



सत्यमेव जयते
GOVERNMENT OF GUJARAT

Annual Report 2006-07

*Innovation, the basis of technology, is the 'incentive' for change & improvement.
Those who initiate change will have a better opportunity to manage the change
that is inevitable...*

Anonymous

॥ जीवो ब्रह्मैव नापरः ॥



GUJARAT STATE BIOTECHNOLOGY MISSION

Department of Science & Technology
Government of Gujarat



GOVERNMENT OF GUJARAT

Annual Report 2006-07



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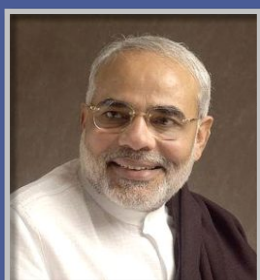


Organizational Structure



Gujarat State Biotechnology Mission

Department of Science & Technology, Government of Gujarat



Shri. Narendra Modi

H'ble Chief Minister of Gujarat State
&
Chairman of Gujarat Council of Biotechnology



Shri. Sudhir Mankad, I.A.S.

Chief Secretary, Government of Gujarat
&
Chairman of Governing Body



Shri. Raj Kumar, I.A.S.

Secretary, Department of Science & Technology, GoG
&
Chairman of Executive Committee



Shri. Akshay Kumar Saxena, I.F.S.

Mission Director, Gujarat State Biotechnology Mission,
Department of Science & Technology, GoG
&
Member Secretary

INDEX

	Message of The Secretary	
	Foreword	01
01	Constitution	02
02	Organizational Structure	03
03	Approach and Strategy	04
04	Policy planning and related Initiatives	06
05	Biotechnology Infrastructure Development in Gujarat	07
06	Biotechnology Research, Innovation support and Development	12
07	Biotechnology Human Resource Development	14
08	Development of Biotechnology Entrepreneurship	16
09	Encouraging Biotech Business and Networking	19
10	Promotion of Biotechnology sector in Gujarat	21
11	Budget	28
12	Audit	28
13	Staff	29
14	Office Facility	29
15	Annexure	30
	Annexure 1: Audited Account 2006-07	31
	Annexure 2: Composition of Biotechnology Council	38
	Annexure 3: Composition of Governing Body	39
	Annexure 4: Compendium of Executive Committee	39
	Annexure 5: Biotechnology Research Support Details	40
	Annexure 6: Biotechnology Investments during 2006-07	41
	Annexure 7: Popular Lecture Series Glimpse	46



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GOVERNMENT OF GUJARAT

Raj Kumar, I.A.S.

Secretary, Department of Science & Technology
Government of Gujarat

Message of Secretary

Government of Gujarat has taken concerted efforts to encourage biotechnology development in the state. Conceptualization of overall framework, elaborate development blueprint, Specific strategies, focused action and programs, have been the salient feature of state's endeavor in the field of biotechnology.

Right from its formation in 2004-04, Gujarat State Biotechnology Mission has been slowly and steadily developing a strong platform. The key issues of policy, infrastructure, research, human resource development, entrepreneurship, business and coordination, are being addressed.

GSBTM is playing both the role of catalyst and facilitator. It is paying definite dividends. Gujarat is being recognized as one of the biotechnology destinations of the country. The high level of investment interest shown by the Biotechnology industries is a welcome sign. To provide an enabling environment for growth of Biotechnology, new initiatives have been taken for developing Biotech industrial clusters. To provide encouraging environment for high end application based research, sector specific facilities are being developed. To ensure the availability of skilled manpower, skill development initiatives are being taken and supported. Intensive actions have been taken to push the growth of biotech business and industries.

With every passing year, GSBTM has been consolidating the efforts of previous years. The annual report of GSBTM for the year 2006-07, provides a brief account of the activities undertaken during the year. The report is a reflection of last three years of states' endeavors, achievement and commitment towards this knowledge based sector.

It is a pleasure to be a part of such team spirit and scientific efforts. We aim for better. We endeavor for best. I hope that GSBTM will keep on working with the same spirit, commitment and enthusiasm.

I wish GSBTM team all the best in their future efforts and goals.

Shri Raj Kumar, I.A.S.
Secretary-DST, GoG

FOREWORD

Constitution of GSBTM as state nodal agency for Biotechnology, has provided an organizational and institutional mechanism to coordinate the Biotechnology development activities.

Assessment of needs, strengths, weakness, gaps, nature of intervention required, development of strategy, conceptualization of framework of goals and appropriate actions / programs, were the main tasks, addressed. Running into its third year of existence, GSBTM is consolidating the platform which would enable biotechnology growth in the state.

During the current year, definite actions were taken in the areas of policy planning, infrastructure development, research and innovation, human resource development, promoting biotech entrepreneurship, promoting biotech business, information dissemination and awareness development.

Finalization of Biotech policy of the state, due for declaration, selection of private partner for developing Biotech Park, completion of environment impact assessment study, including clearance from GPCB and submission of proposal to GoI, marketing efforts undertaken, pre-launch offer for park, initiating work on Agro biotech Park, conceptualization and approval of projects of Bio-informatics Virtual network, Biodiversity genebank, Gujarat genomic Initiative and Marine resource centre, have been salient initiatives.

The singular achievement during the year was the successful participation and projection of Biotechnology sector, during Vibrant Gujarat-2007- Global Investor Summit. GSBTM undertook sincere efforts, to market the state as destination for biotechnology investment. The event resulted in signing of 19 MoUs, committing Rs. 1559 crores of investment during coming 4-5 years in the state. It heralds the arrival of Gujarat, on national biotechnology investment scenario. It also poses immense responsibility to sustain and improve the enabling factors.

Critical constraints stand to decrease, as Biotechnology stakeholders, join hands in this team effort. With every passing year, the GSBTM looks forward to consolidate its efforts. The unflinching support of department of Science & technology and all stakeholders of state strengthens the spirit and resolve of GSBTM, to strive and deliver.

I extend my heartiest gratitude to entire team of GSBTM who, are growing in experience and have displayed highest level of commitment. GSBTM also extends its gratitude to all biotechnology stakeholders of Gujarat, who have been responding positively to this organization.

GSBTM looks forward to join and walk together as the state aims and endeavors for – "A brighter Bio-Future"

Mission Director,
GSBTM

1. CONSTITUTION

The science of Biotechnology is emerging as potential tool for development and technology of hope for the society. The state Government of Gujarat, in its resolve and continued efforts for socio-economic upliftment of society, has identified Biotechnology as single most potential tool of development. To facilitate overall development of Biotechnology, state has constituted Gujarat State Biotechnology Mission [GSBTM], under the Department of Science & Technology.

Vision

'To realize and harness the potential of Biotechnology as a human endeavor for the highest intellectual pursuit and as an effective future delivery system for creating a disease free, nutritionally secure society living in safe, clean environment, leading to overall socio-economic growth, welfare and progress of humanity'

Objectives

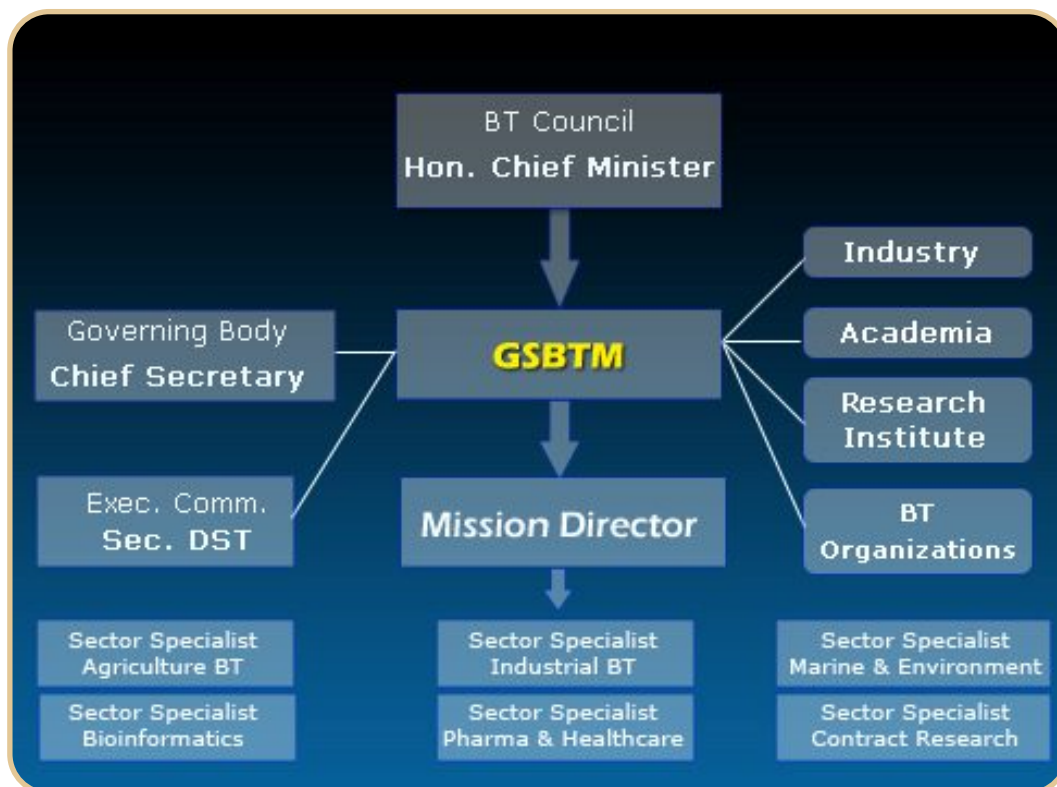
- To implement the biotech policy and programs
- To liaise between the Central and State Government, international institutions, organizations, academia, research and industry for the promotion of biotechnology sector in Gujarat
- To conduct studies and promote research in the field of biotechnology
- To promote and develop the human capacity and infrastructure support in the field of biotechnology
- To facilitate the monitoring, execution, implementation and evaluation of State Government programs in the area of biotechnology

Activities

- Awareness generation and knowledge upgradation programmes and information dissemination programs, like seminars, workshops, lecture series
- Network and coordination like participation in fairs and exhibitions
- Supporting and developing Centres of Excellence in various sectors of biotechnology
- Supporting and facilitating Human Resource Development in biotechnology
- Promoting biotechnology research
- Supporting infrastructure development
- Developing institutional framework for the implementation and regulation of biotechnology programmes

2. ORGANIZATIONAL STRUCTURE

For coordination of Biotechnology programs and activities, the state has constituted Gujarat State Biotechnology Mission, a dedicated organizational structure under department of Science & Technology. The functioning of mission has been initiated in April, 2004, with the appointment of two sector specialists and later on with the appointment of Mission Director. GSBTM has been visualized as autonomous body. The process of registering, under Society Registration Act, was initiated during the first year and on 19th October 2004; Gujarat State Biotechnology Mission (GSBTM) has been registered as society. The Memorandum of Association (MoA) incorporates the scope, duties, responsibilities and functioning of GSBTM.



Gujarat State Biotechnology Mission is an autonomous body, under Department of science & technology. The Governing Body of GSBTM is headed by Chief Secretary, Gujarat, state and includes representatives of DBT, GoI, and Secretaries of key departments, industry representatives and academicians. Executive Committee of GSBTM is headed by Secretary, Department of Science & Technology and includes representatives of industry, technical experts and representatives of interfacing departments. State government has also appointed technical experts as Principal Advisor and Advisor. The state has constituted Gujarat Council of Biotechnology, headed by H'ble Chief Minister of Gujarat and consists of experts & professionals of national & international repute.

The GSBTM, headed by a Mission Director, supported by sector specialists and administrative staff has following mandate:

- To promote, support and facilitate the overall development of Biotechnology in the state.
- To provide institutional, legal, financial and policy support.
- To facilitate networking among stakeholders at Regional, National and International level.
- To facilitate the infrastructure development and R & D activities.
- To create scientific awareness, sensitization, socio-ethical acceptance and adoption to the potentials and application of biotechnology.
- To achieve the above said objectives, GSBTM has planned following,
 - Policy Planning support and strategic initiatives,
 - Biotechnology Infrastructure development,
 - Biotechnology research, innovation and development support,
 - Biotechnology Human resource development,
 - Promoting Biotechnology entrepreneurship,
 - Encouraging Biotech business,
 - Coordination, and networking,
 - Information Dissemination and awareness generation,

3. APPROACH & STRATEGY

During the first couple of years GSBTM has visualized Biotechnology strengths and trends of development at global level, the priorities and approach at country level, status in the Gujarat, the strengths and gaps, in terms of policy planning, infrastructure, research, human resource development, biotech industries, business and related issues.

Accordingly it was felt that as state nodal agency, main focus of GSBTM shall be to provide support to development of Biotechnology in the thrust areas, focusing on promoting biotechnology in Gujarat, projecting the state's strength at national and regional level, strengthening biotechnology research, human resource development, strengthening research infra structure, developing networking mechanisms and providing financing modalities.

Accordingly GSBTM has developed initiatives pertaining to policy planning, infrastructure development, research and innovation, human resource development, promoting biotech entrepreneurship, promoting biotech business, information dissemination and awareness generation, in the state. The actions have been accordingly taken along these directions, during the year 2004-05, and have been continued with more focus in 2005-06. During the year 2006-07, consolidated efforts have been continued for developing Gujarat state as the Biotech Hub of the country.

3.1 Event of the year

Vibrant Gujarat – Global Investor's Summit 2007,
12-13 January, Science City, Ahmedabad



Government of Gujarat, in conformity with national efforts, has been organizing "Vibrant Gujarat: Global Investor Summit" every two years, for bringing up the enormous investment potential in Gujarat and to accelerate the rate of FDI and domestic investment in Gujarat and there by in India. Vibrant Gujarat-Global Investor Summit-2007 was organized in the same spirit in Jan, 2007. The important sectors for focus were Energy & Power, Oil and Gas, Ports, Agriculture, Textiles, Manufacturing, SEZ, Biotechnology. Socio-economic progress is being driven by knowledge based economy. And Biotechnology, as fastest growing sector, has emerged as tool of promise and potential. India, figuring 12th in global ranking and 3rd in Asia Pacific, is poised to become preferable destination for BT investments. Each state, with its characteristic strength, is projecting India at global forum. With this perspective, a Seminar was organized on 13th January, 2007, at Science City, Sola, Ahmedabad. The main purpose of seminar was to provide a platform for experience sharing of professionals, industries and investors, from state, national and international level and seek their inputs, views and perceptions of Gujarat as destination for future BT investment. Biotechnology sector was one of the thrust sectors in Global Investor Summit, Vibrant Gujarat, 2007.

