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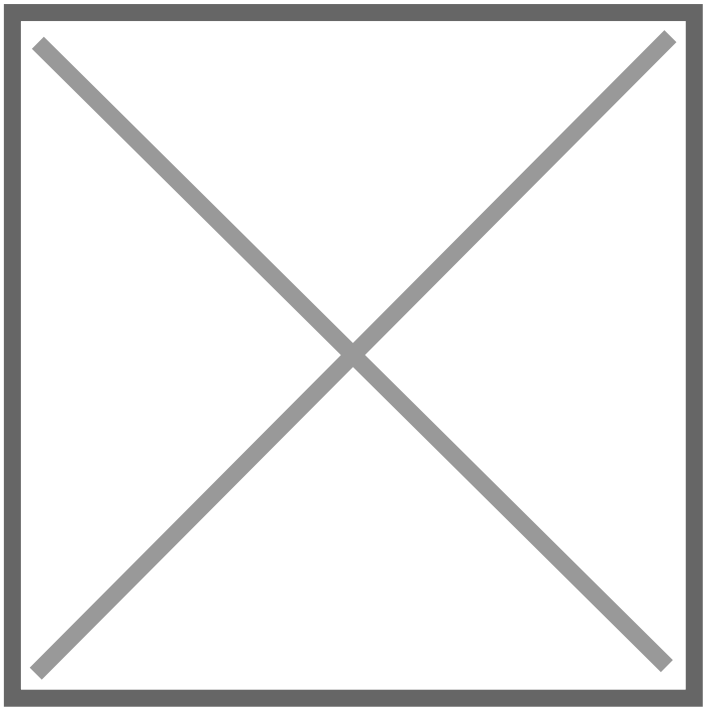

The Biotech Development Strategy addresses HR issues

The policy goal is to facilitate availability of scientific and technical human resource in all disciplines relevant to the life science and biotechnology sector. The key issue is the manner in which to create an effective interface across various related disciplines. The main strategic plans for HRD proposed by the Draft National Biotechnology Development Strategy are :

1. National Task Force on education and training: This would formulate model undergraduate and postgraduate curricula in life sciences keeping in view, future needs. The curricula must address the underlying need for multi-disciplinary and inter-disciplinary learning.

2. Need Assessment: There would be need assessment in 2005 for the next five years and close monitoring during the period for interim changes. A 10-year perspective plan for human resource will be prepared every five years.

3. Curriculum development: The course curricula will be reviewed and improved in consultation with industry and research establishments and standard e-learning modules will be developed for specific skill areas such as IPR, regulations and bioentreprise. Hands-on exposure to MSc biotechnology students will be enhanced through an extended industry internship as well as through short-term placements at CSIR and other appropriate national institutes. Dual degree programs in biotechnology that include regulatory matters, IPR and bio-enterprise management will be encouraged and supported by the DBT.

4. Quality improvement: An accreditation mechanism will be put in place for ensuring minimum standard of education and training at the PG and UG levels. Base requirements for teaching and laboratory infrastructure will be specified and enforced.

5. Strengthening of teaching and R&D in life sciences and biotechnology: Specific mechanisms to achieve the goal will include creation of inter-disciplinary centers of excellence with world class infrastructure in key areas; Program support to encourage inter-departmental networking; and Visiting professorship and creation of industry sponsored chairs in partnership with the DBT.

6. Attracting talent to life science and biotechnology: Bright students will be attracted to take up careers in biology and biotechnology. Summer assignments at academic and industry research laboratories will be introduced at the school level to create interest in the fields of biotechnology and biology.

7. Creating S&T leaders for the industry: The number of PhD fellowships offered by the Department of Biotechnology will be increased to 200 per annum. Public-private partnerships will be encouraged in PhD programs through creation of the 'Bio-edu-Grid'- a network of universities and industries facilitating pooling of resources. Masters degree level professionals in industry will be encouraged to undertake PhD programs while retaining their jobs through industry-university tie-ups.

8. Arresting and reversing brain drain:

Outstanding young investigator grants in biotechnology will be introduced. This will provide a package including salary support, research grant, equipment and opportunities to attend national and international conferences.

- Information on availability of positions in education/research establishments and industries will be provided on a website to facilitate employment of scientists with specific skills at appropriate positions.

- A database of scientists working in different areas of biotechnology within and outside the country will be created to utilize the expertise appropriately.

9. Enabling working conditions for scientists to undertake industry-oriented research

FICCI proposes a Biotechnology Council for India

In order to develop India as a major biotechnology hub, Dr Krishna M Ella, managing director, Bharat Biotech International Ltd and chairman of FICCI biotech committee identifies human resource generation as an important aspect and suggests a series of measures to improve on its quality.

Creating policy framework

It is imperative to have a single national statutory body to regulate education and training in biotechnology in India. There is need to put in place a Biotechnology Council of India (BCI), an independent statutory national body, on the lines of the Medical Council of India, Dental Council of India, Pharmacy Council of India, All India Council for Technical Education and the Bar Council of India.

The chief role of such a statutory body would be to ensure standardization in biotechnology education and training in the country. The BCI should be empowered to grant recognition for those institutions that meet such standards, set with reference to qualified and trained teaching staff, infrastructure, adequately equipped laboratories, etc., that are essential for a focused education in biotechnology.

Biotech curriculum

The biotechnology curriculum in India is still evolving. The need of the hour is to envisage a multidisciplinary curriculum that will cover all aspects of biotechnology including understanding process principles, experimentation, animal and plant technologies, bioinformatics, basics of project management, IPR issues, business values and finances in Biotechnology. There is a need to create separate modules for students and corporates, which will focus on different themes. The student course will emphasize on practical hands-on training, teaching the ethics of GLP and a fundamental know-how of BT management. There is a requirement to:

- Create courses on biotech equipments and technology
- Create short-tem and long-term courses on bio-safety
- Create specific specializations on patents and IPR
- Increase courses content on regulatory frameworks
- Include biotech in marketing and allied subjects

Training in practical aspects

There is a requirement that the state governments, DBT, along with the industry should establish instrumentation and training centers in a few key locations in different states, where students can get trained and research workers can get instrumentation services, on payment of prescribed charges, so that expensive facilities required for most of education and training in biotechnology need not be duplicated. The Indian Institute of Information Technology, Hyderabad, is based on the model. The proposed Council could

actively create educational resources, self-training modules, information about advanced courses, research and fellowship opportunities, and links to various conferences and meetings around the world. It would be worthwhile to implement the following: