

MINISTRY OF SCIENCE AND TECHNOLOGY**DEMAND NO. 82****Department of Bio-Technology**

A. The Budget allocations, net of recoveries, are given below:

		<i>(In crores of Rupees)</i>								
Major Head	Budget, 2003-2004			Revised, 2003-2004			Budget, 2004-2005			
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
Revenue	260.00	13.35	273.35	250.00	13.79	263.79	310.00	13.45	323.45	
Capital	
Total	260.00	13.35	273.35	250.00	13.79	263.79	310.00	13.45	323.45	
1. Secretariat - Economic Services	3451	...	4.58	4.58	...	5.02	5.02	...	4.68	4.68
Other Scientific Research										
2. Assistance to Scientific Institutions/Professional Bodies										
2.01 National Institute of Immunology	3425	25.00	0.85	25.85	23.00	0.85	23.85	28.00	0.85	28.85
2.02 National Centre for Cell Science	3425	9.00	0.42	9.42	13.50	0.42	13.92	15.00	0.42	15.42
2.03 Centre for DNA Finger printing and Diagnostics	3425	8.00	...	8.00	8.00	...	8.00	12.00	...	12.00
2.04 National Brain Research Centre	3425	11.00	...	11.00	15.60	...	15.60	21.00	...	21.00
2.05 National Centre for Plant Genome Research.	3425	7.00	...	7.00	12.00	...	12.00	10.00	...	10.00
2.06 Institute of Bioresources and Sustainable Development	3425	2.00	...	2.00	2.00	...	2.00	3.50	...	3.50
2.07 Institute of Life Sciences	3425	4.00	...	4.00	4.00	...	4.00	5.00	...	5.00
<i>Total</i>		66.00	1.27	67.27	78.10	1.27	79.37	94.50	1.27	95.77
3. Assistance to Other Scientific Bodies										
3.01 Human Resource Development	3425	13.00	...	13.00	14.93	...	14.93	15.00	...	15.00
3.02. Bioinformatics	3425	10.00	...	10.00	10.99	...	10.99	16.00	...	16.00
3.03 Biotech Facilities, Centres of Excellence and Programme Support	3425	20.00	...	20.00	18.00	...	18.00	14.00	...	14.00
3.04 Research and Development	3425	114.00	...	114.00	96.02	...	96.02	132.50	...	132.50
3.05 Biotechnology for Societal Development	3425	7.00	...	7.00	5.96	...	5.96	9.00	...	9.00
3.06 Bio-Process and Product Development	3425	7.00	...	7.00	6.00	...	6.00	10.00	...	10.00
<i>Total</i>		171.00	...	171.00	151.90	...	151.90	196.50	...	196.50
4. I&M Sector-Assistance for Technology Incubators, Pilot Projects, Biotechnology Parks and Biotech Development Fund	3425	15.00	...	15.00	13.00	...	13.00	10.00	...	10.00
5. International Cooperation	3425	8.00	...	8.00	7.00	...	7.00	9.00	...	9.00
6. International Centre for Genetic Engineering & Bio-Tech.	3425	...	7.50	7.50	...	7.50	7.50	...	7.50	7.50
Grand Total		260.00	13.35	273.35	250.00	13.79	263.79	310.00	13.45	323.45
C. Plan Outlay	Head of Dev	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total
Other Scientific Research	13425	260.00	...	260.00	250.00	...	250.00	310.00	...	310.00

1. Secretariat-Economic Services: Provides for expenditure on the secretariat of the department.

2. Assistance to Scientific Institutions/Professional Bodies:

2.01 National Institute of Immunology (NII), New Delhi: The institute was established to undertake, aid, promote, guide and co-ordinate research of a high caliber in basic and applied immunology, to carry out research for development of new vaccines and immunologicals for communicable diseases; to develop immunological approaches for regulation of male and female fertility; to interact with industry for manufacture of products developed from research leads; to organise post-graduate courses leading to Ph.D. degree; to organise

workshops, seminars, symposia, training, programmes of specialised nature in immunological methods and related areas; to serve as a national reference centre for immunology and provide consultancy services; to provide and promote linkages between various scientific research agencies/ laboratories in the field of immunology, vaccine development and related areas; to collaborate with foreign research institutions, laboratories and other international organisations in the relevant fields. Several technologies related to diagnosis of AIDS virus and contraceptive vaccines are under trial or transferred to industries. Anti-Leprosy Vaccine has been developed and this know – how has been transferred to a major pharmaceutical concern, which is producing and marketing this product. The research in the institute has resulted in patenting of several innovations in USA

and India. Three technological leads were granted international patents. 70 research papers have been published on gene regulation, molecular mimicry, reproduction and development as well as immunity and infection in international peer reviewed journals. Besides acceleration of research in the various major areas under investigation, the institute proposes to develop state-of-art bioinformatics and Internet connectivity at global level, upgradation of electron/scanning trans-microscope facility and enhancement of intellectual resource base will be initiated.