Vibrant Gujarat– Global Investors' Summit 2007
MoUs Signed During the Vibrant Gujarat – Global Investors' Summit 2007



Inaugural Ceremony and Key Note Speakers' Sessions



Welcoming the National and International Biotechnology Investors

GSBTM projected Biotechnology as important sector for thrust and investment. The dissemination of structured information was done through well documented and prepared reports and publicity material highlighting the strengths of Gujarat, in terms of social, urban and scientific infrastructure, manpower etc. It included information on sector profile, BT Park, BT education, BT organization of Gujarat, BT sector of Gujarat, Investment opportunity in Biotechnology etc. The event also had conducted "Biotechnology Seminar" which included five international speakers and two national level speakers. Around 500 professionals –including researchers, faculty, professionals, industries, attended the seminar. The participants included Gujarat University, Nirma University, Sardar Patel University, North Gujarat University, Veer Narmad University, GCRI, PERD, CSMCRI, NRCMAP, and representatives from more than 25 industries.

The event resulted in mobilizing BT investments in the state and included 18 Memorandum of Understanding (MoU) signed with committed investment of Rs 1554.00 crores in Biotechnology Sector during 2007 in Gujarat. The event has also extended support for private developer in exhibition by showcasing through BT stalls exhibition, which included coordinating with private developer and state level BT organizations to bring out, for the first time. Gujarat supplement by Bio-spectrum – premier Biotechnology magazine of country having Asia-Pacific circulation, was brought out through active support and participation of Biotechnology stakeholders, based in Gujarat and having business interest in Gujarat.

New Initiatives / Activities Planned

Following the strategic roadmap and moving ahead for Biotech development, definite achievements were made by GSBTM during the year 2006-07. the main being completion of the Study for Agro-BT Park, work on Marine Resource Centre, Gujarat Genome Initiative, Seed Gene Bank Initiative, BIT Virtual centre and specific Entrepreneurship Development Programs in Biotechnology.

4.0 Policy Planning and Related Initiatives

The State Biotech policy is an instrument which not only gives direction to biotechnology growth in state but also reflects a declared commitment of state government for the sector. While policy provides broad guidelines and macro-level approach, enabling implementation, needs developing specific strategies and action plans. Accordingly GSBTM as immediate follow up has developed vision document, policy guidelines strategic roadmaps.

GSBTM has been handling the responsibility of the formation of the Draft of Incentive Biotechnology Policy, which was conceptualized and initiated during 2004-05 after reviewing various existing policies of different states in the country. The same document was sought to be revised during 2006-07, with important features needed for BT industries, incorporated it and finally submitted to the state government for further consideration and approvals.

For wider feedback, the document was placed on website of GSBTM and advertisement in newspaper. The same was presented in the meeting of Gujarat Council of Biotechnology. Based on this policy document, Strategic Roadmaps have been developed; key sub-sectors have been identified; thrust areas within each and specific subsector has been focus and appropriate interventions will be taken for further development by state government. Infrastructure development, Research development, Human Resource development, Entrepreneurship support, Business development, Networking, Coordination and Awareness generation etc, have been identified as the key pillars of Biotechnology development for Gujarat. A presentation was made before H'ble Chief Minister of Gujarat on 8th Dec. 2006. After incorporating the various suggestions made therein, the policy was submitted to state government. It is expected to be released by April, 2007. The year, 2006-07 has been a landmark year for biotechnology, with central government releasing National Biotechnology Development Strategy. Keeping conformity with national vision GSBTM has also initiated developing 11th Five year plan, as tool to achieve the policy objectives and facilitate biotech-enabled development in the state.

4.1 11th Five Year Plan

GSBTM had developed unique of its kind effort of making, Vision Document and Strategic Action Plans. In conformity with the National relevance and State priority, elaborate planning for developing Biotechnology in state in next five years has been done. It addresses nine sub sectors – Agriculture Biotechnology, Animal Biotechnology, Marine Biotechnology, Medical & Pharma Biotechnology, Environment Biotechnology, Industrial Biotechnology, Forestry Biotechnology, Bio-informatics and Nano-Biotechnology.

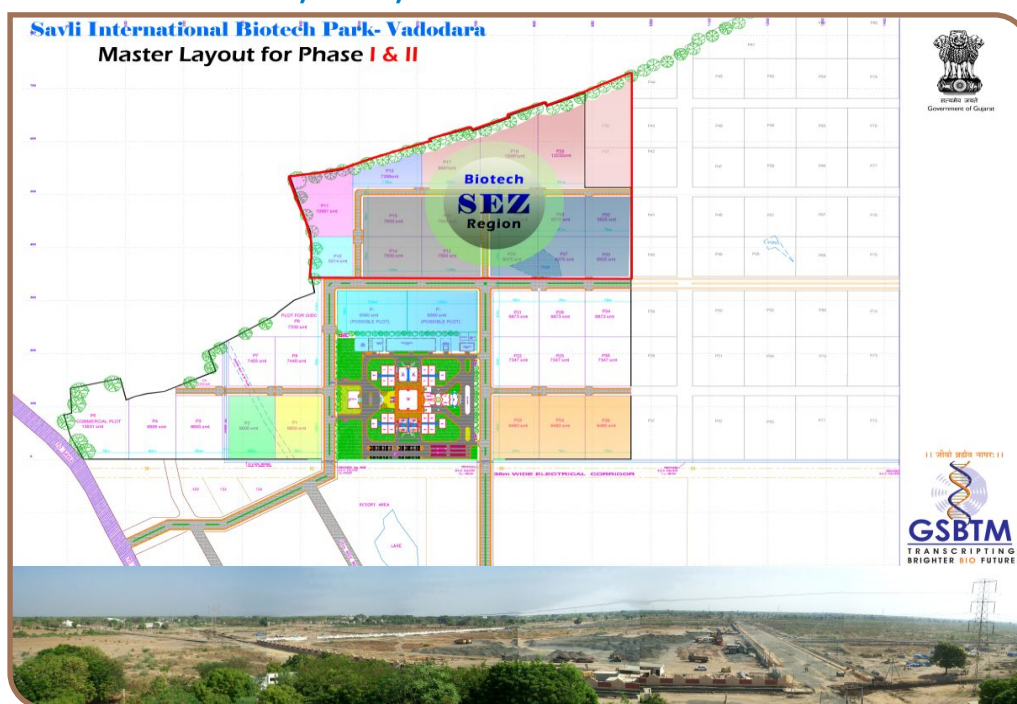
The Five Year Plan has identified activities planned to be done under Infrastructure Development, Research and Innovation, Human Resource Development, Entrepreneurship Development, Biotechnology Business and Information Dissemination for each of the above sectors. Thus sub sector plans have also been developed including physical and financial phasing.

5.0 Biotechnology Infrastructure Development in Gujarat

State of Gujarat has one of the best infrastructure facilities in the country, in terms of relatively good network of roads; pipeline for bulk supply of water, gauge conversion, etc. Government of Gujarat has promulgated ordinances to facilitate setting up of Special Economic Zones and Industrial parks, apart from the single window system clearance and delegated responsibilities of power, duties etc. In addition to the land availability, state government has provisions and commitment to facilitate development of other sector specific infrastructure such as centre of excellence, incubation, accreditation, testing, and validation in the respective zones. However, in view of the requirements of Biotech industries, specialized approach for cluster development and more specific and intensive inputs are required. Keeping the same approach, the state has plans to develop clusters in the form of Biotech parks.

Country's largest Biotechnology Park is being developed in the state in Vadodara, Savli, and spread over the area of 700 acres. It is being developed in Public Private Partnership. After due procedure of competitive bidding, Akruti-Nirman-TCG-UIH consortium has been selected as Private Partner for developing the Biotech Park, Savli. The BT Park is also being developed as SEZ, with GIDC as developer and GSBTM as co-developer. The proposal for same was developed by GSBTM / GIDC, and was submitted to Government of India. Land allotment to applicant companies has been initiated in Non SEZ portion of BT park while Land allotment in proposed SEZ area, is awaiting the receipt of notification from Govt. of India.

5.1 Gujarat Bio-Tech Park, Savli, Vadodara



The year 2006-07 has been seen very much eventful for BT Park development. During the year Environment Impact Assessment study was completed by GSBTM, including the mandatory step of Public Hearing. The NOC was sought from GPCB and proposal for seeking environment clearance, has been submitted to MOEF, GoI. In accordance with Environment Management plan, a proposal for laying effluent channel, from Savli to Nandesari, has been submitted to Industries Commissioner for funding under ASIDE. It aims to address the issue of effluent disposal, coming from tenants of the BT Park.



5.2. Major Infrastructure Initiatives

In Biotechnology Infrastructure Development different activities undertaken during 2006-07 for smoother and faster realization and implementation of the following initiatives:

5.2.1 Agriculture Biotechnology Park

The exclusive strengths of Gujarat in Agriculture sector, the strong potential of BT applications and to encourage agriculture through large scale use and application of Biotechnology, underline the need of creating a cluster, in the form of Agro-Biotech Park which would facilitate Agro-processing, Agro-exports, value addition and enable the availability of all the components of value chain. Accordingly, GSBTM has conceptualized the establishment of Agro-Biotechnology Park in Gujarat. Agro-BT Park is planned to be developed in Public Private Partnership model.

Ernst & Young Pvt. Ltd. were engaged as management consultant, for conducting location and feasibility study. GSBTM has provided technical and relevant inputs for overall development of concept in terms of activities focus area, facilities, components etc. Ernst & Young have completed their study and have submitted the draft report. The proposed Agro- BT Park has multiple stakeholders in terms of different department – agriculture, animal husbandry, fisheries, dairy, horticulture, ayurveda. It has various interfacing organizations – GSFC, GNFC, GGC, Gujarat Agro-industries Corporation, Seed Corporation, Oilseed boards, Fisheries Corporation. It has interface with various industries- seed industries, Bio-fertilizer industries, Tissue Culture industries, Food process industries. The stakeholder workshop is planned to be conducted for seeking the inputs and incorporating the same. In the meanwhile keeping the social, urban and basic infrastructure into consideration, various locations, are under scrutiny.

State government is developing Ahmedabad-Gandhinagar area as knowledge corridor. To enable better synergy, with existing infrastructure, Gandhinagar is one option. Other options being examined are Anand-Ahmedabad-Mehsana and Rajkot –Bhavnagar-Junagadh, corridor. The proximity of agriculture universities would be an exclusive incentive for attracting MNC and other agri-related industrial investments at Agro Biotech Park.

5.2.2 Marine Biotechnology Park

Gujarat has longest coastline and rich marine bio-resources. In view of the strong potentials of biotechnology applications, value addition, processing increase yields etc. in marine sector and to enable the development of biotechnology techniques, processes, products and innovations, GSBTM has conceptualized the development of Marine Biotechnology Park. It has been a fall out of the recommendations made during the Summit on Strategic Development of Marine Biotechnology, with scientists of repute from the State & the Nation. The recommendations made in the summit were followed up for further, to result into a fall-out 'Consultation Meeting' on to discuss the concept of Marine Biotech Incubator in a Marine Biotech Park. In the meeting, feedback was drawn for the Necessity of a Marine Biotech Park as proposed to the State along with the components of the Incubator. The Marine Biotech Park is aimed to facilitate the start ups and the established companies.

Marine biotechnology is influenced by environmental factors and availability of special facilities, apart from the common facilities necessary for any biotech park. Location analysis helps find the appropriateness of the site for establishment of the park. Accordingly, location analysis was done to examine various options. The State Level Location Analysis as well as On-site Location Analysis, was undertaken on the parameters of proximity to the sea, Type of the land – Agricultural, Non-agricultural, Pasteur, Terrain, Existing connectivity, Manpower availability in the vicinity, Presence of other industrial activities which might complement the incubator, park activities, Presence of polluting and non-polluting industries in the vicinity, Distance from CETPs, Agricultural produce in the nearby areas, if any, Human communities in the close vicinity of the location, etc.

On the basis of above and availability of adequate land parcel, location at Sachana, village near Jamnagar has been identified. Different sites were studied for their basic aspects, needed for setting up a Marine Biotech Park. The project is envisaged to be started in 100 Acre, with possibilities of expansion at a later stage. The proposal for seeking this land for developing Marine Biotech Park has been submitted to state authorities.

5.2.3 HLA Registry Facility and Cord Blood Bank

During the first Biotechnology Council Meet, under the chairmanship of H'ble Chief Minister of the State, it was suggested to establish HLA Registry Facility, in the state. It is needed for the treatment of a large number of diseases prevailing in the State. Such a facility apart from helping in the State's Healthcare Facility betterment, would also serve the Nation's Healthcare perspective. As a fall out of this meeting Biotechnology Mission organized a Healthcare Biotechnology Summit on 4th February, 2006. The issue was discussed in the Summit at length and it was recommended to organize a meeting of the concerned scientists with the officials of the State. A meeting was organized to discuss the Issues in Establishing a HLA Registry Facility and a Centre of Excellence in Transplant Immunology and Immunogenetics. The meeting was conducted on 16th May, 2006 at Gandhinagar. At both of these occasions, the need and relevance of creating cord Blood banking facilities was also discussed.



The meeting was chaired by Dr. Manju Sharma, Principle Scientific Advisor, Biotechnology, to the State; Executive Director, IIAR, Gandhinagar. The major points of discussion for HLA Registry Facility were about its Location, Operational Mechanism, Nature of the collaborating agency, Training of personnel and technicians in the agency, Number of volunteer donors to be registered in 3 years, MoU Terms and Conditions, Financial Matters, Time schedule for the project and any other related issue. The issue of Cord Blood Bank, was also discussed, with respect to aspects like need and capabilities for establishing and operating State Level Cord Blood Bank, Utility factor of such a facility, Operational Mechanism and Maintenance of the facility, Self sustainability of the facility, Conduct of Stem Cell Research, Ethical and Biosafety issues and other related issues. Hence the concept note for Human Leucocytes Antigen (HLA) Registry facility in the State was proposed by GSBTM to develop a ready to refer database of over 30,000 HLA Types, for addressing the blood related disorders, highly prevalent in Gujarat and also to facilitate organ transplanting. In accordance with the recommendations of experts, it was decided that state based organization having technical competence would submit the project jointly with AIIMS to DBT. GSBTM would facilitate the project preparation and submission. The proposal from Indu Research Foundation, Vadodara, was forwarded to AIIMS, for submission.

