

Biotechnology Industry Research Assistance Council (BIRAC) (A Govt. of India Enterprise)



BIRAC Resource Facilities

Report 2015



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— Report - 2015

BIRAC RESOURCE FACILITIES



Executive Summary

The biotech innovation lifecycle is riddled with uncertainties at all stages of product development. Startups in biotech, faces challenges that are different from the challenges faced by startups in other domains, such as IT. Starting a biotech venture is itself a challenge, as one needs massive amounts of investments as well as specialized laboratories with access to high-end instruments. The typical 'garage startups' that are highlighted in IT world are a rare phenomena in the biotech world except for perhaps bioinformatics startups. In addition, securing early stage venture funds is difficult in the biotech as most Venture Capitalists (VCs) are reluctant to hedge bets on biotech startups considering the fact that the gestation period for products to be commercialized could take up anywhere between 7-12 years. The early hurdles in biotech startups both in terms of access to 'space' for operations and R&D as well as seed funding are generally bridged by biotech incubators.

Biotech incubators offer a range of solutions to startups such as incubation space, high end instrumentation, scientific and business mentoring and last but not the least, access to networks and communities which are essential for a nascent biotech to put down roots. These solutions offered by the biotech incubators act like oxygen for survival of biotech start ups.

The Hon. PM, Shri Narendra Modi recently at the Independence Day speech outlined his vision as 'Start up' & 'Stand up' India such that India progresses to become a developed nation through entrepreneurship. Incubators and especially biotech incubators will be an important factor for the 'Start up' India vision.

The economic benefits of bioincubation go beyond the usual framework of assessment that includes job creation within the bioincubators as well as by the resident startups, IP being generated by residents, the facilitative environment for commercialization of new technologies emerging from the startups being supported and finally the help that is provided by incubators to startups during follow-on funding rounds. Cumulatively these factors increases the valuation of startups and help the startups to exit and move to the next level of enterprise.

It is essential that Indian bioincubators function at par with the global best. Recent policy decisions by the Government of India in the areas of entrepreneurship development also takes into account the important role that incubators including bioincubators play. The revamped Indian Companies Bill of 2013 has provided for bioincubators to qualify to tap into the CSR funds of corporates (the 2013 Act says that 2% of net profits of Corporates be channeled for CSR activities). This would give the incubators an opportunity for resource generation and in turn help them to be sustainable.

The highest policy think tank of the Government, Niti Aayog, has recommended district incubation centres (in a PPP mode) under the SETU scheme that would nurture startups. This initiative will help in spreading the startup culture across the nation as well as help incubators to grow.

BIRAC's Bioincubator Support (BIS)

BIRAC is cognizant of the needs of the biotech startups in the country and its portfolio for entrepreneurship development includes not just funding but also support for bioincubation- a crucial determinant for developing a holistic ecosystem of support network for biotech enterprises. Through the Bioincubator Support programme (BIS), BIRAC has extended funding support to 15 bioincubators across the nation .Each of these bioincubators have been selected based on an assessment matrix that evaluates their capabilities in supporting biotech ventures as well as ability to create an ecosystem around them. These 15 BIRAC supported bioincubators provide nesting grounds for many biotech startups including those startups that are directly funded by BIRAC.

Each of the bioincubator is also creating building blocks of a bio-innovation ecosystem which will add value and foster the growth of biotech startups.

The booklet showcases the bioincubators that have been supported by BIRAC and the impact they have

created regionally and at the national level.

The synergistic effect of funding, incubation and other support mechanism will create an optimal environment for biotech startups to grow rapidly.

Impact Created by BIRAC's Bioincubator Support Programme

With in a short duration of three years BIS has created an excellent impact by creating an infrastructural ecosystem for innovation. To create an impact these incubators were selected based on the matrix that assesses their capabilities to support Bio-startups. Some of the aspects that build up this matrix includes geographical location, existing ecosystem in and around these centers, startup culture, earlier experience and expertise in incubation, technical and research institutional in around these centers, space and facilities that can be contributed by incubator etc. Considering these factors all incubators were supported at Stand Alone Parks/Bio Parks, Indian Institute of Technologies, Universities/Research Institutes, Biotech Clusters.

| S.No. | Incubator | Target Location | |
|-------|--|-----------------------------------|--|
| 1 | IKP, Hyderabad | | |
| 2 | SBTIC, Hyderabad | | |
| 3 | GSBTM, Savli | Stand Alone Dark / Pie Dark | |
| 4 | KSIDC, Trivendrum | Stand Alone Park/Bio Park | |
| 5 | Women Bio Park,Chennai | | |
| 6 | HTIC, Chennai | | |
| 7 | FIIT, IIT Delhi | | |
| 8 | IIT Madras | Indian Institute of Technologies | |
| 9 | SIDBI, IIT Kanpur | | |
| 10 | ZTM-BPD, IARI, Delhi | | |
| 11 | KIIT-TBI | Universities (Descerch Institutes | |
| 12 | NCL, Pune Universities/Research Institutes | | |
| 13 | PERD, Ahmedabad | | |
| 14 | CCAMP, Bangalore | Biotech Cluster | |
| 15 | RCB Bio Cluster, Faridabad | | |