2.02 National Centre for Cell Science (NCCS), Pune: The facility was established to receive, identify, maintain, grow and supply animal and human cell lines, tissues, organs and fertilised eggs and embryos, hybrid-cells including hybridomas, plasmids, genes and genomic libraries; to carry out research and development in these cell lines and related materials and products; to develop quality control and supply culture media and other reagents and materials independently or in collaboration with industry; to organise training programmes for technical personnel in Tissue Culture Technology, Tissue Banking, Cell products and related areas; to serve as a National Reference Centre for Tissue Culture, Tissue Banking, Cell products and Data Bank, etc. and to provide consultancy services to Medical, Veterinary, Pharmaceutical Institutions, Public Health Services and industries in the country; to provide and promote effective linkages between various scientific and research agencies/laboratories and other organisations including industries; to collaborate with foreign organisations in the relevant areas. The technology for large-scale expansion of human skin culture for the treatment of burns, vitiligo and non-healing ulcers and cryo-preservation of cord blood and haematopoietic stem cells transferred to various hospitals. Significant scientific leads such as identification of a new gene involved in tumor formation, induction of apoptosis by inhibitors in cancer cell lines will be pursued by the institute for the development of products and processes through strengthening of technology development programmes. The Centre has obtained a patent for its invention on "New nutrient medium developed to maintain hybridoma cell lines" and filed two more patents. NCCS, Pune during the year proposes to augment cell repository through development of specific cell lines from human and animal tissues such as tumors, lymphoblast cells for patients with genetic disorders. The research activities would continue towards validation of the leads with special emphasis on stem cell differentiation, improvement of technology for stem cell cryo-preservation and mechanism of wound healing.

2.03 Centre for DNA Finger Printing and Diagnostics (CDFD), Hyderabad: The objective of the Centre is to provide DNA fingerprinting services for crime investigations, settling paternity disputes and to provide DNA fingerprinting services, undertaking R&D work in the area of DNA fingerprinting and diagnostics, carrying out research in modern biology through cutting edge tools and providing training in DNA fingerprinting techniques. The centre is currently functional in rented premises. The building construction is already in progress. The centre is providing DNA diagnostic services for human genetic disorders and DNA finger printings for use by Indian judiciary in deciding criminal and other forensic cases. It has EMB (European Molecular Biology) BIOINFORMATICS network as a national nod. CDFD is the only institution from India to be internationally selected for operation of European Molecular Biology (EMB) net national node. Basic research at CDFD is being carried out under four major themes – Genetics, Molecular & Cellular Biology, Molecular Pathogenesis and Bioinformatics. It is also set towards establishing a Disaster Management Cell and development of several new DNA based services in the areas of seed authentication, certification of genetically modified foods (GM foods) and wildlife and animal identification.

2.04 National Brain Research Centre (NBRC), Gurgaon:

The centre has been set-up as an autonomous body of the department and had been registered under the Societies Registration Act. A completely functional interim laboratory has been set up in a rented building at Gurgaon. The centre will undertake research primarily in the areas of neurosciences and basic brain research. A piece of land of 38 acres has been allotted to the Centre at Gurgaon and the construction of the building has been started. An action plan for the research activities during the decade has been drawn out with emphasis on networking of centres/institutes doing neurosciences research and evolving comprehensive neurosciences courses. It will also provide centralized facilities for sophisticated and high value equipments, transgenic animals, laser microscopy etc. Research activities have been initiated such as neural stem cell research, systems and cognitive neuroscience that is visuo-motor control with particular reference to saccades and research on neurodegenerative disorders. Multi-institutional research projects are being initiated in areas namely brain mechanisms of visuo-motor control in normal volunteers & patients with focal brain lesions. Construction of the Phase II project of NBRC will be taken up. New Research activities in accordance with NBRC mandate will be undertaken. The research projects in molecular/cellular neurosciences, systems neuroscience and theoretical neurobiology will be initiated. An inter-disciplinary M.Sc. course will be started.