5.3 New Infrastructure Initiatives Undertaken

Infrastructure and Research & Development is the necessity for continuous upgradation of Biotechnology, an innovation driven field of science. Hence GSBTM has developed new initiatives providing state of art infrastructure for Gujarat Genomic Initiative, Seed Gene Bank to address identified Research Areas for Biotechnology Development.

5.3.1 Gujarat Genomic Initiative

Today Biotechnology is important tool in scientific research having its strong application in bio-prospecting, molecular taxonomy, developing genetic markers, both for breeding as well as for identification, for pre-implantation diagnostics and in-situ conservation of plants and micro-organisms. India has a rich

biodiversity, contributing 2.5 percent of global biodiversity. Gujarat, with its rich biodiversity, is regarded as the Gene Treasure and is one of the 34 Biodiversity hotspots of the world, having, and more than 7374 floral and faunal species. It includes 4,320 species of plants and 2,728 species of animals (GEC 1996). The State thus harbors 14% of the fish, 9% amphibians, 19% of reptiles, 37% of birds and 25% of the mammalian species recorded in the country.

Dedicated program for screening and identification of new genes is required as genome initiative. More than 32 genome initiatives have been taken while all these are programs are operating with huge investment and are expected to generate new genes / genetic information, it is felt that a small step in this regard may be taken by Gujarat. GSBTM has conceptualized Gujarat Genomic initiative (GGI).

Gujarat Genomics Initiative is planned to be a multi-unit, multi-disciplinary, multi-institutional initiative with participating faculty, students, scientists and biotechnology industries. Activities focus shall be on Genomics and Molecular Biotechnology with a base of genomics, proteomics and transcriptomics operations including specialized research laboratories, training activities, infrastructure and equipment for the biotechnology community of Gujarat.

This initiative will help

- In creating a top level genomics culture in Gujarat,
- It will generate a new economic opportunities in the field of high-end biotechnology,
- It will also help in building-up genomics infrastructure which will enable the Gujarat in achieving international competency and standards,
- This initiative will lead to develop the large-scale consortia of the academia, institutes and Biotechnology Industries with a highly diverse network of professionals.

H'ble Chief Minister, Gujarat, during his briefing meeting by Secretary, DST & MD, GSBTM had suggested to utilize facilities of Forensic Directorate for Biotechnology Development gave birth to this novel concept of the proposal. It being a Multi-institutional approach, in initial phase, it intends to involve key state government organizations – Gujarat State Biotechnology Mission, DST, GoG, Directorate of Forensic Science (FSL), GoG and Gujarat Forest Department. It involves collaborative efforts between three state government agencies, using their resource and respective strengths. The roles and responsibilities, of participating organizations have been elaborated in the MoU. Memorandum of Understanding, details of objective, function and role and responsibility of participating organization, was prepared and discussed with each of them. The modifications suggested by them were made and the participating organizations have given their consent. The project is costing around Rs. 200 lac for three years. FSL shall be contributing its infrastructure worth Rs. 161.50 lac. The project was approved by the Governing body.

5.3.1 Seed Gene Bank

Biotechnology is important tool in scientific research having its strong application in bio-prospecting, molecular taxonomy, developing genetic markers, both for breeding as well as for identification, for pre-implantation diagnostics and in-situ conservation of plants and micro-organisms. India has a rich biodiversity, contributing 2.5 percent of global biodiversity. Gujarat, with its rich biodiversity, is regarded as the Gene Treasure and is one of the 34 Biodiversity hotspots of the world, having more than 7374 floral and faunal species. It includes 4,320 species of plants and 2,728 species of animals (GEC 1996).

While various global programs are operating with huge investment and are expected to generate new genes / genetic information, it is felt that a small step in this regard may be taken by Gujarat. GSBTM has conceptualized the program of Seed Gene Bank. It collates and compliments the efforts undertaken by the state by different department. It is also a part of overall strategy of screening, characterizing and development of genomic database of biodiversity of Gujarat.

The development of Seed Bank is proposed to be a multi-unit, multi-disciplinary, multi-institutional initiative with participating faculty, students, scientists and biotechnology industries. Activities focus shall be on collection, inventorization and germplasm storage from key locations throughout different agro-climatic zones of Gujarat, Developing and operating a database and information network system on forest genetic resources, and operations including specialized research laboratories, training activities, infrastructure and equipment for the biotechnology community of Gujarat.

The suggestion was made by experts and members, during meeting of Gujarat Council of Biotechnology, held on 14th June, 2005, under the Chairmanship of H'ble Chief Minister of Gujarat. Accordingly this proposal has been developed which contains details of project relevance, objectives, activities, organizational mechanism, sustainability, operational modalities, collaboration, etc.

It being an Multi-institutional approach, in initial phase, it intends to involve key state government organizations – Gujarat State Biotechnology Mission, DST, GoG, and Gujarat Forest Department, GoG, Centre of Medicinal and Aromatic Plants (CIMAP, Lucknow) and other universities. . It involves collaborative efforts between three state government agencies, using their resource and respective strengths. The roles and responsibilities, of participating organizations have been elaborated in the MoU. Memorandum of Understanding, details of objective, function and role and responsibility of participating organization, was prepared and discussed with each of them. The modifications suggested by them were made and the participating organizations have given their consent. The project cost for three years is Rs. 6,00,00,000, (Rs. 350,00,000 in year I, Rs. 1,50,00,000 in year II and Rs. 1,00,00,000 in year III). Gujarat Forest Department shall be contributing its infrastructure worth Rs. 2,00,00,000. The project was approved by Governing body.

6.0 Biotechnology Research, Innovation support and Development

Biotechnology is a knowledge driven sector and needs high level of support to research and development which includes, research prioritization, action plans, research support to ongoing programs and new programs, establishment of research based centre of excellences and facilitation of patenting. In continuation with the previous year, GSBTM has conceptualized the new programs with extending research support to the existing ones. It has been evolved to encourage and strengthen research culture and enabling national level participation and competence building.

6.1 Biotechnology Research Support

With an objective to support Biotechnology Research in Gujarat; educational institutions and agencies, GSBTM conceptualized Biotechnology research support program. It was designed to encourage fundamental research as well as applied research (inclusive of product/process/technology development) with the following objective,

- Facilitating research through Infrastructure and Fundamental Research support
- Encouraging research culture with knowledge upgradation and exchange of information on recent advances and developments
- Providing common platform for interaction & knowledge exchange to the experts
- Creating a new breed and environment for Biotechnology Research
- Facilitating the conversion of Lab Biotechnologies into transferable products or processes

The nature of support to be provided, included support to Fundamental Research and Infrastructure, Product / Technology related Research, Research related to Technology Scaling-Up and Research related to Technology Transfer.

The various Research Areas supported, included Agriculture Biotechnology, Industrial Biotechnology, Animal Biotechnology, Environmental Biotechnology, Healthcare & Pharmaceutical Biotechnology, Marine Biotechnology, Bioinformatics and any other field (as deemed relevant by the Committee from time to time).

6.1.1 Current & Ongoing Projects

In the above head 16 Research Projects were funded covering various sub sectors. Of the 16 projects sanctioned, 7 project belong to Agriculture Biotechnology, 3 project belong to Environment Biotechnology, 3 project belong to Industrial Biotechnology, 1 project belong to Bioinformatics, 1 project belong to Pharma Biotechnology and 1 project belong to Animal Biotechnology. Thus a total of 16 projects have been sanctioned with committed financial support during 2006-07 of Rs. 9135717 for the year 2006-07.

6.1.2 New projects

Thus a total of 14 projects have been sanctioned with committed financial support of Rs. 2,43,54,816 for 3 years in CoE and Major research projects; whereas Rs. 34,29,380 for 2 years under minor research project scheme. During 2005-06, an amount of Rs. 1,50,61,640 was provided as financial assistance for year 2005-2006, for above mentioned Research & Development Projects.

6.1.2.1 Centre of Excellence: The technical committee recommended the establishment of 2 Centre of Excellence, with recommended financial support of Rs. 1,24,61,816 for 3 years.

6.1.2.2 Major Research Project: The technical committee recommended five major research projects with recommended financial support of Rs. 96,45,200 for 3 years.

6.1.2.3 Minor Research Project: The technical committee recommended five minor research projects with recommended financial support of Rs. 1,30,61,060 for 2 years.

6.1.2.4 Young Lecturers and Scientists Research (YLSR) Scheme: Two Young Lecturer and Scientist research were proposed under this scheme with the funding/financial assistance of Rs. 5,80,000, for 2006-2007.

6.1.2.5 Doctoral Research Fellowship : GSBTM has proposed Doctoral Research Fellowship program for the Research students for their specific research project under the DST, DBT,

CSIR, SRF scale, for creating research culture among the new biotech generation. For applying under DRF scheme, students were invited with their Research Projects/Guidelines, after preliminary screening by GSBTM, the short-listed candidates were called for technical interview/presentation which was assessed and evaluated by experts of the field. A committee of experts had selected few students under DRF scheme for financial aid for their research work and proposed to the Government of Gujarat for its approval. Total funding/financial assistance recommended by technical committee for DRF scheme this year is Rs. 15,87,600 for 2 years.

However, the Governing body decided that with limited resources, GSBTM must focus on infrastructure development, and encouraging Biotech business. State level manpower must be encouraged and enabled to seek financial support available and offered by national level funding agencies.

6.1.2.1 Human Resource Development Scheme : GSBTM has proposed a new scheme of Human Resource Development-HRD to the state government during this year for generating skilled manpower in the Biotechnology sector. Under this scheme Two Post Graduate programs were suggested for financial support. Relevant details are provided in the Annexure.

The above sanctioned projects were expected to benefiting 22 Faculties/ Scientists, working in 11 Laboratories of 6 Universities, 3 Research Institutes and, 4 Colleges of the state.

7.0 Biotechnology Human Resource Development

7.1 BIT Virtual – The Virtual Institute of Bioinformatics

Bioinformatics is a newly emerging interdisciplinary research area that has rapidly evolved as a core component of post-genomic research which aims at transforming the sequencing data into the biologically meaningful knowledge. It is becoming increasingly simple to obtain experimental information on DNA, RNA and protein sequences and expression levels; the interpretation of this information is far from straightforward. There is a critical scarcity of individuals with the training in biology, chemistry, computer science and the specific methods of bioinformatics to interpret this data.

Due to strong biotechnology based industry set up and other research activity promoted by GSBTM and other government agencies there is large primary data generation. These create urgent need of computational analysis and other bioinformatics based extensions. Which currently is blocked due to lack of growth in the area of bioinformatics in Gujarat, it is very vital to build up an institute, which provides the key infrastructures, impart knowledge.

GSBTM had conceptualized the networking the bioinformatics education and research with different universities of the state. The proposed virtual institute of bioinformatics – [BIT Virtual] will provide the platform, where the bioinformatics specialists interact among themselves, and other biotechnology research community. It involves collaborative efforts between three state government agencies, using their resource and respective strengths. The roles and responsibilities, of participating organizations have been elaborated in the MoU. Memorandum of Understanding, details of objective, function and role and responsibility of participating organization, was prepared and discussed with each of them. The modifications suggested by them were made and the participating organizations have given their consent.

The BIT Virtual, being an Multi-institutional approach, in initial phase, it intends to involve key stakeholders in Biotechnology & Bio-informatics -- Government Organization – Gujarat State Biotechnology Mission, DST, GoG, Department of Biotechnology, DBT, GoI, University & Academia – AAU, JAU, SPU, HAU, GU, and their constituent and concerned departments, Industries – Progenics, MNC and other industries.

The project cost envisaged for three years is Rs. 17,479,750 (Rs. 13,303,750 in year I, 2,163,000 in year II and Rs. 2,013,000 in year III) . Progenics, Singapore, MNC shall be contributing 20% of the projects cost (worth Rs. 45 lac), through concessions in equipment and providing Professors Chair. The project was approved by Governing body.

7.2 Gujarat Biotechnology Residential Crash Program [GBRCP]

The state has identified the importance of professionally qualified human resource as one of the key drivers in the growth and development of Biotechnology in the state. To facilitate the students of the state to compete into national level institutes, GSBMT had conceptualized an extensive training program - Gujarat Biotechnology Residential Crash Program [GBRCP].

GBRCP was an application intensive programme of residential character and had lectures, group discussions, presentations, tests, practice sessions, etc. A total of about 70 students from 7 Universities belonging to as many as 35 different College Departments and belonging to a cross-section of varied demographic and socio-economic backgrounds from different places all over the state participated.

GBRCP Phase-I amounted to: a total of 52 hours of formal lectures, a large number of informal sessions and discussions, two psychological training and Orientation sessions, One Physical Training session, Two Personality Development Sessions, One Brain-storming session and One Industrial Visit.

In continuation of the Phase – I of GBRCP; Phase-II aimed at assessing their preparations; troubleshooting; supplementing further lectures; mock tests; orientation sessions for interviews; etc. Interestingly Phase-II was followed by "A National Symposium on Frontiers of New



Biology" on 28th April, 2006 at IIAR. The students got an opportunity to listen to a galaxy of speakers, one of them being Dr. A. P. J. Abdul Kalam, President of India and many other eminent scientists of the nation. Two day biological science orientation lectures were aimed for training graduating students for appearing National Level Entrance Examination, where Dr. Harish Padh, Director, B. V. Patel Institute of Pharmaceutical Education, Research and Development, Dr. Smita Trivedi, Lecturer, M. S. University, Baroda and Mr. A. N. Bhadalkar, Sector Specialist – Industrial Biotechnology imparted lectures and also conducted preparatory exams.

Amongst the salient results, 2 students ranked in the All India Common Entrance test for M. Sc. (Biotech) conducted by Jawaharlal Nehru University, New Delhi; 2 students ranked in the All India Common Entrance test for M. Sc. (Research) conducted by National Institute of Virology, Pune; One student ranked in the All India Common Entrance test for M. B. A. (Biotech) conducted by Pune University, Pune; about 10 students ranked in the All India Common Entrance test for M. Sc. (Microbiology) and M. Sc. (Biochemistry) conducted by M. S. University of Baroda; about 18 students ranked in the Common Entrance test for M. Sc. (Biotech) or M. Sc. (Microbiology) or M. Sc. (Biochemistry) conducted by S. P. University, Vallabh Vidyanagar; and so on.



