes and plants. The core facility of this research laboratory is its pilot plant, with microprocessor controlled fermentors and sophisticated equipments required for microbiology, biochemistry, enzymology, genetic engineering and bio-chemical engineering.

The biotech division has four subunits: Microbiology; Fermentation technology; Genetic engineering; and Enzyme technology. In the Microbiology unit of the division, isolation of microbes, their identification, characterization, preservation and screening for specific microbial enzymes and secondary metabolites are carried out. Among the enzymes the emphasis is on the presence of industrially important enantio/ regio-specificity. The microbial strains encoding such enzymes are identified up to species level by 16S rRNA gene typing. Selected wild type and recombinant strains are grown at lab to pilot scale fermentors. The strategies of scale-up or scale-down are selected depending upon the nature of the process under study.

National Institute of Oceanography (NIO), Goa

Marine biotechnology is an important area of research at the National Institute of Oceanography. The institute has expertise in the areas of marine biology, biodiversity, bioorganic chemistry and microbiology. It is actively engaged in the discovery of novel drugs, nutraceuticals, industrial enzymes and other useful products. It was established on January 1, 1966 following the International Indian Ocean Expedition (IIOE) in the 1960s. While the headquarters of the institute is at Dona Paula, Goa, NIO has regional centres located at Kochi, Mumbai and Visakhapatnam. NIO's real strength lies in trained manpower developed the during last four decades for basic ocean research. Over 150 individuals and groups from the institute have studied the special features that the North Indian Basin offers and have made handsome contributions to knowledge regarding the ocean. Over 400 technical and supporting staff backs up the research workers. Besides, the institute gives an opportunity for the fresh graduates to work as project trainees on various projects.

The institute has recently signed a MoU with Pancham Aquaculture Farms, Mumbai for development of technologies and products for sustainable coastal aquaculture and their health management. NIO with its vast experience in aquatic resource assessment and environmental management will provide the company with scientific, technical and aquatic health solutions to the sustainable coastal aquaculture and disease management.

Central Leather Research Institute (CLRI), Chennai

CLRI is one of the premier R&D organizations in the country with a strong foundation in both basic and applied research in leather and allied sciences.

In 1996, the Apex Court declared the closure of 400 tanneries in Tamil Nadu citing serious environmental problems of tannery effluents. Nearly 148 scientists from CLRI demonstrated cleaner leather process technologies in tanneries and undertook the responsibility of providing the know-how on plant pollution control measures. The result: today almost all the tanneries in Tamil Nadu have either established Effluent Treatment Plants (ETPs) or connected to the CETPs. "Probably, this is one example of its kind in India where science really solved a national problem," remarked Dr T Ramasami, director, CLRI. CLRI is one of the few laboratories in the world to recognize the value of biotechnology in leather research. Activities in the area of biotechnology in CLRI took a definite shape in 1990. Since then the focus is in the areas of enzyme technology, in vivo and in vitro studies on connective tissue metabolism and in the development of plant and synthetic drugs for use in the animal models for myocardial infarction and arthritis. In addition, the department provides training in the above areas for carrying out PhD, M Tech and MS Programs of the University of Madras, Anna University, BITS and other universities.