REGIONAL CENTRE FOR BIOTECHNOLOGY

an Institution of education, training and research

(Established by the Dept. of Biotechnology, Govt of India under the auspices of UNESCO)

Annual Report

2009-2010

Contents

Preamble

The Regional Centre for Biotechnology, an institution of education, training and research established by the Department of Biotechnology, Government of India under the auspices of UNESCO, is a newly created autonomous institution currently established by an executive order of the Government of India dated 20.04.2009 pending a bill to be introduced in the parliament. The Centre is aimed to focus on multi-disciplinary education. training and research programmes which will be constantly evolving to provide scope for intense experimentation to germinate innovation in Biotechnology. It is earnestly hoped that the international nature of this Institute and the partnership with UNESCO will create access to new ideas in education and training on a worldwide basis.

The immediate research and development activities being undertaken at the Centre presently include: structural, systems and chemical biology, molecular and cell biology, nanoscience and technology, disease biology and drug discovery. Other areas of the research and training activities will be further enhanced after recruitment of new faculty members.

Two training programmes have been conducted jointly with sister institutions. One is the Winter School in Biotechnology held in October 2009 in collaboration with International Centre for Genetic Engineering & Biotechnology. The other is CCP4 training workshop on Crystallography and Drug Discovery which took place in February 2010 jointly with Jawaharlal Nehru University (JNU), All India Institute of Medical Sciences (AIIMS) and National Institute of Immunology (NII). Processes for post-doctoral training programmes of the Centre have already been initiated. Workshops in other contemporary areas of biotechnology such as nanomaterials, proteomics and genetically modified plants are being planned in collaboration with other sister Institutions. Enthusiastic response was received from the Vice-Chancellors of many prominent Indian Universities to enrol students from neighbouring countries through this Centre in their DBT-sponsored MSc Biotechnology programmes and the logistics of overseas students' inclusion in their respective courses is being worked out.

The buildings and laboratories designs for permanent campus at Faridabad have been prepared and approved by the Building Committee. The Phase-I of the campus development has been initiated. In the meanwhile, interim laboratory space has been hacquired on rental basis at 180, Udyog Vihar Phase I, Gurgaon. Process for procurement of generic laboratory equipment has been initiated. Some equipment have been received, others are expected in due course and further processing is in progress. An informative web portal comprehensively describing programmes and activities of the Centre has been prepared and launched.

While forging ahead to contribute every bit of creative effort and mite to bring accolades and acclaim to the envisioned Centre in the near future I thankfully acknowledge active and unrelenting support from academic, administrative and technical staff of the Centre, generous support from the Department of Biotechnology, Government of India and unmatched cooperation from UNESCO and other partner Institutions of within the country.

(Dinakar M. Salunke)
Executive Director

Place: Gurgaon
Date: 10.09.2010

2. Regional Centre for Biotechnology in Brief

Genesis:

The Government of India and the UNESCO fully realizing the need of training and education for generating interdisciplinary human resource relevant to biotechnology, took a joint decision to establish the Regional Centre for Biotechnology (RCB), an institution of education, training and research. Accordingly, an Agreement was signed dated 14th July 2006 for the establishment and the operation of the said Regional Centre in Partnership with UNESCO thereby expanding the opportunities to create world class education and research and provide seeds of global cooperation.

Background:

This Centre would be beneficial to all countries in the region including India in developing knowledge-rich highly skilled human resource, harmonization of policies & procedures in biotechnology and indirectly promoting trade. Biotechnology being essentially global, the partnerships are as much within as across countries. RCB will create a platform from which many such partnerships will emerge. In other words, RCB is a Centre of education, training and research in biotechnology with intimate contributions from countries of the region and academic institutions from the rest of the world and provides a meeting place where innovation, enterprise, and industrial development will germinate.

Research and Academic Programmes:

The Centre will promote multi-disciplinary innovative research in biotech sciences. Contemporary research at the interface of disciplines with integration of science, engineering and medicine and emphasis on the relevance to the regional societies is being undertaken. Board range of areas synergising with biotech science will be pursued:

- Molecular, chemical and cell biology
- Disease biology
- Biomedical science
- Bioengineering
- Chemical and physical sciences
- Climate science, agriculture and environment

The design and processes of the education at this centre will be such that it will generate technology savvy solution finders/creators, science entrepreneurs/knowledge economy entrepreneurs and R&D leaders. Interdisciplinary Ph D Programme of RCB aims at producing a highly specialized cadre of scientists capable of translating laboratory research to actual practice for societal benefit. The goal of such an Interdisciplinary Ph D Programme is to educate students at the interface of engineering, agriculture, medicine and physical sciences via a flexible structure that permits explorations at the intersections of these disciplines.