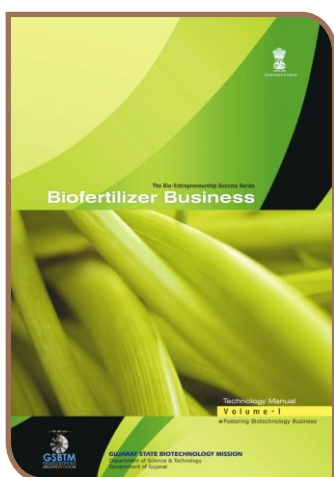
8.0 Development of Biotechnology Entrepreneurship

Biotechnology industries are, capital intensive, power intensive, research driven and have multi sector linkages. Biotechnology industries are Research and Development oriented, manufacturing based and/or Bio-service providing. Biotechnology, have interface with multiple sectors, namely, Agriculture, healthcare, environment, marine, animal husbandry etc. The Biotechnology Industries have multiple client spectrums, characterized by starters, existing entrepreneurs venturing in BT field and established business houses diversifying in Biotechnology.

8.1 Technology Facilitation cell

While development of Biotechnology business involves entrepreneurship and investments, GSBTM has come up with products and out puts that facilitate Biotechnology foresight, entrepreneurship, business, investment and wealth creation. An immediate action needed for this is technology facilitation and support. GSBTM has visualized a Technology Facilitation Cell (TFC), within GSBTM, which would provide support initially by providing selected services, in terms of database of biotechnology available for commercialization, transfers, partnerships and later on additional roles. The cell was initiated, on experimental basis which has made operational for the continuous year by engaging one JRF level personnel.

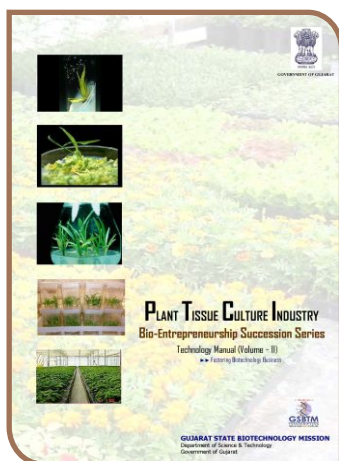
The cell has developed its first product which is A Compilation of Globally available technologies. The product was aimed to provide essential information to interested biotechnology stakeholders, both the existing ones and also the ones who are looking forward to converge towards and diversify into niche biotechnology sectors. Within one year, TFC has produced Technology Scroll (6 volume compilation), Business Plan on Bio-fertilizer, a Report on Jatropha including Database, and a Report on Tissue Culture and Bio-Diesel.



8.1.1 Biofertilizer Business – Technology Manual [Volume I]

Main objective of preparation of Biofertilizer Business - Technology manual is, to provide the information regarding infrastructure and laboratory facilities require for a Biofertilizer Production Industry. It also provides information on supply of efficient cultures of micro-organisms to industry and then to farmers well before sowing. This report also covers the quality control aspects for Biofertilizer Business.

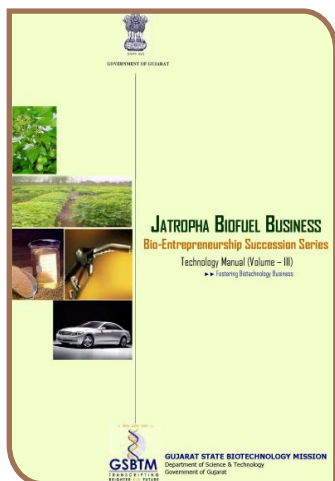
Preparation of Biofertilizer Business – The Bio-Entrepreneur Succession Series will be of use and interest to consultants, researchers, libraries, entrepreneurs, and manufacturers of Biofertilizer and for those who wants to venture in to this field.



8.1.2 Plant Tissue Culture Industry – Technology Manual [Volume II]

Tissue culture, an important area of biotechnology can be used to improve the productivity of planting material through enhanced availability of identified planting stock with desired traits.

Preparation of Plant Tissue Culture Industry – The Bio-Entrepreneur Succession Series includes all basic aspects, methodology & advance technologies of Plant Tissue Culture. It will be useful for researchers, entrepreneurs & for those who are concerned to invest in this field.



8.1.3 Jatropha Biofuel Business – Technology Manual [Volume III]

This Technology Manual- Jatropha Biofuel Business includes utilization of Plant Jatropha curcas as a Biofuel and its detailed information on Economics of Cultivation, Plantation, World-wide Activities, National & Global Status, and Biodiesel Purchase Policy etc.

Preparation of Jatropha Biofuel Business – The Bio-Entrepreneur Succession Series will be of use and interest to researchers, entrepreneurs and for those who wants to venture in to this field.

8.2 Entrepreneurship Development Program

8.2.1 Short Programme on Development of Entrepreneurship in the Business of Biotechnology

To highlight the nuances of entrepreneurship as well as the technical aspects of Business of Biotechnology, a short residential programme on Entrepreneurship in Biotechnology was envisaged, comprising of both – scientific as well as entrepreneurial modules.

'Business of Biotechnology' is a five-day long residential programme with modules for both scientific as well as entrepreneurial components. These modules will be open to both types of applicants - scientific as well as entrepreneurial. In addition to these modules, various case studies of Entrepreneurs are also planned. The program is planned to have a total of 40 lectures, 5 discussion sessions and a few Informal sessions.

The program also comprises of practical exposure in the form of Industrial Visits and preparation of Project Profiles/Business Plans. It has been envisaged that about 20–25 participants be allowed with educational background of either science/technology or management or entrepreneurship. Candidates were preferred from science and business background (may be M.Sc./ M.Tech./ B.E./ Ph.D./ M.B.A.) having inclination towards biotech business arena.

The lecture session include a primer on Biotechnology, Technical Entrepreneurship, Resource-base for bio-business, Business plan, Finance, Intellectual Property Rights, Biological hazards & bio-safety regulatory guidelines, and Case studies of a few first generation Entrepreneurs.

The program is intended to encourage new start ups in Biotechnology, encourage entrepreneurship skills, business management skills in scientific professionals. It will encourage convergence of related industries to biotechnology business. It will generate few BT entrepreneurs. It being an Multi-institutional approach, in initial phase, it involves key state / National government organizations – Gujarat State Biotechnology Mission, DST, GoG, Entrepreneurship development institute Gandhinagar, GoI, and PERD, A'bad, IIT, Delhi, It involves collaborative efforts between three state government agencies, using their resource and respective strengths. The roles and responsibilities, of participating organizations have been elaborated. It is multi-institutional project and is planned to be implemented through Entrepreneurship development Institute, Gandhinagar. The program was approved in Governing body and will be conducted in the fore coming session.

8.2.2 Entrepreneurship Development Program in Marine Biotechnology

Strengths of Gujarat lie in its 1600km long coastline inclusive of Gulf of Kachchh and Gulf of Khambhat, which makes the longest coastline, and country's first Marine National Park and in-situ conservation centre of marine Biodiversity. The Academic Strengths, include Central Salt and Marine Chemicals Research Institute (CSMCRI), Central Marine Fisheries Research Institute (CMFRI), Veer Narmad South Gujarat University, Bhavnagar University and Gujarat Ayurved University.

The identified Gaps are, (i) Dedicated educational & Training programs, for developing manpower in marine biotech, are wanting, (ii) Entrepreneurship Development Programme in Marine Biotech, is wanting, (iii) Despite the abundance of marine resources, Application and industry specific research in Marine Biotech is lacking and (iv) Negligible presence of Marine Biotech Industry in the State. The emerging scenario of marine biotechnology industry in our country warrants the need for more entrepreneurs to venture in this area towards strengthening the industrial base in marine biology & biotechnology.

Accordingly, Gujarat State Biotechnology Mission had conceptualized "Marine Biotech Entrepreneurship & Business Plan Development Program". The program aimed towards development of potential, informed, bio-entrepreneurs in marine biotechnology. Government of Gujarat also had concept of Marine Biotech Incubator facility in pipeline, and these bio-entrepreneurs in marine biotech could be some of the probable candidates into the facility.

Ideology of the Program was to promote and develop entrepreneurship in Marine Biotechnology by imparting training and exposure to post graduate students, in various aspects of business development and management of marine biotechnology industry.

The Objectives of the Program were (I) To organize a three months training programme once in a year to provide adequate exposure to post graduates from various fields of biotechnology and management, for marine biotech start ups, (ii) To culture entrepreneurship capabilities in the candidates, through interaction with industry, management and research institutes, (iii) To train the candidates in marine biotechnology with strong background in molecular biology, (iv) To expose the trainees at IIM to develop management skills and the business plan and (v) To generate entrepreneurs.

Collaborating Bodies were (i) Department of Biosciences, Veer Narmad South Gujarat University for conducting the Marine Sciences part, of the coursework, (ii) Entrepreneurship Development Institute of India – for conducting the Entrepreneurship Development part, of the coursework and Gujarat State Biotechnology Mission for overall coordination,

The program had 15-17 seats and Students were selected through advertisement. The minimum eligibility were M.Sc. Life Sciences, M.Sc. Pharmacy, M.Sc. Chemistry, B. E. Chemical Engineering, M.Sc. Agriculture, M. Sc. Marine Biology, M. Sc. Mariculture, M. Sc. Industrial Fisheries, M.F.Sc., M.B.A. & Ph. D. in the above mentioned fields. Industrial exposure and experience would be desirable.

The program was comprising of preparation of Business Plan by the candidate, at the end of 90 days training period. The plan would be evaluated by a panel of experts and on the basis of evaluation of the business plan; the candidate would be awarded grade / certificate. Course work Conduction would be through interactive lectures and practical.

Program was planned to be conducted by Core Faculty team –from Department of Biosciences, Veer Narmad University, Entrepreneurship Development Institute of India and Visiting Faculty team Faculty from IIM, Ahmedabad, Department of Biotechnology, Cochin University of Science & Technology, Cochin, professionals from BT industries, CMFRI, Veraval. Expert Panel for Business Plan Presentation were comprised of representatives from BT industries, DDG, Fisheries, ICAR, New Delhi, Representative from the collaborating Bank, Representative from the collaborating Venture Fund Ltd, Faculty from the collaborating Management Institute and GSBTM Representative. Program was planned be conducted in different components; biotechnology related components would be conducted in Biotechnology Institute/University Department while management related component would be done in EDI, Gandhinagar.

The marine biotechnology research leads obtained by many investigators through DBT and other funding, need to be translated into technology, for industrial venture. For the same, bio-entrepreneurs have to be generated, to take up the task of technology transfer and commercialization. The anticipated outcomes would be: Business Plans on technologies of marine biotechnology and Candidates with requisite entrepreneurship skills in marine biotechnology. It was planned to be a multi-institutional program involving GSBTM, CSMCRI, EDI and university. The program was approved by Governing body.

9.0 Encouraging Biotechnology Business and Networking

9.1 Gujarat Integrated Bio Network [GIBioN] - 18th State Level Competition for Seminars, Extempore Speech, Article Writing & Scientific Cartoons

Gujarat Integrated Bio Network [GIBioN] is a network of 55 undergraduate colleges of Gujarat, envisaged to conduct various activities for under graduate and post graduate level biotechnology students. Objective of this network is to provide students a competitive and encouraging environment, to interact and present their skills at state level. A thought provoking theme of the network activities were a Series of Competitions, 18th State Level Competition for Seminars, Extempore Speech, Article writing & Scientific Cartoons, organized on 17th December, 2006, at Naran Lala, College of professional & applied sciences, Navsari jointly with Microbiology Study Circle, Nadiad and GSBTM. The competitions included: Seminar Presentation Competition, Article Writing Competition and Scientific Cartoon [BTtoon] Competition among Second and Third Year B. Sc. Students. Around 1000 students attended the program, and 150 students participated in the various activities as mentioned above. Winners emerged out of the program received prizes for their best performances. The program was organized to impart a healthy spirit of competition amongst the young biotechnologists of the State.



9.2 Proposed Initiatives for Biotech Business

9.2.1 Spirulina Project

The application of Biotechnology for rural and societal benefits was discussed in the meeting of Gujarat Council of Biotechnology. It was also suggested that a dedicated project addressing malnutrition problem through Biotechnology, may be conceptualized. While malnutrition is problem with multiple aspects and linkages and cannot be addressed through one particular approach, it was felt that initiative may be taken to utilize any existing technology / process or product.

Spirulina, fresh water blue green algae, is being developed as the "food of the future". Spirulina is 65 to 71 % complete protein, with all essential amino acids in perfect balance. Spirulina is widely used because of its medicinal properties and also an important nutraceutical. Incorporating Spirulina in the diet, an intake per day of 10 grams per adult is widely recommended to maintain health. Thus Spirulina if added in the daily food practice or in the mid-day meal at primary school, Anganwadi, etc, would address the protein needs of rural population. It needs dedicated program for spirulina production and supply. The technology, Machinery and laboratory equipments for large scale cultivation and production are available from various manufacturers in India.

In light of the issue of addressing malnutrition problem through Biotechnology and assimilating the facilities created in Gujarat, under DBT funded project, the report submitted, the issues (Facilities / infrastructure created, Technical feasibility, Financial feasibility, modalities to operate and run it efficiently like a business, Possibility of operating it as state venture through government agency) brought therein and the options and modalities identified therein, a project has been developed by GSBTM which includes concept relevance, strategy, collaborations, sustainability, organizational mechanism, phasing, etc.

Spirulina cultivation is planned to be encouraged as social program for addressing malnutrition problem in rural area. Entire project has been perceived in terms of socio-economic-health and welfare perspective and accordingly, health department or university are planned to be involved to operate and run the project as state government centre of Spirulina production. GSBTM may provide necessary support for the program for scaling up of the facilities on project basis so that it can undertake Spirulina capsule production on commercial scale for supply to health department. The infrastructure, established from GOI funds is planned to be developed into a Spirulina training and production and demonstration centre, with complete testing, quality control facilities. If successful, the same would be considered for replication in other parts of state,

It being an Multi-institutional approach, in initial phase, it intends to involve key state government organizations – Gujarat State Biotechnology Mission, DST, GoG, Juangadh, Agriculture University, and Health department, It involves collaborative efforts between three state government agencies, using their resource and respective strengths. The roles and responsibilities, of participating organizations have been elaborated in the MoU. Memorandum of Understanding, details of objective, function and role and responsibility of participating organization, was prepared and discussed with each of them. The participating organizations have given their consent.