2.05 National Centre for Plant Genome Research (NCPGR), New Delhi :

The National Centre for Plant Genome Research has been established as an autonomous institution of the Department. The centre started functioning w.e.f., 1st April, 1998 and was formally registered as a Society on 16th July, 1998. The main objective of the Centre is to take up the research work on structural, functional and application genomics of selective crop plants. In addition the Centre will utilise molecular biology approaches alongwith tissue culture and genetic engineering technology to identify important genes and manipulate these for generating transgenic plants with improved agronomic characters and pathogen/stress resistance. The centre is carrying out its research activities from the building of erstwhile CPMB of Jawaharlal Nehru University (JNU). The centre has taken up on genomics of *cicer arietinum*, which include collection and maintenance of germplasm, construction of genetic maps, sequencing of more no. of ESTs. On-going research activities on chickpea genomics, molecular characterisation of calcium mediated abiotic stress signaling pathway with an aim to develop plants tolerant to unfavourable conditions are being pursued. Transgenic potato with high nutrition quality has been developed with the introduction of *Amaranthus Ama1 gene*. It is proposed to complete the construction of NCPGR complex and the activities on R&D would continue from the new campus.

2.06 Institute of Bioresources and Sustainable Development (IBSD), Imphal:

The Institute of Bioresources and Sustainable Development (IBSD) has been registered as a Society under the Manipur Societies Registration Act, 1989 (Manipur Act (1) of 1990) on 26th April, 2001. The main objectives are to set up the state-of-the-art biotechnology research facilities at Imphal for sustainable development of bioresources, to study and document the unique biodiversity of the region, to develop biotechnological interventions for sustainable development and utilisation of bioresources, to generate technological packages for employment generation and economic progress of the region, to collaborate with other institutions/organisations/universities in furthering research pursuits in bioresources and to undertake capacity building (human resource development).

2.07 Institute of Life Sciences, Bhubaneswar The institute has been taken over from Govt. of Orissa in August 2002. The

objectives inter-alia are to conduct and promote basic and applied research in the frontier areas of Life Sciences, foster interaction amongst Scientists of various disciplines and to encourage them to carry out research in areas that interface between physical and biological sciences, to carry out inter-disciplinary research in collaboration with other Research Institutions, various Science Departments of Universities, Medical Colleges and Agricultural Colleges. ,to provide expert advice to various agencies for the application of the new findings, to organize symposia, workshops, conferences and summer schools in frontier areas of Life Sciences for the advancement of knowledge and greater awareness ,to provide advanced training to post-M.Sc. students leading to Ph.D. degree. The institute is carrying out research in biomedical sciences, infectious diseases, and cancer and plant sciences . The meeting of the Institute Society was held in December 2002 under the chairmanship of Hon'ble Minister (S&T), Govt. of India. The Institute would focus on research areas in reproduction, development and cell biology, molecular biology of aging and cancer, infectious diseases, parasitic diseases, bio-resource development, conservation and utilization, environmental biotechnology and bio-prospecting, diagnostic and therapeutics. Renovation, strengthening infrastructure facilities and equipment will be completed.

3. Assistance to other Scientific Bodies:

3.01 Human Resource Development: An integrated manpower development programme comprising M.Sc./M.Tech./ Post Doctoral course in biotechnology at various universities/ institutes of many states and union territories; Biotechnology national and overseas associateships, short-term training courses, seminars and symposia, popular lectures, biology scholarships, publications and other miscellaneous programmes have been implemented. All ongoing PG teaching courses will be continued for financial support under human resources development Programme. In addition, about 5 new PG courses on regular basis or a one-time grant would be supported on merit in states not represented so far. The schemes biotechnology associateship, awards and popularization would continue.