The Centre will be open to industry for enhancing their skills in specific areas. Domain-specific programmes will also be designed in order to create a cadre of highly specialized scientists for technology development in the relevant areas. An important focus of expertise building will be regulation, product development, scale up, manufacturing sciences and bio- entrepreneurship.

Faculty:

The centre would recruit scientists with potential for intellectual leadership and passion for both research and teaching in cutting-edge areas of biotechnology and life sciences. The research and education programmes of RCB will be designed to create innovative opportunities to engage in research by integrating science, engineering and medicine to provide major breakthroughs of relevance to India and the region. Centre recognises that the expertise and innovation in diverse domains is critical for the development of novel perspectives in biotechnology, and invites scientists, engineers and medical professionals of the highest calibre and credibility to participate in this shared adventure to transform the biotech sciences.

Scientists working in other national/international institutes and universities will be selected for a period of five years to contribute to the mission of the Centre as adjunct faculty. Limited visiting faculty positions are also available for Indian as well as foreign nationals. Selection will be carried out by a high level committee of global experts.

Career Opportunities:

Post- doctoral training opportunities are available for young scientists from the region who are below the age of 35 years to work under the mentorship of senior faculty of RCB. Post-graduate candidates from this region will be admitted for the inter-disciplinary Ph D programme of the Centre to work under the mentorship of RCB faculty.

RCB is working in close co-operation with several prominent Indian Universities to facilitate admission of international students within the region for the post-graduate course in biotechnology sponsored by the Department of Biotechnology, Government of India.

3. Mandate of the Centre

Mandate of the Centre is to provide a platform for biotechnology education, training and research at the interface of multiple disciplines. The programmes of the Centre will be designed to create opportunities for students to engage in multi-disciplinary research where they learn biotech science while integrating engineering, medicine and science, to provide solutions for human and animal health, agriculture and environmental technologies.

Mission & Vision:

The mission of the Centre is to create opportunities for multi-disciplinary education, training and research in biotechnology. The vision is to produce human resource tailored to drive innovation in biotechnology, particularly in areas of new opportunities and also to fill talent gap in deficient areas.

The Centre shall be an institution of international importance for biotechnology education, training and research (and shall, in due course, be constituted as an autonomous body under an Act of the Parliament). The Centre will also be regarded as a "Category II Centre" in terms of "the principles and guidelines for the establishment and functioning of UNESCO Institutes and Centres" and will enjoy the privileges and immunities of an International organisation under the United Nations (Privileges and Immunities) Act, 1947.

Objectives:

- To produce human resource through education and training in a milieu of research and development for application of biotechnology for sustainable development towards building a strong biotech industry through regional and international co-operation with emphasis on novel interdisciplinary education and training programmes, currently not available in the country.
- To develop research programmes of a global quality through international partnerships.
- To establish technology policy development and information dissemination activities.
- To establish desired infrastructure and technology platforms to support above mentioned activities.
- To enable periodic experimentation in design and implementation of biotechnology education and training and to be a source of new concepts and programmes.
- To create a hub of biotechnology expertise in South Asian Association of Regional Co–operation (SAARC) region, and more generally in the Asian region and to address human resource needs.
- To promote and strengthen South-South & South-North co-operations around issues relevant to biotech education, training, innovation, commercialization and trade; and
- To promote a network of satellite centres in these sub-regions.

Focus:

The primary focus of the Centre is to provide high quality human resource in disciplinary and interdisciplinary areas. This will also create amazing opportunities for students to engage in research by integrating science, engineering and medicine so as to provide health care solutions for human and animal sector, for agriculture and environment technologies.

The Centre would provide outstanding disciplinary as well as interdisciplinary short term training programmes which will include science & technology training for physicians, biologists and engineers by networking through local hospitals/medical & engineering schools etc. In addition, short term training programmes in platform technologies will be conducted for skill development. Specialized domain specific programmes will also be created in new emerging areas.

The Centre will offer a unique Ph.D. programme, specialized master's degree course integrated with the Ph D programme, domain specific training programmes and high quality research and development in specific areas. The Centre will also liaison with other Indian Universities for entertaining students from this region for Masters programme in Biotechnology. The Centre will have the provisions for Visiting Professorship for Indian Nationals and International Scientists, Adjunct Professorships, Re-entry Grants and Young Investigator Awards.