The total project cost is approx Rs. 20 lac for the two years. The same was planned to be implemented from the budget available with the GSBTM. The existing infrastructure created under DBT, GoI fund and the ones available with JAU, shall be utilized. However, Governing body felt that such project, planned to be run on business lines may be implemented through public sector agencies like Gujarat state fertilizer corporation or Gujarat green revolution company.

10.0 Promotion of Biotechnology sector in Gujarat

With an aim to create awareness related to biotechnology related aspects, sensitize the general public and key players in this sector, the GSBTM has aimed at conducting various programs. Main being, event participation, Participation in International Conferences and Exhibitions, Participation in National Conferences and Exhibitions, Conduction of National Exhibition, Conference, Development of Resource, Conduction of Popular Lecture Series, Conduction of State Level Seminars, Awareness Generation, Dissemination of Information, Documentation and preparation of Awareness material & literature,.

10.1 Event Participation

10.1.1 Participation in International Conferences and Exhibitions

Delegation to Germany

To facilitate knowledge sharing, exchange of information between the stakeholders across the countries and also for Coordination, Branding, Marketing at International level which is very much required, especially against the aggressive initiatives by all other states. Gujarat State Biotechnology Mission participated in FICCI-GTZ supported delegation visit to Germany. The delegation interacted with Biotech related companies and patent offices, at Munich

During Bio – 2006 delegates at EUPO and IZB at Munich, Germany



10.2 Coordination and Facilitation

10.2.1 Conduction of Popular Lecture Series

GSBTM, DST, GOG has identified the need to create scientific awareness, sensitization, socio-ethical acceptance and adoption to the potentials and application of biotechnology for the purpose of Promotion, Support and facilitation for the overall development of Biotechnology in the state. Hence, GSBTM has accorded a very high priority to dissemination of scientific information, awareness generation, knowledge up-gradation and exposure by means of various Awareness programmes like seminars, workshops, lecture series, participation in fairs and exhibitions Accordingly, GSBTM has conceptualized a program of 'Popular Lecture series', which intends to bring the knowledge of the best professionals, generate awareness about fascinating world of Biotechnology, its future promises, and initiate networking between stakeholders to the doorstep of the society in a comprehensive form. Having visualized programme of Popular Lecture Series as a mandate for - dissemination of technical knowledge, creating awareness about the latest developments in the field of Biotechnology, various programs were conducted. It generated a tremendous interest and response in the Biotechnology Stake holders.



Popular Lecture Series- During the year 2006-07 following popular lectures were conducted. Experts delivered lecture on different issues, addressing a big mass of Biotechnology Students, Research Scientists, Academicians and research institutes from the state.

Dr. Usha Goswami, Marine Geneticist and Biotechnologist, Deputy Director and Head Gene Lab (Retd.) National Institute of Oceanography (NIO), Goa delivered her lecture on "Marine Biotechnology: Its achievements and new avenues in marine biology" at South Gujarat University, Surat.



Dr. Stefan K. Bohlander, Professor of Molecular Hematology and Oncology (C3 tenured), Ludwig Maximilians University, Germany had delivered his talk on "Chromosomal Translocation in Leukemia: From Stamp Collecting to Treatment" at GCRI.



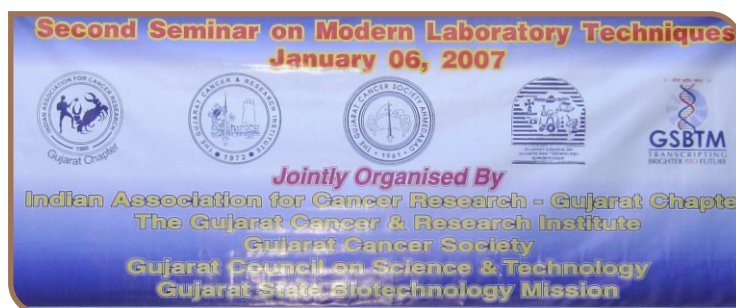
Dr. Suman P. S. Khanuja, Director, Central Institute of Medicinal and Aromatic Plants - CIMAP, Lucknow. Delivered his popular lecture on "Biotechnological prospecting of bioactive molecules, genes and products from plant genetic resources" at BISAG.

10.2.2 Conduction of State Level Seminars

Seminars provide opportunities of technical interaction amongst the state players, experts, professionals and enable exchange of information. This facilitates exchange of ideas and possibilities of collaborations, both within the state and in between the states. GSBTM has adopted the policy to encourage this activity by providing financial support to interested institutions. During the year, following seminars were supported.

1. Second Seminar on Modern Laboratory Techniques

Second Seminar on Modern Laboratory Technique was jointly organized under the patronage of Indian Association for Cancer Research – Gujarat Chapter, GCRI and Gujarat State Biotechnology Mission on 06 January 2007 for the training of MLT students of the state. Dignitaries from Gujarat Cancer Society and Research Institute had delivered their talk on Modern Laboratory Techniques, were Dr. Pankaj Shah, Director - GCRI, Dr. Shilin Shukla, Deputy Director - GCRI, Dr. Prabhudas Patel, Biochemistry Research Department Head and Shri Akshay K. Saxena, Mission Director – GSBTM. Other Invited dignitaries of national repute were Dr. B. V. Patel, Dr. Shubhada Chiplunkar, Dr. Harish Padh, Prof. Naresh Kumar and Dr. Narendra Jawali.



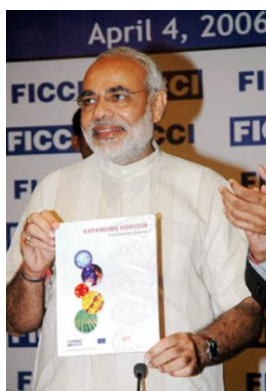
2. Seminar on Humanity's Heritage: Our Genome & Stem Cells

A seminar focusing on "Humanity's Heritage: Our Genome & Stem Cells" was organized by Society of Biological Chemists (India), Baroda Unit at Department of Microbiology and Biochemistry, M. S. University, Baroda and supported by GSBTM. Stem Cell research scientists and experts of the nation were gathered at one platform to discuss various application and opportunities residing with Stem Cell research in the post genomic era. The seminar emphasized on new rapidly developing technology's immediate and real concerns, in terms of genetic information and ethical issues, privacy and confidentiality, safety and environmental impact, uncertainties of genetic tests for complex conditions and commercialization with taking care of patents or ownership of DNA etc.



3. Seminar on Evaluation of Infra-Red Thermography Technique as a Method for Early Detection of Breast Cancer

One day Seminar on "Evaluation of Infra-Red Thermography Technique As a Method for Early Detection of Breast Cancer" was jointly organized by Gujarat State Biotechnology Mission, Sinsil International, Prime Group and Specialise Instruments, at Infocity, Gandhinagar. Experts delivered their talk on various prevailing issues like, Prospects and Protocols for BT Clinical Trials in India, Medical Statistics for BT Clinical Designs, Medical Thermography : Indian Scenario, Breast Infra-Red Thermograph Imaging : An Overview, Comparative Study Of Existing Diagnostic Modalities For Breast Cancer, Breast Imaging Techniques - Current Status, Infrared Imagers And Imaging, Issues In Developing Breast Thermogram Generation & Analysis (BTGA) System, Environmental Requirements For Breast Thermography Laboratories and Numerical Simulation As An Adjunct Tool To Thermography As A Tumor Detection Tool. In depth discussion and presentations made on various issues of Breast Cancer treatments. Participating experts were representing state and national industry/institutes like, Anna University, Chennai, Dhirubhai Ambani Institute of Information & Communication Technology (DA-IICT), Gandhinagar, Dr. Balabhai Nanavati Hospital, Mumbai, Gujarat Cancer & Research Institute, Ahmedabad, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, Institute For Plasma Research, (IPR) Gandhinagar, INTAS Pharmaceuticals, Ahmedabad, Sterling Hospitals Limited, Ahmedabad.



Honourable Chief Minister of Gujarat
Mr. Narendra Modi releasing the Report
"Expanding Horizon - Biotechnology Gujarat,
April 2006"

4. Facilitating Other Biotechnology Organizations in Gujarat by FICCI-EU-GTZ Biotech Resource Centre and GSBTM

The Federation of Indian Chambers of Commerce & Industry (FICCI), in collaboration with the European Union (EU) and GTZ (German Technical Cooperation) has established FICCI-EU-GTZ Biotech Resource Centre at Ahmedabad. GSBTM being a state nodal agency for biotechnology development had extended its role of facilitation during setting up of centre. GSBTM has provided the necessary database and state related information of biotechnology stakeholders of Gujarat. The prime objective of the center is to act as a platform to knit bilateral relationship between small and medium scale entrepreneurs (SMEs), R&D institutes and academia. The Chief Minister of Gujarat, Narendra Modi released the report - "Expanding Horizon-Biotechnology Gujarat", on 4th April, 2006 at the FICCI's national executive committee meeting.

With spirit of supporting and encouraging state organizations in Biotechnology development, GSBTM, participated and provided state level perspective in various programs & seminars conducted by FICCI-EU-GTZ Biotech Resource Centre. The Centre organized seminars on Textile Biotechnology, Pharmaceutical Biotechnology, Industrial Biotechnology, and Agriculture Biotechnology. To Share state of the art technologies available for the textile industry as cost effective and eco-friendly alternative to the contemporary industrial processes an awareness seminar on "Textile Biotechnology and Industrial Biotechnology" was done in Aug. and Sept. 2006. An awareness seminar on Biotech options in terms of sustainable development of Agriculture and Pharmaceutical Sector were also made in the month of December 2006.



5. Facilitating Other Biotechnology Institutions in Gujarat – "National Symposium on Frontiers of New Biology" at IIAR at its Inauguration

Apart from undertaking various activities, GSBTM, as state agency is also actively supporting the biotechnology related initiatives taken by other organizations. During the year, Inauguration of Indian Institute of Advanced Research (IIAR) was done by President of India Dr. A. P. J. Abdul Kalam. The event witnessed the presence of H'ble Chief Minister of Gujarat, Shri Narendra Modi and various delegates, scientists, and academicians. GSBTM also provided financial support to IIAR in conducting National Symposium on "Frontiers of New Biology" on 28th April 2006 at IIAR, Village Koba, Gandhinagar, Gujarat. The event was attended by eminent scientists and dignitaries of the country. These included, Prof. P. N. Tandon, President, National Brain Research Centre, Manesar; Dr. Manju Sharma, Former Principal Secretary, DBT, New Delhi; Dr. V. P. Kamboj, President, The National Academy of Sciences, India, Allahabad; Prof. G. Padmanaban, Indian Institute of Science, Bangalore, Dr. M. K. Bhan, Secretary, Dept. of Biotechnology, Govt. of India, New Delhi; Prof. M. C. Varshneya, Vice Chancellor, Anand Agricultural University, Anand; Dr. S. Nagarajan, New Delhi; Dr. S.P.S. Khanuja, Director, Central Institute of Medicinal and Aromatic Plants, Lucknow; Prof. Asis Datta, Director, National Centre for Plant Genome Research, New Delhi; Dr. V. S. Chauhan, Director, New Trends, Dr. K. K. Taiwar, Director, Institute of Medical Education and Research, Chandigarh; Prof. M. Vijayan, Indian Institute of Science, Bangalore; Prof. A. Surolia, Director, National Institute of Immunology, New Delhi; Prof. Akhilesh Tyagi, Dept. of Biochemistry, University of Delhi South Campus, New Delhi; Prof. B. B. Chattoo., M. S. University, Baroda.





10.3 Awareness Generation, Dissemination of Information, Documentation, Preparation of awareness material & Literature

The important role of mission shall be to provide relevant, field related information to the stakeholders both in print form as well online. It includes hosting of website, updating, and creation of web cell.

10.3.1 Website

Electronic media is potential and ideal vehicle of information dissemination. To communicate with vast spectrum of stakeholders – Academicians, professionals, experts, industries at state, region, national and international level, and informative website is highly desirable. Accordingly, to reach and have access to vast stakeholder group, GSBTM conceptualized and developed website of GSBTM. It has been developed to address needs of different stakeholders and provides relevant and pertinent information about Biotechnology of Gujarat, infrastructure, policy initiatives, research, human resource development, entrepreneurship development, Biotechnology business, networking etc. It also provides links to important biotechnology sites of Government of India.

During year 2006-07 GSBTM website was updated with information on topics on Biotechnology and allied sub-sectors, Biotechnology Industries in India, "Biotech Park", Biotechnology in Gujarat covering Investment Opportunity, R&D Activities, Bio entrepreneurs etc., Institutes Conducting Biotech Courses, S*Star Mirror site, mbtEACH (Network of Molecular Biology & Bioinformatics Community of Gujarat), Biotechnology Chronicle, Biotechnology Entrepreneurship Development Programs in Industry and Marine Biotechnology, Facts and Figures covering Biotech Industry in India, A special feature for the Biotech Aspirants called "Jobs Ahead" covering Current jobs in Biotech Industries in India.

A noteworthy achievement was virtual tie up with S* Star, a Singapore based Universities Consortium. GSBTM has become mirror site of S* Star, only third one in the country. Other organizations having such mirror sites are Centre for DNA Fingerprinting, Hyderabad, Madurai Kamraj University, Madurai and also GSBTM. This arrangement facilitates access to educational resource material and certificate programs, of S*Star.

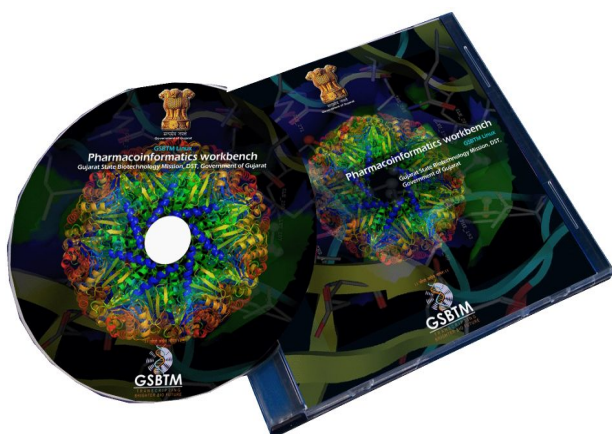


10.3.2 Biotechnology E-chronicle

It is important to provide a platform and forum for sharing and disseminating biotechnology related information of Gujarat. Such effort has not been undertaken by any of the state. Accordingly, a concept of e-chronicle was developed, in-house. Since, the launch of first issue of Biotechnology E-chronicle, on 15 Aug. 2005, work is being continued. There were two issues released during 2006-07. The chronicle covers the industry, research, academic strengths of Gujarat. It has various features like Industry of the month, research institute of the month, entrepreneurs of the month, spotlight, Cartoon corner, techno-views, Bio-business etc. The print format of Biotechnology chronicle, was distributed to biotechnology stakeholders of the state and selected organizations of the country.