3.02 Bioinformatics: The plan scheme of bioinformatics envisages providing a National Bioinformatics Network in the country designed to bridge the gaps in Biotechnology information and to establish links among scientists in Biotechnology. The network aims to provide a single reference to various information resources of importance to biotechnology and modern biology including data banks of genetic importance, published literature, patents and other information of scientific and commercial value. It also aims to provide necessary infrastructural support for modern research in biology involving computationally intensive analysis. The network consists of 11 distributed information centres (DICs) and 46 sub-DICs computational facilities at the national level. It has also established linkages with international institutions like ICCB, a UNESCO based funded bio-informatic programme and is also linked with EMB net, as well as international legume-data base and information services (ILDIS). Educational and training activities in bioinformatics will also form part of the scheme. A supercomputing facility for in silico studies in genomics, proteomics and drug design has been established at IIT, Delhi. New projects for establishing centres of excellence in bioinformatics will be taken up.

3.03 Biotech Facilities, Centres of Excellence & Programme Support: It includes repositories for conservation of plant microbes, specialised biotechnology facilities for advance research, pilot scale manufacturing, centres of excellence and programme support in high priority areas of modern biology. The seven repositories include those on medicinal and aromatic plants, filaria and reagents, cryopreservation of blood cells, tissue

culture microorganisms, blue green algae, marine cyanobacteria and drosophila stockcentre. The biotechnology facilities include experimental animal facilities, genetic engineering and strain manipulation unit and biochemical engineering and process development. The programme support in modern biology at IISc. has resulted in over 220 high quality publication in national and international journals, the training of a large number of Ph.D. students and post-doctoral fellows and in catalyzing many interactions between Institute faculty and industry resulting in industry sponsored projects. Several projects have been taken to the stage of technology transfer; most notably the development of hepatitis and rabies vaccines and a peptide based HIV diagnostic kit. National Facility for Virus Diagnosis and Quality Control of Tissue Cultured Raised Plants, a Containment Facility for Transgenic Planting Material is doing well and an International Depository Authority of hazardous microorganisms by upgradation of existing facility of Microbial Type Culture Collection (MTCC) at Institute of Microbial Technology(IMTECH), Chandigarh has been declared of international level. Programme support at RCGB has progressed well. New NMR facilities have been setup at TIFR, Mumbai and IISc, Bangalore and IICB, Kolkata. The biotech facilities and programme support activities would continue with the addition of new proposals in identified areas of 10th Plan.

3.04 Research & Development: Various projects aim at creation of a strong R&D base and product development. These R&D projects mainly fall under: (i) Basic research; (ii) Crop biotechnology; (iii) Medicinal and Aromatic Plants; (iv) Plant biotechnology; (v) Seribiotechnology; (vi) National Bioresource Development Board; (vii) Medical Biotechnology; (viii) Human Genetics and Genome Analysis; (ix) Animal Biotechnology; (x) Aquaculture and Marine Biotechnology; (xi) Environmental Biotechnology. In crop biotechnology, transgenic lines of cotton, rice and brassica have been developed for insect resistance, tolerance to virus and quality traits respectively. Molecular markers have been developed for wheat quality, leaf folder resistance in rice. Integrated pest and nutrition management programmes implemented at 14 centres in 12 different states demonstrating a high cost benefit ratio. A new network programme for development of transgenic biofertilisers started. Mycorrhizal biofertiliser has been launched for marketing at national level. NBDB initiated project in diversity of cyano-bacteria in hot desert eco-system and rhizo-bacteria of arid plants. Projects on awareness about bioresources among visually challenged have been started. More programmes for bio-resource development in cold and hot deserts, Western Ghats will be taken up. A medium throughput screening facility has been established for screening large number of medicinal plant extracts with anti-amoebae properties. A total of 19 potential bioactive lead molecules have been isolated and identified from plants used in traditional systems of medicine and patents have been obtained. In Plant Biotechnology, the tissue culture programme continued with emphasis on protocol refinement and demonstration. A multi-institutional programme on improvement of spices has been supported. Tissue culture raised black pepper lines are field demonstrated in 100 ha. In bioprospecting programme, Spatial and non-spatial database has been completed for 85 species covering biodiversity hot spots like North East India, Western Ghats, Western Himalayas and Andaman and Nicobar Islands. Biodiversity characterization at landscape level using satellite remote sensing and Geographic Information System has been taken up further for Central India, Eastern Ghats and Mangrove regions.

