

6. HUMAN RESOURCE DEVELOPMENT

The department is implementing an integrated programme of Human Resource Development (HRD), which covers teaching, training and popularisation of biotechnology. The main objective is to generate adequate human resources trained in the multi-disciplinary and knowledge intensive field of biotechnology, to meet the requirement of trained personnel for the promotion of biotechnology, implementation of various research projects and programmes in biotechnology and its applications in the country. The details of the various schemes are as follows:

6.1 POST-GRADUATE, POST-DOCTORAL AND POST M.D./M/S PROGRAMME

The objective of this programme is to generate adequate trained human resource at the post-graduate/post-doctoral levels to meet the long-term requirement for the development of the field of biotechnology in the country. The department has continued its support to post-graduate courses at M.Sc./M.Tech. levels in selected universities/institutions. These courses are:

- 20 M.Sc. courses in General biotechnology
- 3 M.Sc. courses in Agriculture Biotechnology
- 1 M.Sc. course in Medical Biotechnology
- 1 M.Sc. course in Marine Biotechnology
- 4 M.Tech./M.Sc. (Tech.) courses in Biochemical engineering, Bioprocess technology and biotechnology

In addition, a two-year post-doctoral research-cum-training programme at 4 institutions and two one-year post MD/MS certificate courses in Medical Biotechnology were also supported. Two one-year PG Diploma courses were also supported. During the current year 2 new M.Sc Biotechnology courses at Allahabad University, Allahabad and Himachal Pradesh Krishi Viswavidyalaya, Palampur have been approved. A proposal of Guru Jambeswar University, Hisar for financial assistance for starting a M.Sc course is under consideration. Financial assistance in terms of one time grant to 2 or 3 institutions for conducting post-graduate courses would also be considered. The total intake of students to the various PG/PD courses supported by the department in the country is around 500 per year. An in-depth evaluation of the implementation of the PG/PD programmes supported by the department on regular basis has been made in the course co-ordinators meeting held at Gujarat University, Ahmedabad on 15th September 1999.

6.2. BIOTECHNOLOGY ASSOCIATESHIPS

The objective of the programme is to train scientists in research in frontier areas of biotechnology in leading research institutions in the country and abroad. Scientists holding regular jobs in research institutions/universities and working actively on biotechnological research programmes are selected for the award of these associateships. Two kinds of associateships, namely, National Associateship and Overseas Associateship are awarded by the Department every year.

National associateship: The national associateship is awarded to scientists to conduct research in leading national institutions engaged in biotechnological research activities for a period of one year which is extendable by 6 months in deserving cases. It is proposed to award 15 associateships in the current year.

Overseas associateship: The overseas associateship is awarded under two categories, namely, long-term and short-term associateships for a period of one year and 3 to 6 months respectively. It is proposed to award around 20 associateships under both the categories for the current year.

6.3 TRAINING PROGRAMMES

Short-term training courses for mid-career scientists: The department supports short-term training courses of minimum duration of 15 days in universities and research institutions having facilities and expertise in the areas of biotechnology to impart hands-on training on advanced research techniques in various areas of biotechnology. Mid-career scientists, faculty members of university departments, post-doctoral research fellows, attend these courses and the knowledge gained by them would facilitate in pursuing their R&D programmes as also in undertaking new research initiatives in their parent institutions. The number of participants in each course is around 15. During the year, 11 short-term training courses have been conducted. Four training courses have been approved so far and 3 proposals are under consideration.

Post M.Sc. and M.Tech. training in industries: The objective of this scheme is to orient the biotechnology post-graduates to the needs of biotech industries. Students passing out the post-graduate courses in biotechnology are selected for training in various biotech-based industries in the country for a period of 6 months. Such training would enhance the career opportunities of the students in industries. This scheme is being implemented with the help of the Biotech Consortium India Ltd. (BCIL), New Delhi. During the year around 25 students have been placed for training in various biotech industries.