10.3.3 Documentation

In-house projects have been taken involving students on short term assignments. Complete report on Industrial Enzyme has been developed. Similarly, interactive, web-based compilation of BT news has been prepared. National database on BT research, manpower, patents, technology, has been developed. Pharmaco-Informatics Workbench has been developed and international paper has been accepted. It was the only Indian paper accepted in the "International Conference in Bio-Informatics", INCOB 2006, held in New Delhi during 18-20 December 2006, by GSBTM team including Saxena A.K., Shah J. M., Saiyed Z.M., Bagatharia S.B.



1. Pharmacoinformatics Workbench

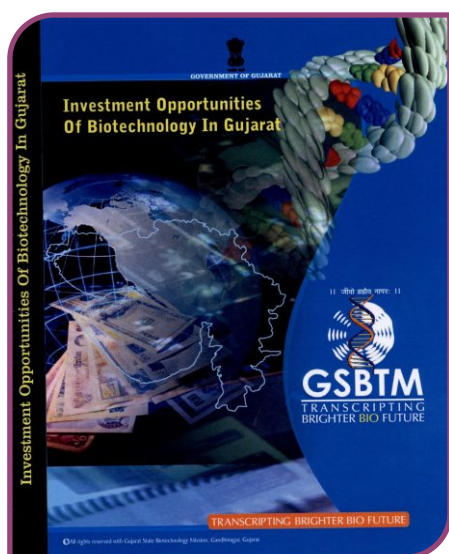
Knoppix is a Linux distribution Live CD/DVD. It is a Debian based Linux distribution running on a CD drive without using the hard drive or installing any files onto the hard drive. Knoppix has a great utility in the field of Bioinformatics and can be remastered as per requirements. Application is a customization of Knoppix as a Pharmacoinformatics Workbench with a compilation of Softwares, to be utilized for drug designing and discovery, structure prediction, molecular modelling and related chemo informatics activities by Bioinformatics and Biotechnology stakeholders as an open-source. GSBTM Pharmacoinformatics Workbench is a re-mastering of Knoppix as a Pharmacoinformatics Workbench with compilation of softwares for structure based drug designing. Packages included in it are Dock v5.4.0, Hex v4.2, Tinker v4.2, gOpenMol v3.0, Bodil v0.8, and ChemTool v1.6.9.

2. Biotechnology News Compilation

To facilitate availability of classified information on Biotechnology, covered by media, GSBTM has developed a compilation which is search based and which facilitates tracing and tracking news of relevant sector, sub-sector, field and interest in Biotechnology. It has been developed as BT News. It is web enabled interactive format. The first version covers BT related news of last five years, classified into nearly 15 sub-heads. More than 350 Newspaper articles of Biotechnology appeared in prominent News Dailies compiled and available in just one click of mouse. It's a compilation and development of a database from easy Retrieval, compilation of 6 years articles during the 2000-2006 and compilation of classified from user's perspective i.e. sector specific, or niche user specific to enable new updates at their convenience.



10.3.4 Publicity Material



1. Investment Opportunities in Gujarat – 2007

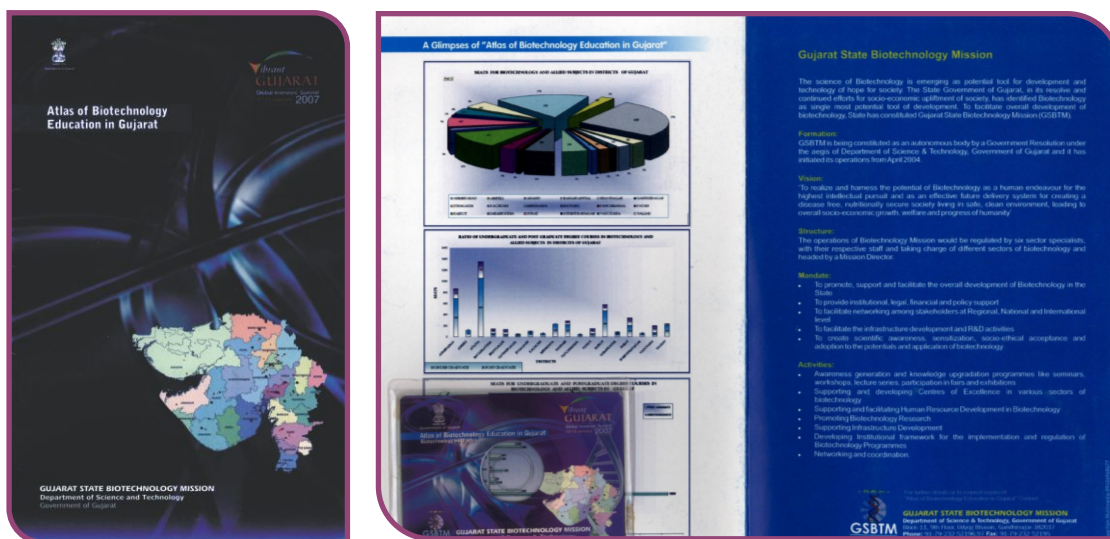
To facilitate entrepreneurs and interested business houses, both from state, across state and overseas, Platform, to invest and venture into Biotechnology business, a compilation of "investment opportunities Biotechnology in Gujarat" was developed. It is a compilation of 25 Investment Opportunities of 6 Biotechnology, and its allied sectors of Gujarat, The information is provided on potential areas of investments, likely size of investment required, suggested locations, raw material availability, availability of technology and skilled manpower etc. Interactive CD summarizing project profiles and investment opportunities in Biotechnology in Gujarat has been made. It highlights the sector strength, location analysis and investment opportunities in Various Biotechnology areas in Gujarat.

2. Gujarat Biotech Park CD & Brochures



Biotech Parks have been successfully addressing the infrastructure requirements of the rapidly growing Biotech Industry, not only in the nation but all over the globe. Government of Gujarat along with central Govt. is setting up a Biotech Park at the GICDC Savli Industrial Estate at Vadodara. Gujarat Biotech Park, Savli, Vadodara, aims to create one such Biotech Cluster in Gujarat, to provide platform for Research and technology development, entrepreneurship and business in the Biotechnology sector. Informative brochure and interactive CD format was developed to facilitate information availability to investors and researchers. It contains details of Gujarat Biotech Park Project Roll-out Plan, Time lines and Phase wise implementation information and Park Layout.

3. Atlas of Biotechnology Education in Gujarat Brochure & CD



The preparation of Biotechnology Education Atlas was conceptualized to be a factual document reflecting the Biotechnology education status and potential manpower resource centre for Biotechnology, from the state and regional perspective. It provides all stakeholders-both public and private - an update of current status of Biotechnology education in Gujarat. It is an overview of Biotechnology education with respect to level of educational programs, the regional distribution, subjects/streams etc. It reflects present, future and potential manpower availability for Biotechnology sector in Gujarat. It is a kind of Map for the state level facilitates as well as qualitative and quantitative trend analysis for future HRD planning in Biotechnology sector.

4. GSBTM Analytical Report & Compendium Brochure with CD

It was also developed with respect to encourage Biotech Business and Networking in the State. It also provides structured systematic and essential information to potential investor in biotechnology in Gujarat. 'Compendium of Biotechnology Organizations in Gujarat' is a unique product and a tool for promoting Gujarat as a Biotechnology Destination by showcasing its existing strength. It's a projection of Biotechnology Strength of Gujarat with 40 Biotechnology Industries. Analytical Report Developed with an objective to provide all stakeholders and Government agencies an update on Current Biotechnology Activities in the State, with respect to activities being undertaken in India and elsewhere around the world.



5. Brochures Developed

New brochures were developed during Vibrant Gujarat for facilitating information dissemination, proper display, during various state level strengths, opportunities and programs of biotech. The same have been effectively used during various seminars, BT programs.



11.0 Budget

For the year 2006-07, a total of Rs. 1070 lacs Grant were released to GSBTM. Total Expense of Rs. 550.44 lacs were accounted on 31st March 2007. It was the third consecutive year and various new programs were developed. The audited accounts are produced in the Annexure.

12.0 Audit

Consequent to the approval given by Governing body, Shri. T. N. Shah, auditors were appointed for conducting the audit of GSBTM accounts for the year 2006-07. The same has been approved in the Governing body meeting. The copies of audited and approved accounts of GSBTM for the year 2005-06 have been sent to relevant agencies including charity Commissioner, Income Tax office etc.

13.0 Staff

State Government has sanctioned a staff of 24 for Gujarat State Biotechnology Mission. This includes 6 technical staff and 8 office staff and 6 supportive staff. However, during the first year, staff of 4 was recruited by Department of Science & Technology. It included three sector specialists and one Account cum Administrative officer. Subsequent to approval, given in November 2005, recruitment of 2 Deputy Section Officers has been undertaken through manpower agency. The process of selection of Administrative and Account Officer is under the way by seeking applications from retired people, in the category of class II, screening and their interview. During the year, two Sector Specialists – Bio-informatics & Pharma –Healthcare were also appointed.

Staff Recruitment Details						
YEAR 2006-07						
No.	Designation of Post	Scale of Pay	Mode of Recruitment	No. of Post	Filled Post	Vacant Post
1	Mission Director	16400-450-20000	Deputation	1	1	-
2	Sector Specialist	12000-375-16500	Contract basis	6	5	1
3	Account-cum-Administrative Officer	6500-200-10500	Contract basis	1	-	1
4	English Steno Grade-I	6500-200-10500	Deputation / Contract basis	1	-	1
5	Dy. Section Officer	5500-175-9000	Contract basis	3	3	-
6	English Steno Grade-II	5500-175-9000	Contract basis	2	2	-
7	Clerk	3050-75-3950-80-4590	Contract basis	1	1	-
8	Data Entry Operator	3050-75-3950-80-4590	Contract basis	1	1	-
9	Peon	2500-55-2660-60-3200	Contract basis	4	4	-
			Total	20	17	3

14.0 Office Facility

GSBTM being a nodal agency, created under department of science & technology, has its office in Udyog Bhavan. The office renovation works, have been completed to suit to specific office requirement. In view of the office requirement, for computer laboratory, technology, Web cell, library, Patent cell etc, renovations were done additionally.

15. ANNEXURE

ANNEXURE	CONTENT DETAIL
ANNEXURE – 1	Audited Account 2006-07
ANNEXURE – 2	Composition of Biotechnology Council
ANNEXURE – 3	Composition of Governing Body
ANNEXURE – 4	Composition of Executive Committee
ANNEXURE – 5	Biotechnology Research Project Support - CoE/Major/Minor/YLSR/DRF/HRD Schemes
ANNEXURE – 6	Biotechnology Investments during 2006-07
ANNEXURE – 7	Popular Lecture Series Glimpse

ANNEXURE-1
Audited Account 2006-07

T.N.SHAH & CO.

CHARTERED ACCOUNTANTS

N.B.SHAH B.Com F.C.A.

PHONE :- (O) 23222152, 23241432

T.N.SHAH B.Com F.C.A., D.I.S.A.

(R) 23121986

503, ABHISHEAK, OPP. HOTEL HAVELI, SEC :- 11, GANDHINAGAR. 382 011.

AUDITOR'S REPORT

NAME OF THE PUBLIC TRUST :-

GUJARAT STATE BIOTECHNOLOGY MISSION

Block-11, 9th Floor, UDHYOG BHAVAN, Sector-11, Gandhinagar.

REGISTRATION NO. :-

GUJ/ 1220, Gandhinagar Dt, 23/11/2004

We have audited the Accounts of the above named Trust for the year ended and beg to report that :-
31st MARCH 2007.

- 1 The accounts are maintained regularly and in accordance with the provisions of the Act and the Rules :- YES
- 2 Receipts and disbursements are properly and correctly shown in the accounts :- YES
- 3 The cash balance and vouchers in the custody of the manager or Trustee on the date of the audit are in the agreement with accounts :- YES
- 4 Books, Deed, Accounts Voucher and other documents and records required by us were produced before us :- YES
- 5 An inventory, certified by the trustee of the moveables of the Trust has been maintained :- N.A
- 6 The manager/Trustee appeared before us and furnished the necessary information required by us :- YES
- 7 No. property of funds of the Trust were applied for any object or purpose other than the objects or purposes of Trust :- NO
- 8 The amounts outstanding for the more than one year are Rs.Nil and the amount written off is Rs. NIL
- 9 Tender were/were not invited for repairs or construction as the expenditure involved did/did not exceed Rs. 5000/- :- YES
- 10 No money of the public Trust has been invested contrary to the provisions section 35 :- NO
- 11 No alienations of immovable property has been made contrary to the provisions section 36 :- NO
- 12 The interest has been accounted on the cash basis.
- 13 Some Utilisation Certificates of the grants given to various Institutions has not been given to us for our verification
- 14 Previous year balances has been Regrouped and Reclassified wherever required.