4. Governance Structure

A Board of Governors, Programme Advisory Committee, Executive Committee and Finance Sub Committee will administer the activities of the Centre.

Board of Governors (BoG):

It has a representative of the Government of India, a representative each of the Member States and representatives of the Director General, UNESCO. The Secretary, Department of Biotechnology, Ministry of Science & Technology, Government of India shall be the Chairperson of the Board of Governors.

Programme Advisory Committee (PAC):

Constitutes scientific and technical experts nominated by the Government of India, the member countries of the region and the UNESCO. The Programme Advisory Committee (PAC) shall be the principal academic and research advisory body of the Centre and shall provide advice for planning, execution, review and monitoring of the scientific and academic programmes of the Centre. The PAC will normally meet once a year.

Executive Committee (EC):

Comprises of the Executive Director of the Centre (Chair), representatives of Department of Biotechnology, Government of India, Ministry of External Affairs, Ministry of Human Resource Development, and representatives of 3 Member countries of the region (representation by rotation) and UNESCO. The Executive Committee (EC) shall be concerned with issues of the management of the Centre. Meetings of the EC shall ordinarily be held twice a year and on such date and time and at such place as may be fixed by the Chairman of the EC. One of these meetings shall be held just prior to the annual BoG meeting.

Finance Sub-Committee:

The Executive Committee is assisted by a Finance Sub-Committee to ensure smooth following up of the due financial processes. Meetings of the Finance Sub-Committee (FSC) shall ordinarily be held before every meeting of the EC and on such date and time and at such place as may be fixed by the Chairman of the FSC. The minutes of the meeting of the FSC, after being considered by the EC, shall be placed before the BoG.

5. Recruitment of Academic and Support staff

The post of Executive Director has since been filled. Dr. Dinakar M. Salunke has assumed the charge of the Centre as Executive Director with effect from 02.03.2010.

The faculty selection process is being pursued vigorously. Faculty search has been initiated seeking applications/nominations by advertising nationally and internationally. Advertisements were placed in prestigious science magazines such as Nature, Science and Current Science and national news papers. These advertisements shall be put up with reasonable periodicity. The advertisements will also be placed on the internet. Processes that involve preliminary screening an expert committee, evaluation by domain-specific peers, and final selection by a selection committee were worked out.

Following the above procedure involved in three levels of Search-cum-Selection and Screening, offers of appointment to six candidates against the post of Assistant Professor were issued on. Four among them sent confirmation for joining shortly.

Registrar and three Management Assistants were selected and offers of appointment sent to them. The recruitment process to the post of Senior Manager (A & F), Executive Engineer, Staff Officer to Executive Director, Administrative Officer, Workshop Officer, Documentation Assistants & Technical Assistants were in progress as on 31.03.2010.

6. Training & Education Programmes initiated by the Centre

Following two schemes of the Centre have been initiated so that the education, training and research activities of the Centre could begin at the earliest.

RCB Young Investigator awards:

Young Investigator Awards (RCB-YI) are instituted with a monthly stipend of Rs 40,000/- . This is a career oriented scheme to identify and mentor outstanding young scientists with innovative ideas and desirous of pursuing research at the interface of disciplines in biotechnology. The young scientists below the age of 35 years would be considered for this award. Selected awardees will work under the mentorship of the faculty of the Centre. The award is analogous to the innovative young biotechnologist award of the Department of Biotechnology and the vaccine research innovation award of THSTI. Candidates having Ph D degree with excellent

academic record and high impact publications/patents will be considered for the award. Duration of the award will be for three years extendable for another two years based on rigorous review of performance.

Research fellowships:

Research Fellowships have been instituted for the students who have completed MSc/MBBS/B Tech/MVSc or equivalent in any discipline that is relevant for innovative multi-disciplinary biotechnology research and are eligible for registration for Ph D programme to work under the mentorship of the Centre's faculty. While the remunerations will be similar to the JRF/SRF scheme of DBT/CSIR, the Centre will work out the selection process consonant with international standards.

The advertisements for post-doctoral trainees as RCB Young Investigator (RCB-YI) awards and for JRFs have been made through National Dailies, reputed Science Journals and the Websites of RCB & NII and the applications received were being screened as on 31.03.2010.