In animal biotechnology, specific monoclonal antibodies for diagnosis for infections in birds and molecular genetic characterization of malabari goats, indigenous cattle and buffalo have been achieved. A multi-centric programme on buffalo

genomics has also been started. Transgenic lines of Indian carp with 6 to 8 times faster growth and a protocol for cell culture system of cell lines susceptible to white spot disease are some achievements. Technologies for diagnosis of white spot disease in shrimps and other bacterial diseases have been transferred to industry and commercialized. In sero-biotechnology 3 high yielding silkworm hybrids have been developed using molecular marker technology, patented and commercialized. India is participating in International Consortium on Lepidopteron Genomics along with 7 other countries on mulberry and non-mulberry silkworms. Under the scheme medical biotechnology more than 100 R&D projects are ongoing with significant research leads such as: development of Nested PCR diagnostic assay for detection and identification of members of *Mycobacterium tuberculosis* complex; identification of novel mutations in drug resistant strains of *M.tuberculosis* by using PCR system; identification of Leishmania T-cell clone a potential candidate for vaccine development with significant protection in experimental animals. In stem biology projects, seventeen patients who received cultured limbal epithelium underwent corneal transplantation. Several projects have been initiated under the mission mode programme on genomics in the areas of molecular genetic studies on Type 2 Diabetes and genome sequencing, functional analysis of *Helicobacter pylori* with significant results. Projects generated on whole genome sequencing of microbes relevant to India will be supported. The mission mode projects on new generation vaccines for rabies, malaria, HIV/AIDS, cholera, Japanese encephalitis, tuberculosis are progressing well. DNA Rabies vaccine is ready for commercial use in animals. Vaccine for cholera is in Phase-IIA clinical trials and that for Rotavirus in Phase -I clinical trials with large-scale production GMP materials by industry. Negotiations have been initiated for technology transfer of HIV-1 Subtype 'C' vaccine with a US company with the involvement of an Indian industry. In environment biotechnology, projects on lower plants as indicators of pollution supported. A national facility on conservation of endangered animal species has been approved. Mission mode projects have been launched on food and nutritional security; genomics; new generation vaccines; production, demonstration and testing of biofuels; development of new drugs and molecules from important medicinal plants; and digitized inventORIZATION and documentation of bioresources.

During the year 2004-2005 it is proposed to launch a collaborative project on cereal genomics involving molecular markers and genes discovered in rice, maize and wheat; Improvement of semi-arid crops and a network on biotechnological interventions for sustainable water security; agribiotech centres in some selected agriculture universities; Molecular biological aspects of bio-control agents; Develop biofertilisers for high value plantation crops, medical and aromatic plants, floriculture, protected cultivation and organic farming for high value horticulture crops; DNA fingerprinting and molecular marker studies of species and horticulture crops; Improvement and production bamboo; Exploring novel genes/ promoters/ transcription factors from different bioresources; A multi-centric programme on bovine tuberculosis; Molecular characterization of domesticated and wild avian species and animal breeds; and quality control of bovine semen; Bio-prospecting of marine bio-molecules important in industry, research and medicine, structural and functional genomics of marine species; Projects on cell and tissue culture based system for sea weeds and invertebrates; various aspects of genomics of silkworm (both mulberry and non-mulberry); R&D projects on development of vaccines and diagnostics for respiratory diseases, emerging and re-emerging communicable diseases, cardio vascular disorder; Therapeutic vaccines, combination vaccines, liver-cell transplantation?? Projects will be supported in stem cell biology for basic understanding of signing

mechanism, differentiation, generation of organs from embryonic stem cell lines.

3.05 Biotechnology for Societal Development: Special biotechnology based programme for SC/ST population, women and rural areas have been taken up. The programmes on rural areas have so far benefited around 12,000 rural people. More than 2,100 rural people have been trained to cultivate medicinal plants. Many more people have been also trained in preparation of products like jams, jelly, squash, pickle and these products are being sold in local market and are making an additional income of around Rs.2000 per month. Biotechnology based programmes for societal development continued to benefit the women, SC/ST population in rural areas. 13 new projects under SC/ST programme, 4 new projects under rural programme were approved. The programme on cultivation of citronella in 5 districts of Arunachal Pradesh in 300 acres benefited 341 people and 700 people were trained. The average income generated by the family through citronella cultivation is about Rs.8000/- per year. About 8000 SC/ST youth and women have been trained in cultivation and processing of mushroom and some of these trainees have already started their own production units. Projects in the areas of such as floriculture, organic farming, food biotechnology and genetic disorders and counseling will be started for the benefit of women in rural areas. 3 bio-village projects are also under consideration.