DATE :- 06/10/2007
PLACE :- Gandhinagar



FOR, T.N.SHAH & CO.
CHARTERED ACCOUNTANTS

[Signature]
T.N. SHAH
PARTNER

THE BOMBAY PUBLIC TRUST ACT, 1950
SCHEDULE IXC (Vide Rule 32)

Statement of income liable to contribution for the ending on 31 / 03 / 2007

NAME OF THE PUBLIC TRUST :- **GUJARAT STATE BIOTECHNOLOGY MISSION**
Block-11,9th Floor,UDHYOG BHAVAN, Sector-11, Gandhinagar.
REGISTRANTION NO. :- **GUJ/ 1220, Gandhinagar Dt. 23/11/2004**

GROSS ANNUAL INCOME	Rs.	Rs.
Details of Income not chargeable to contribution under Section 58 Rule 32		121,412,169.00
(i) Donations received during the year from any source	107,000,000.00	
(ii) Grants by Government and local authorities		
(iii) Interest on Sinking or Depreciation Fund		
(iv) Amount spent for the purpose of education		
(v) Amount spent for the purpose of medical relief		
(vi) Deductions out of income from lands used for Agricultural purposes :-		
{ A } Land Revenue and local Fund/Cess.		
{ B } Rent payable to superior landlord		
{ C } Cost of production, if lands are cultivated by trust.		
(vii) Deductions out of income from lands used for non Agricultural purposes :-		
{ A } Assessment, Cesses and other Government or Municipal Taxes.		
{ B } Ground rent payable to the superior landlord		
{ C } Insurance Premium		
{ D } Repairs at 8-1/3 per cent or gross rents or buildings.		
{ E } Cost of collection at 4 per cent or gross rents of building let out.		
(viii) Cost of collection of income or receipts from securities stocks etc. at 1 per cent of such income.		
(ix) Deductions on account of repairs in respect of buildings not rented and yielding no income at 8-1/3 percent of the estimated gross annual rent,		
Income liable to contribution		14,412,169.00

FOR, T.N.SHAH & CO.
CHARTERED ACCOUNTANTS

T.N.SHAH
PARTNER

DATE :- 06/10/2007
PLACE : Gandhinagar



For ,Gujarat State Bio-technology Mission

Mission Director

THE BOMBAY PUBLIC TRUST ACT, 1950
SCHEDULE VIII [VIDE RULE 17 (1)]

NAME OF THE PUBLIC TRUST :- **GUJARAT STATE BIOTECHNOLOGY MISSION**
Block-11,9th Floor,UDHYOG BHAVAN, Sector-11, Gandhinagar.
REGISTRATION NO. :- **GUJ/ 1220, Gandhinagar Dt. 23/11/2004**

T.N.SHAH & CO.
CHARTERED ACCOUNTANTS
503, ABHISHEK, OPP. HOTEL HAVELI,
SEC :- 11, GANDHINAGAR.
ph :- 23222152 , 23241432 (o)
Mobil:-9824088407

BALANCE SHEET AS ON 31 / 03 / 2007.

FUND & LIABILITIES	Rs.	Rs.	PROPERTY & ASSETS	Rs.	Rs.
Corpus Fund			IMMOVABLE PROPERTIES :-		
Opening Balance			(As per Ann-1)		
Add: Additions during the year			LEASEHOLD Land at		
			BT Park	9,979,200.00	9,979,200.00
			Computer System	1,335,004.00	1,335,004.00
			Books & periodicals	285,533.00	285,533.00
			Furniture & fixture	459,468.00	459,468.00
			Office equipment	40,155.00	40,155.00
			Tools & Equipment	18,341.00	18,341.00
			Aquaguard System	6,850.00	6,850.00
BT Park Fund (Openingi Bal.)	144,186,580.00				
Less :	-	144,186,580.00			
Bt Venture Fund	50,000,000.00		Investments:-		
Add: Addition during the year	30,000,000.00	80,000,000.00	FDR with GSFS GOI	163583668.00	163,583,668.00
	-				
Research & Dev. of BT Open.bal.	64924413.00				
additions during the year	74200000.00				
less. Expenses	21881657.45	117242755.55			
Guj. State BT Mission (open.bal)	-				
additions during the year	2800000.00				
Less. Expenses	410,789.00	2,389,211.00			
Land Contribution Money at BT Park (Ann-2)	6,013,242.30	6,013,242.30	ADVANCES		
Gujara: Council of Science City	25,000.00	25,000.00	GVFL		70,000,000.00
Security Deposits From Pappilon	55,700.00	55,700.00	Advance to Ramkya consultancy		636,454.00
EMD Deposits	37,000.00	37,000.00	Advance to Snehal Bhagthariya		3,000.00
Salary Deduction	2,460.00	2,460.00	Project Advances		17,291,101.00
Duties & Taxes	143,803.00	143,803.00	T.D.S.		587,084.00
			CURRENT ASSETS		
			Infocity club & resort	488.00	
			Pappilon multy media	40	
			Bank A/c (SBI)	104,455,325.35	
			CASH ON HAND	717.00	104,456,570.35
INCOME & EXP. ACCOUNT :			INCOME & EXP. ACCOUNT :		
Balance as per last			Balance as per last Balance Sheet		
Balance Sheet	4,178,492.50		Add :- Surpluses/Less : Deficit		
Less : Appropriation, if any			As per Income & Expenditure		
Add :- Surpluses/Less : Deficit	14,408,184.00	18,586,676.50	Accounts		
As per Income & Expenditure					
Accounts					
TOTAL Rs.		368,682,428.35	TOTAL Rs.		368,682,428.35

As per our report of even date attached
* (If Accounts are kept on cash basis)

* Income outstanding

The above Balance Sheet to the best of my/our belief contains true account of
the Fund and Liabilities and of the Property and Assets of the Trust.

FOR, T.N.SHAH & CO.
CHARTERED ACCOUNTANTS

For ,Gujarat State Bio-technology Mission

DATE :- 06/10/2007
PLACE :- Gandhinagar

T.N.Shah
PARTNER



Mission Director

GUJRAT STATE BIOTECHNOLOGY MISSION
ANNEXURE-3

SR NO.	PARTICULARS	BT Sector In Gujarat	Research & Dev. Of BT Sector in Guj.
1	Advertisement Exp.	15203.00	24560.00
2	Staff salary	102300.00	1188354.00
3	Busi.Guidance, Promotion Proj Pre.Fesi. Study	57455.00	
4	In House Proj. Exp.	51800.00	
5	Printing Exp.	53868.00	364433.00
6	Support to new training Pro. HRD	50638.00	
7	Technology Facilitation	56040.00	
8	Training Prog. in special inst.	23485.00	
9	Contri. to Guj. BT VentureFund Corpus.	0.00	
10	Consultancy for BT Agro Park Exp.		180314.00
11	BT Park Baroda Exp.		2275842.00
12	Finance Support		238000.00
13	Institute of Bioinformatics		125000.00
14	Institute of Marine Biotechnology		11866.00
15	Dev. Chord Blood Bank Facilities		58557.00
16	Support to Ongoing Projects		9135717.00
17	Gi-Bion Prog. Exps.		67058.00
18	Incob 2006 Exp.		8000.00
19	Workshop-Seminar -Symposium Supp.		270462.00
20	Accounting & Auditing fees		21224.00
21	Books & Periodicals		1646.00
22	Consultansy to GIL		15552.00
23	Electricity Exp.		266836.25
24	GIIC M&R Exp.		100570.00
25	Honorium Exp.		500.00
26	Office Exp.		230998.00
27	Office Renovation Exp.		945495.00
28	Office Rent Exp.		3203630.00
29	Postage Courier Charges		545.00
30	Security Charges		221577.00
31	Stationery Exp.		43684.00
32	T.A./D.A. Charges		12396.00
33	Telephone & Mobile Bill Charges		10706.00
34	Travelling Charges		69914.00
35	Vehicle Hire Charges		866048.00
36	Vibrant Gujarat Exp.		519129.00
37	Bio 2006 Event Exp. Banglore		462702.00
38	Particioation in national Exhibi.Confer		(4859.00)
39	Meeting Exp.		10889.00
40	Web Hosting Exp.		66000.00
41	Prepa. of awarness mate4rial & literature		644780.00
42	Conduction of State level seminars		106372.00
43	Aware. Generat. & Info. Dissemination		59572.00
44	Popular Lecture Series		57588.20
	TOTAL	410789.00	21881657.45



GUJARAT STATE BIOTECHNOLOGY MISSION
ANNEXURE-1

<u>PARTICULARS</u>	<u>AMOUNT Rs.</u>	
1 COMPUTER SYSTEM		
OPENING BALANCE	970346.00	
ADD: Additions during the year	361018.00	
	<u>1331364.00</u>	
LESS: Sale during the year	0.00	1331364.00
2 Scanner		
OPENING BALANCE	0.00	
ADD: Additions during the year	3640.00	
	<u>3640.00</u>	
LESS: Sale during the year	0.00	3640.00
3 Aquaguard System		
OPENING BALANCE	0.00	
ADD: Additions during the year	6850.00	
	<u>6850.00</u>	
LESS: Sale during the year	0.00	6850.00
4 Books		
OPENING BALANCE	189568.00	
ADD: Additions during the year	0.00	
	<u>189568.00</u>	
LESS: Sale during the year	0.00	189568.00
5 Books TFC		
OPENING BALANCE	0.00	
ADD: Additions during the year	95965.00	
	<u>95965.00</u>	
LESS: Sale during the year	0.00	95965.00
6 Furniture & Fixtures(establishment)		
OPENING BALANCE	438780.00	
ADD: Additions during the year	20688.00	
	<u>459468.00</u>	
LESS: Sale during the year	0.00	459468.00
7 LEASE HOLD Land		
OPENING BALANCE	0.00	
ADD: Additions during the year	9979200.00	
	<u>9979200.00</u>	
LESS: Sale during the year	0.00	9979200.00
8 Office Equipment		
OPENING BALANCE	40155.00	
ADD: Additions during the year	0.00	
	<u>40155.00</u>	
LESS: Sale during the year	0.00	40155.00
9 Tools & Equipment		
OPENING BALANCE	0.00	
ADD: Additions during the year	18341.00	
	<u>18341.00</u>	
LESS: Sale during the year	0.00	18341.00



GUJARAT STATE BIOTECHNOLOGY MISSION

ANNEXURE-2**LAND CONTRIBUTION MONEY AT BT PARK**

Sr.No.	Name	Amt.Rs.
1	Anhox Biotech Pvt.Ltd.	1000.00
2	BDR Pharmaceutical Inte. Pvt.Ltd.	1500000.00
3	Hi Tech Surgical System	200000.00
4	MD Bio	286902.30
5	Mebs Biotech Ltd.	2489300.00
6	M J Biopharm	1192950.00
7	Oxygen Healthcare	312840.00
8	Scrutiny Fees Income	30250.00
TOTAL		6013242.30



ANNEXURE-2

Constitution of Gujarat Biotechnology Council

No	Designation	Status
1	Chief Minister, Gujarat State	Chairman
2	Minister of State, Industries	Member
3	Chief Secretary, GoG	Member
4	Secretary, DBT, GoI	Member
5	Principal Advisor, GoG for Biotechnology	Member
6	Principal Secretary (Finance), GoG	Member
7	Principal Secretary (Industries & Mines), GoG	Member
8	Principal Secretary (Forest & Environment), GoG	Member
9	Secretary (Higher & Technical Education), GoG	Member
10	Secretary (Health), GoG	Member
11	Secretary, Department of Science & Technology, GoG	Member
12	Secretary (Agriculture), GoG	Member
13	Dr. S. P. S. Khanuja, Director, Central Institution for Medicinal and Aromatic Plants - CIMAP	Member
14	Dr. Bharat Chattoo, Head of Biotechnology Programme, MSU, Baroda	Member
15	Vice - Chancellor, Gujarat Agriculture University	Member
16	Dr. Datta Madamwar, Head, Dept. of Bio Science , SPU, Vallabh Vidhyanagar	Member
17	Dr. Harish Padh, Director, PERD, Ahmedabad	Member
18	Dr. Lalji Sing, Director, Centre for Cellular and Molecular Biology, Hyderabad	Member
19	Dr. V.R Kamboj, President, National Academy of Science, Allahabad	Member
20	Director, CSMCRI, Bhavnagar	Member
21	Prof. Subhash Chand, IIT, New Delhi	Member
22	Shri Pankaj Patel, CMD, Zydus Cadilla Ltd., Ahmedabad	Member
23	Shri Sudhir Vaid, MD, Concord Biotech Ltd., Ahmedabad	Member
24	Dr. Farzaan Engineer, MD, Quintiles Spectral(India)Ltd, Ahmedabad	Member
25	Director, Gujarat State Biotechnology Mission	Member Secretary
26	Dr. S. Nagrajan, Director, IARI, New Delhi	Member
27	Director, National Institute of Oceanography, Goa	Member
28	Dr. Amit Ghosh, Scientist, Director, IMTECH, Chandigarh	Member
29	Dr. P. K. Ghosh, Advisor, Cadila Pharmaceuticals, Ahmedabad	Member
30	Dr. Amrita Patel, NDDDB, Anand	Member
31	Shri P. K. De, Chairman, Span Diagnostic Ltd, Bandra	Member
32	Dr. V. Chothaiwala, GM, Torrent Research Center, Bhatt	Member
33	Dr. Devyani R. Tipe, Research Assoc., Department of Microbiology, School of Sciences, Gujarat University, Ahmedabad	Member

ANNEXURE-3 Constitution of Governing Body Committee

No.	Designation	Status
1	Chief Secretary, Gujarat State	Chairman
2	Principal Secretary, Forest & Environment Department	Member
3	Principal Secretary, Finance Department	Member
4	Principal Secretary, Industries & Mines Department	Member
5	Principal Secretary, Health Department	Member
6	Principal Secretary, Higher & Technical Education Department	Member
7	Secretary, Agri. & Co-operation Department	Member
8	Secretary, Science & Technology Department	Member
9	Secretary, DBT, GoI	Member
10	Joint Secretary (BT), Science & Technology Department	Member
11	Director, BISAG, Gandhinagar	Member
12	Advisor, GUJCCST, Gandhinagar	Member
13	Prof. Bharat B. Chattoo, M.S. University, Baroda	Member
14	Prof. Harish Padh, Director, B. V. Patel PERD Center, Ahmedabad	Member
15	Prof. Datta Madamwar, Head, S. P. University, Vallabh Vidhyanagar	Member
16	Dr. P. K Ghosh, Adviser, Cadilla, Ahmedabad	Member
17	Director, CSMCRI, Bhavnagar	Member
18	Shri Pankaj Patel, Zydus Cadilla, Ahmedabad	Member
19	Mission Director, GSBTM, Gandhinagar	Member Secretary

ANNEXURE-4 Constitution of Executive Committee

No.	Designation	Status
1	Secretary, Department of Science & Technology, GoG	Chairman
2	Secretary, Department of Technical Education, GoG	Member
3	Joint Secretary (BT), Department of Science & Technology, GoG	Member
4	Director, BISAG, GoG	Member
5	Advisor, GUJCOST, GoG	Member
8	Director, B. V. Patel P. E. R. D. Centre, Ahmedabad	Member
9	Dr. P. K. Ghosh, Advisor, DST, GoG	Member
10	Financial Advisor	Member
11	Mission Director, GSBTM	Member Secretary