6.4 VISITING SCIENTIST FROM ABROAD

Under the scheme, eminent biotechnologists from abroad are invited for a period upto 6 weeks to research institutions/universities in India to initiate collaborative research programmes or conducting training courses or to participate in teaching activities. The scheme enables the sharing of the current state of knowledge in the frontier areas of Biotechnology. During the year, the visits of 2 scientists have been approved.

6.5. BIOLOGY SCHOLARSHIP

Fifteen biology scholarships are awarded from amongst the top 40 students in biology at the CBSE 10+2 level examination in order to encourage them to take up biology as career. Each scholarship award carries a lumpsum cash amount of Rs. 15,000/-, a gold plated medal and a certificate of merit. The awards are presented at the National Science Day held on 28th February every year. For the current year, 15 students are being selected for the award.

6.6. POPULARISATION OF BIOTECHNOLOGY

The programmes namely, biotechnology publications, popular lectures by experts support to National Science Day celebrations, films and exhibitions aim at popularising biotechnology and its applications among students and the general public.

Biotechnology Publications: During the current year, under a project supported at the national institute of Science Communication (NISCOM), New Delhi of CSIR, Hindi version of three books which were published earlier in English under “*Vistas of Biotechnology*” series and 3 books under the “Foundations of Biotechnology” series have been brought out.

Popular lectures by experts: The objectives of this scheme are to create public awareness especially among students of the recent developments and potentials of biotechnology through popular lectures by experts in biotechnology. A series of three lectures each on various topics is sponsored by the Department in academic and research institutions in the country. Out of the three lectures in a series, at least one lecture is to be delivered in the regional language or in Hindi. Apart from the various areas of biotechnology, topics such as bioethics, patenting and IPR issues concerning biotechnology have been identified for organising popular lectures with a view to promoting the public understanding of these issues. During the year around 10 popular lecture series have been supported.

Exhibitions: The department participated in the following exhibitions:

- Spring International Trade Fair, Plovdiv, Bulgaria: 3-8th May 1999.
- Delhi Book Fair, Pragati Maidan, New Delhi: 14-22nd August, 1999
- Technology Summit & Technology Platform 99, Hyderabad: 28-29th October, 1999
- India International Trade Fair, Pragati maidan, New Delhi: 14-27th November, 1999
- Indian Science Congress Exhibition, Univ. of Pune, Pune: 3-7th January, 2000
- Science and Culture Expo’ 2000, Bishnaghata – Patuli District, 24 Parganas, W.B.: 15-22nd January, 2000
- Swadesi Vigyan Mela, New Delhi: 2-6th February, 2000
- Biotechnology India 2000, New Delhi: 16-18th February 2000

National Science Day: The Department provides grant for the celebration of National Science Day by the institutions, which are conducting DBT, sponsored PG/PD programmes in biotechnology. Activities such as open houses, exhibitions, debates essay competitions, quiz programmes etc. on various topics of biotechnology are organised by the institutions. Support for the celebration of National Science Day Functions at several institutions has been continued.

6.7. SEMINAR / SYMPOSIA / CONFERENCES

Financial support for organising national / international seminars / symposia / conferences / workshops which are relevant to biotechnology by universities, research institutions and recognised registered societies was continued. During the year, financial assistance has so far been provided for holding around 100 seminars / symposia / conferences. The Department provided a major support for holding the 5th IUPAC

International Symposium on Bioorganic chemistry at NCL, Pune during January 31-February 4, 2000.

Financial assistance towards travel cost was provided to four scientists who are actively associated with the activities/programmes of the department for their participation in major international conferences held abroad in the area of Biotechnology in order to enable them to interact with the leading international experts on the current developments in their research areas.

6.8. NEW INITIATIVES

A new scheme of national Bioscience Award for Career Development has been launched. Five scientists in recognition of their outstanding research contributions have been selected for the award. A proposal for establishment of a Chair in honour of Prof. G.N.Ramachandran a distinguished biophysicist and structural biologist at the Indian Institute of Science, Bangalore has been approved.