3.06 Bio-process and Product Development: Financial support is provided for development of technology packages in the areas where sufficient R&D work has been carried out for transfer to the field and large scale production and manufacturing activities. Areas include: (i) Biofertilisers; (ii) Biological Control of plant pests, diseases and weeds; (iii) Tissue culture pilot plant facility for multiplication of forest trees; (iv) Food biotechnology and nutritional security; (v) Tissue cultured elite vanilla & large cardamom; (vi) Micropropagation technology parks (vii) patenting and monitoring and regulation of biosafety guidelines in R&D; and (viii) Biotech product, process development and technology transfer involving bioindustries and other user agencies, industrial and microbial biotechnology. The technology of rapid test for detection of HIV-I&II antibodies by Naked Eye Visible Agglutination assay (NEVA) with autologous RBC agglutination Test developed by Delhi University, South Campus, New Delhi has been commercially launched on the Technology Day. The activities of patent cell will continue with awareness programmes, publications, database development and refresher courses on long term and short term. For biosafety assessment, projects will be initiated and develop protocols for environmental and food safety issues. In the area of food biotechnology, negotiations for transfer of technologies from completed R&D projects have been initiated. The Mission Mode Institutional Programme is being executed on food and nutritional security.

4. I&M Sector-Assistance for Technology Incubators, Pilot Level Facilities, Biotechnology Parks and Biotech Development Fund: The scheme on establishment of Biotech Parks, incubators and facilities was approved in principle. Hon'ble Prime Minister laid foundation stone on May 23, 2003 for the Lucknow Biotechnology Park. The activities at biotechnology park in Lucknow and incubator facilities in Andhra Pradesh would be started.

5. International Cooperation: International Bilateral Programmes and Scientific Advisory Committee (Overseas): The Department has on-going bilateral cooperation programmes with Federal Republic of Germany, Israel, Switzerland, Sweden, USA, U.K. while such programmes with Japan, Egypt, France,

Khazakistan, Russia, Srilanka, Tunisia, China, Cuba, Mongolia, Poland, Vietnam, Brazil, Myanmar and some other countries are being finalised. Interactions have been made with Australia, Brazil, Hungary, Mexico, Norway, Romania and Slovenia. In addition, multilateral co-operations under SAARC and ASEAN countries are being developed. The international cooperation programme has been expanded with bilateral activities and new agreements with Malaysia, Thailand, Syria, Mauritius, USA and France. Under Indo- Swiss programme several leads in terms of biosensors for pesticides detection, phytoremediation molecular markers for wheat diseases and successful transformation of chickpea reported. An Indo-US workshop in agriculture biotechnology was held in May 2003 for evolving collaborative research projects in abiotic stress tolerance (salinity, drought) and nutritional enhancement (vitamin-A, iron, zinc) of our staple food crops. Negotiations are ongoing for establishment of bilateral biotechnology institute in Indonesia and establishment Asian biotechnology consortium in association with MEA. Joint projects based on common needs and mutual benefits will be implemented with Asian countries such as Thailand, Indonesia, Malaysia, Vietnam, Mauritius, Iran, Turkey involving training programmes in India, exchange of information and establishment of centres and technology incubators. Projects with USA, Germany, France, Switzerland and UK will also be taken up based on the existing agreements and renewal of the same.

6. International Centre for Genetic Engineering and Biotechnology: ICGEB has been established with two components one in New Delhi and the other in Trieste, Italy with the objective of bringing the fruits of modern biotechnology to the developing countries. Intensive scientific research is performed in a total of six groups viz., malaria, virology, immunology, recombinant gene products, plant molecular biology and insect resistance. In addition to research, there are several training and other scheme such as post-doctoral and Ph.D. programmes as well as organisation of training courses and symposia. In addition to the two components, the ICGEB has a network of national regional and international co-operating R&D centres which endeavour to promote an active programme of research and development towards fulfilling the stated objectives. Government of India is providing assistance for meeting recurring cost for running the Centre in New Delhi. The research work in the area of Hepatitis, Malaria, recombinant gene product, plant molecular biology, plant resistance and plant transformation is continuing. ICGEB had transferred Technologies for HIV-I and HIV-II diagsitc kits, hepatitis C diagnostic kit, hepatitis B vaccines, erithropoietin, alpha-interform, genome interferon, human growth hormone and granulocyte colony simulating factor.