ANNEXURE-5

Biotechnology Investments during 2006-07

No	Company	Location of project	Title of project	Approximate Investment (in Rs. crores)	Probable Employment Generation
1	Akruti-Nirman-TCG Group	BT Park Vadodara	Development of BT Park Savli	200	20
2	Stemcyte Technology	Gandhinagar	Umbilical Cord Blood Banking and Stem Cells Research	85	50
3	M J Biopharm	BT Park Vadodara	Development of Recombinant products	160	15
4	Zydus Group	Ahmedabad / Gandhinagar	Large manufacturing and scale-up facility for recombinant biological therapeutics	100	100
5	Intas Biopharmaceuticals Ltd	Ahmedabad / Gandhinagar	Transgenic Animals/Plasma Fractionation	120	95
6	IKF Technologies Limited	Bhuj	Biodiesel plantation and extraction	100	1000
7	Anhox Biotech Pvt. Ltd.	BT Park Vadodara	Development of Recombinant products & food biotechnology	40	130
8	Concord Biotech	Dholka, Ahmedabad	Development of new Biotechnology based product	55	100
9	BDR Pharmaceuticals International Pvt. Ltd.	BT Park Vadodara	Production of biotechnology based APIs and Final Dosage products	35	50
10	IBS Bioinformatics Pvt. Ltd. and Shankus Group	Gujarat	Data Mining for Life Science, Medicinal Chemistry, Bioanalysis	40	700
11	Hester Pharmaceuticals Ltd	Kadi., Mehsana,	Development of poultry vaccines	39.8	110
12	NUSUN Genetic Research Ltd .	Near Gandhinagar	Biotechnology research centre in agriculture - Seed Biotechnology	30	207
13	MD Bio	BT Park Vadodara	Development of Bioinformatics software	10	22
14	Zytex Biotech Pvt. Ltd	BT Park Vadodara	Manufacture of enzymes	20	50
15	Oxygen Healthcare	BT Park Vadodara	Contract research services	10	50
16	Total Potential Cells (P) Ltd.	BT Park Vadodara	Stem cell research	10	5
17	The Asia-Pacific Bioinformatics Network (APBioNet)	Gandhinagar	The Virtual Institute of Bioinformatics [BIT ^{Virtual}]	Knowledge Partnership	5
18	Progeniq Pvt. Ltd.	Gandhinagar	The Virtual Institute of Bioinformatics [BIT ^{Virtual}]	Knowledge Partnership	5
19	Alexandria	Gujarat	Biotechnology Parks & Incubators	500	5000
		Total Investment made during 2006-07 (in Crores)		1554.8	7714

ANNEXURE-6

Biotechnology Research Support Details

Recommended Projects:

GSBTM Research & HRD Proposals 2006 - 07

List of the proposals recommended by the technical members after presentation

Category	Title	Investigator	Organization	City	Category	Sector	Recommended Total Budget
YLSR-1	Production of Exopolysaccharides	Dr. Rupal P. Patwa	Shri P.H.G. Municipal Arts and Science College	Kalol	YLSR	Industrial biotechnology	280000.00
YLSR-2	saline desert microbial biodiversity exploration for biotechnological Implications	Dr. Rajesh Patel	Department of Life Sciences, North Gujarat University	Patan	YLSR	Environmental Biotechnology, Agriculture and allied areas, Industrial Biotechnology	300000.00
MI-1	Real-Time PCR Detection of Brucella from bull semen	Dr. Ashish Roy	Department of Microbiology, College of Veterinary Science & A.H.,	Anand	Minor	Animal Biotechnology	686540.00
MI-2	Development Of Kit For Identification Of Species Of Meat By PCR Technique.	Dr. D. N. Rank	Dept. of Animal Genetics and Breeding ,College of Veterinary Science and A.H.,	Anand	Minor	Animal Biotechnology	683600.00
MI-3	Anti-diabetic activity of six plants with special reference to diabetic complications like retinopathy and nephropathy.	Dr. Manish Nivsarkar	B.V. Patel Pharmaceutic al Education and Research Development Centre.	Ahmedabad	Minor	Pharmaceutica ls and Healthcare	688520.00
MI-4	Development of aqueous two phase separation process for downstream processing of Aspergillus niger pectinases used in fruit processing industry	Dr.(Mrs.) Anuradha S. Nerurkar	Department of Microbiology & Biotechnology Centre, Faculty of Science, M. S. University, Baroda	Vadodara	Minor	Industrial biotechnology	675520.00
MI-5	Designing and development of a cost effective protein miniarray for clinical proteomic study of head & neck cancers.	Dr. Rakesh M. Rawal	The Gujarat Cancer & Research Institute, NCH Campus, Asarwa, Ahmedabad	Ahmedabad	Minor	Basic Research	681680.00

PROJECT CATEGORY -

1. YLSR - YOUNG LECTURERS AND SCIENTISTS RESEARCH PROJECT SCHEME
2. MJ - MAJOR RESEARCH PROJECT SCHEME
3. MI - MINOR RESEARCH PROJECT SCHEME
4. CoE- CENTRE OF EXCELLENCE SCHEME
5. DRF - DOCTORAL RESEARCH FELLOWSHIP SCHEME
6. HRD - HUMAN RESOURCE DEVELOPMENT SCHEME

GSBTM Research & HRD Proposals 2006 - 07

List of the proposals recommended by the technical members after presentation							
Category	Title	Investigator	Organization	City	Category	Sector	Recommended Total Budget
CoE-1	Center Of Excellence For: Advanced Center Of Environmental Biotechnology	Dr. Datta Madamwar	P. G. Department of Biosciences, Sardar Patel University	Vallabh Vidyanagar	COE	Environmental Biotechnology	6994816.00
CoE-2	Centre of Excellence in Pharmaceuticals and Health care	Prof. Harish Padh	PERD Centre	Ahmedabad	COE	Pharmaceuticals and Healthcare	5467000.00
DRF-1	Characterization of Novel Chromium(VI) Reductase from Bacillus sp.	Chirayu Desai	Department of Biosciences, Sardar Patel University	Vallabh Vidyanagar	DRF	Environmental Biotechnology	264600.00
DRF-2	Inflammatory Mechanism In Rodent Implantation: Cytosolic Phospholipase A2 (cPLA2) And Its Regulation Via Calcium Channel	Aryamitra A. Banerjee	B. V. Patel Pharmaceutical Education & Research Development (PERD) Centre	Ahmedabad	DRF	Pharmaceuticals and Healthcare	264600.00
DRF-3	Diversity and Characterization Of Commercially Valuable Extremozymes From Haloalkaliphilic Bacteria Isolated From Seawater Along The Coastal Gujarat	Rupal H. Joshi	Department of Biosciences, Saurashtra University	Rajkot	DRF	Industrial Biotechnology	264600.00
DRF-4	Isolation and characterization of Biosurfactant producing microorganisms and their possible role in Microbial Enhanced Oil Recovery (MEOR).	Sanket J. Joshi	Department of Microbiology and Biotechnology centre, MS University	Vadodara	DRF	Environmental Biotechnology	264600.00
DRF-5	Pharmacogenomics in cancer chemotherapeutics	Krishna Vyas	B. V. Patel Pharmaceutical Education & Research Development (PERD) Centre	Ahmedabad	DRF	Pharmaceuticals and Healthcare	264600.00
DRF-6	Study and identification of metal specific biomarkers in plants on exposure to heavy metal stress.	Tejas Patel	B. V. Patel Pharmaceutical Education & Research Development (PERD) Centre	Ahmedabad	DRF	Environmental Biotechnology	264600.00
HRD-1	P.G. Diploma in IPR in Biotechnology	Dr. Srikrishna Deva Rao	Gujarat National Law University	Gandhinagar	HRD	Biotechnology	5295900.00
HRD-2	Post Graduate Study Programme in Animal Biotechnology	Dr. J. V. Solanki	College of Veterinary Science and A.H.,	Anand	HRD	Agriculture Biotechnology	8700000.00

GSBTM Research & HRD Proposals 2006 - 07

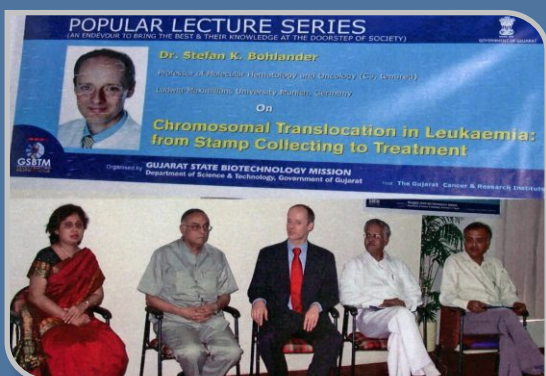
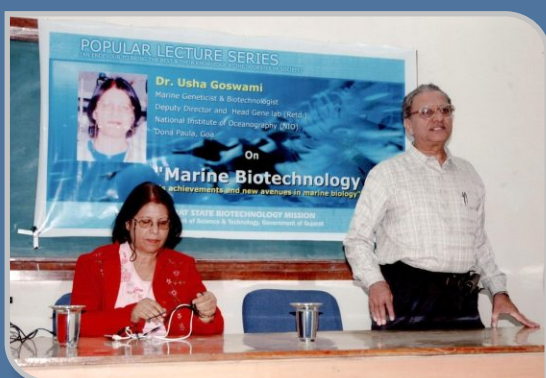
List of the proposals recommended by the technical members after presentation							
Category	Title	Investigator	Organization	City	Category	Sector	Recommended Total Budget
MJ-1	Cytogenetic and Molecular Characterization of Male Sterility in Isabgol (Plantago ovata Forsk.)	Dr. R. S. Fougat	B. A. College of Agriculture, AAU	Anand	Major	Agriculture Biotechnology	1923600.00
MJ-2	Towards development of therapeutic antibodies against cancer and AIDS	T. Bagchi	The Maharaja Sayajirao University of Baroda	Vadodara	Major	Pharma & Healthcare	1778550.00
MJ-3	Biodiversity, Genomics and Biotechnological Applications of Extremely Halophilic Archaea	Dr. Vivek N. Upasani	M.G.Science Institute, Navarangpura	Ahmedabad	Major	Marine Biotechnology	1952000.00
MJ-4	Catalase single nucleotide polymorphisms (SNPs) and their association with vitiligo pathogenesis in Baroda, Gujarat	Dr. Rasheeda Annisa Begum	Dept Of Biochemistry, Faculty Of Science, M. S. University, Baroda	Vadodara	Major	Pharmaceuticals and healthcare	1991050.00
MJ-5	Development Of Microsatellite libraries in Groundnut and utilization of SSRs for DNA typing, Varietal Characterization and Fingerprinting	Dr. Radhakrishna T.	National Research Centre for Groundnut	Junagadh	Major	Agriculture Biotechnology	2000000.00
Recommended Total Budget (Rs)							41686376.00

Sanctioned Projects

No	Investigator	Title of the Project	Type	Sector	Name of Institution	Duration	Amount released & Sanctioned in 2006-07 (Rs.)
1	Dr. P. K. Ghosh	COE in Marine Biotechnology	COE	Marine Biotechnology	CSMCRI, Bhavanagar	3 Year	1879400
2	Dr. B. Chatto	COE for Agri. Biotechnology	COE	Agri. Biotechnology	Dept. Microbiology & Biotechnology	3 Year	1410000
3	DCF, Research Davison	Mycorrhizal Rhizobial Association, establishing gene bank and technology transfer to farmers in field	Major	Agri. & Allied areas	Gujarat Forest Research Institute, Gandhinagar	3 Year	615000
4	Dr. G Archana	Microbially Mediated Alleviation of Heavy Metal Toxicity to Plants and Community changes in Rhizospheric populations upon metal pollution using copper as model	Major	Agri. & Allied areas	Dept. Microbiology & Biotechnology, Vadodara	3 Year	284860
5	Prof S. Dave	Studies on Biotechnology of Heavy Metals	Major	Environmental Biotechnology	School of Science, Ahmedabad	3year	525000
6	Dr. J. Solanki	Somatotropin mediated gene expression in lactogenic pathway of buffalo	Major	Animal Biotechnology	Anand Agricultural University	3year	683200
7	Dr. S. Baxi	Characterization of Chromosome Rearrangements of Malignant Effusions with Multiplex FISH	Major	Industrial Biotechnology	GCRI, Ahmedabad	3 Year	283967
8	Dr. S. Trivedi	Study of Estrogen receptor system in human breast cancer	Major	Pharma & Healthcare	GCRI, Ahmedabad	3 Year	411600
9	Dr. V. Thaker	An Immunological approach in Agri. Biotechnology	Major	Agri Biotechnology	Bioscience Department, Saurashtra University, Rajkot	3 Year	315520
10	Dr. H. Chhatpar	Research project in agriculture & environmental biotechnology	Major	Agri & Environmental Biotechnology	Dept. Microbiology & Biotechnology, Vadodara	3 Year	1609370

No	Investigator	Title of the Project	Type	Sector	Name of Institution	Duration	Amount released & Sanctioned in 2006-07 (Rs.)
11	Dr. D. R. Patel	Development of Cell Lines Resistant to Alternaria Blight using in vitro Techniques	Minor	Agriculture Biotechnology	Plant Tissue Culture Lab, AAU, Anand	3 Year	169400
12	Dr. R. Patel	Protein Expression Profile of Haloalkalophilic Bacteria	Minor	Industrial Biotechnology, Bioinformatics	Hemchandracharya University, Patan	1 Year	0
13	Dr. L. J. Parekh	Bioremediation of Metallic Pollutants from Electroplating Effluents	Minor	Environmental Biotechnology	Shree M & N Virani Science College, Rajkot	2 Year	185000
14	Dr. K. Kaliya	Functional Abnormality of glycosylated IgG in diabetes mellitus and their role in progression of secondary complications such as diabetic nephropathy	Minor	Basic Research	S.P. University, Vallabh Vidhyanagar	2 Year	296500
15	Dr. D Madamwar	Preparation and characterization of immobilized lipase for flavor production	Minor	Industrial Biotechnology	S.P. University Vallabh Vidhyanagar	3 Year	215400
16	Dr. G Nareshkumar	Genetic Manipulation of Rhizobium for improved P nutrition	Minor	Agri. & Allied areas	Bio Chemistry Dept, MS Uni, Baroda	2 Year	251500
Sanctioned Total Budget (Rs.)						Total	9135717

ANNEXURE-7 Popular Lecture Series Glimpse



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