7. Workshops Sponsored by the Centre

The following Workshops were sponsored by Centre:

Advanced School in Biotechnology in India 2009:

Advanced School in Biotechnology in India 2009 entitled: Biologics: From discovery to development was conducted during Oct 27th-Nov 3rd, 2009 at Heritage Village Resort, Manesar, Gurgaon. The Advanced School was jointly organized by UNESCO Regional Centre for Biotechnology (RCB), International Union of Biochemistry and Molecular Biology (IUBMB) and International Centre for Genetic Engineering and Biotechnology (ICGEB). There were 30 registered participants who attended the School from different parts of the world, including countries like Egypt, Algeria, Venezuela, Sri Lanka, Syria, Nigeria, Iraq, Iran, Bangladesh, Sudan and India. Theme for this Advanced School concerned the processes from discovery to development of Biologics and covered topics such as process development of

vaccine and therapeutics, diagnostics, biomarkers, drug discovery and development, rationale for vaccine development, delivery system and regulatory considerations in vaccine development. The Advanced School was inaugurated by Prof. V S Chauhan, Director, ICGEB, New Delhi, followed by a welcome lecture by Prof. Angelo Azzi, President, IUBMB. There were a series of twenty lectures delivered by seventeen speakers who were experts in their field of interest. These speakers were representing both academics and industries and shared their experience in product development and discussed various hurdles one could face while performing translational research.

Third CCP4 Workshop in India:

The 3rd CCP4 event in India "From Crystals to Structures : CCP4 Seminar cum Workshop" was held at New Delhi from February 15-19, 2010 with the joint collaboration of All India Institute of Medical Sciences (AIIMS), Jawaharlal Nehru University (JNU), National Institute of Immunology (NII) and the Regional Centre of Biotechnology (RCB). The previous two schools were held in Bangalore. The workshop was financially supported internationally by CCP4, UK, BBSRC, UK, EMBL, Germany and nationally by JNU, RCB, DST, CSIR and INSA. Forty national students representing different laboratories from all over India as well as two international students attended the workshop which was inaugurated by Dr. R. Chidambaram, Principal Scientific Advisor to the govt of India. A number of eminent tutors both international and national with expertise covering all aspects of the field conducted the workshop. Most international tutors were part of the CCP4 core group, who are involved in developing methodologies and software. The sessions were very intensive and gave a concentrated overview of current developments as well as the methods involved in structure determination using CCP4 suite. The seminars and discussions were held in the morning and the rest of the day was devoted to both tutorials and hands-on-session covering theoretical and practical aspects of protein crystallography, structural analysis of proteins, protein-ligand interaction and drug design. Extensive problem solving sessions on the participants data was also done. The tutors succeeded in solving 5 difficult structures out of the 15 that were brought by the participants. In addition to this a hands-on-session was conducted in which students were trained on sample preparation for transportation and data collection at EMBL, Grenoble.

8. Interim Facilities and construction of permanent buildings

Interim buildings

The interim laboratories of the Centre have been set up within the National Capital Region (NCR) Delhi in a 20,000 sq. Ft. Building at 180, Udhyog Vihar, Phase-I, Gurgaon (Haryana) adjacent to the South Delhi area.

Permanent buildings

The permanent campus of the Centre is coming up in a unique Biotech Science Cluster (BSC) being set up by the Department of Biotechnology (DBT), Govt of India in the NCR Delhi at Faridabad (Haryana) on a 200 acre plot of land. The other major Institution within the Cluster is the Translational Health Science Technology Institute (THSTI). A number of other related Centres to be co-located at the cluster are at conceptual stage. The Cluster will facilitate synergizing high value resources and infrastructure, coordinated development and maximize societal benefits.

A firm of Architects M/s. Suresh Goel & Associates engaged for planning, design and execution of building works, services and other facilities has prepared layout plans and schematic designs. Some of the statutory approvals of civic authorities of NCR have already been obtained and some are in the pipeline for commencing various activities. The scheme of total works / services has been divided into several packages expected to be completed in about three year's time. Contract for Package–I/Phase–I for site clearance, construction of internal roads, rain water harvesting, etc. has already been awarded and execution of these jobs is in progress. Power connection of 2000 KW load has been obtained and dedicated transmission line from nearest power grid in Faridabad to the receiving station at site has already been erected. The survey of 160 acre of additional land has also been undertaken. The Building Committee constituted for the NCR – HBSC has been closely monitoring the progress of its various construction activities.

9. RCB as Centre of Excellence through a legislative process (Act of Parliament)

The draft is being examined by a Committee and the revised draft based on the recommendations of the committee will be processed further following the stipulated procedures.