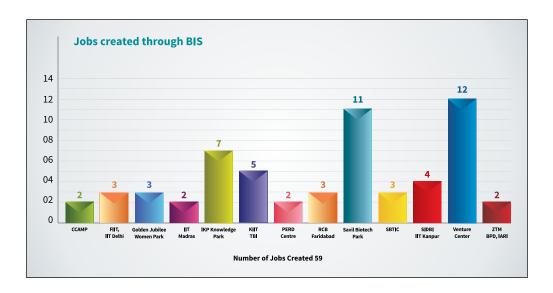


BIRAC has created a noticeable impact through Bioincubator support programme. Till now Rs 150.00 crore of funds has been sanctioned for fifteen projects.

Through BIS support BIRAC has supported 1,50,000.00 sft of Bio-incubation space. This will be active by end of 2016.

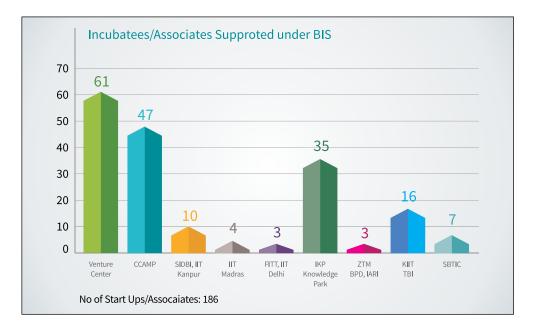
BIRAC has supported skilled manpower for managing these incubators. A total of 59 jobs will be generated through 13 incubators by FY 2015-2016. Another 13 jobs will be created by the end of 2016. A total of 72 skilled jobs will be created through BIS.

Approximately, 1,00,000 sft of area has been made functional by end of FY 2014-15.



By strengthening these incubators, till now BIRAC has supported approximately 186 startups and individual entrepreneurs over three years either directly as resident incubatees or indirectly as associates through various services models.

These incubators has also served a number of budding entrepreneurs and startup companies those who have been granted BIG awards and other funds.



Core facilities set up under Biotechnology Industry Partnership Programme (BIPP)

BIRAC under its flagship Biotechnology Industry Partnership Programme, has established core facilities. Access to major facilities is an essential requirement for success in futuristic technologies and to lay foundations for discovery and innovation. It is our experience that national facilities, established with good intent lack user friendliness and are underutilized. Public-Private Partnership is justified for establishment of core facilities to advance research in futuristic technologies and science. An appropriate model is management in the private hands, access to private sector at commercial rates and to the SME sector and public sector at preferred rates. This type of collaboration is already approved by the government for the infrastructure sector.

Two facilities that have been created under this program are;

- 1. Physiochemical characterization of biologics, at Intas Pharmaceutical Ltd.
- 2. Rapid immuno and molecular diagnostic assays for infectious diseases, at SPAN Diagnostics Ltd.

These facilities can be used by interested parties at the above mentioned centers.

Resource center, services and other Infrastructure created under BIRAC support. This booklet provides information on the facilities available to Start-ups, SMEs and Academic researchers a preferential rate

Bio-incubator Support (BIS)

To foster techno entrepreneurship in biotechnology, BIRAC has strengthened existing Bio-incubators and is establishing world Class Bio-incubators at Bio-cluster in India.

The Bio-incubators for SMEs and start-ups are a part of an existing University/ Institute or Science Park.

A BIRAC Bio-incubator necessarily takes on the following roles and functions:

- Provide good incubation space
- Create Central Equipment Facility
- Provide enabling services and required mentorship for IP and Technology Management
- Legal and Contract, resource mobilization and networking platform

Core facilities set up under Biotechnology Industry Partnership Programme (BIPP)

Purpose:

- 1. Establishing national facilities under Public Private Partnership (PPP) to advance research in futuristic technologies and make value service facilities available to Start ups/entrepreneurs.
- 2. With a special management model, access is provided to SME sector and public sector researchers at preferential rates.





BIRAC Bio-Incubator Support (BIS)







Pune

Seeding Tomorrow's Enterprises Today

Focus area(s):

Medical Biotechnology/ Medtech • Diagnostics • Agro/Industrial Processes

Current Status

Resident start ups **24**

Associates 37

- VC-BioIncubator offers ~6000 sft space for bio-start-ups; Bioincubator offers many work horse instrument facilities (like: Biosafety cabinet, Ultra-centrifuge etc.); High-end facilities include:
 - The Center for Applications of Mass Spectrometry (http://venturecenter.co.in/cams/)
 - Cell Studio (www.venturecenter.co.in/cellstudio), which houses Confocal Microscope, Flow Cytometer and Bose Electroforce System.
 - VC- BioIncubator offers unique modular services to cater to bioincubatees in best possible ways via its various services like, Incubation: Biostarter package, Bioenterprise fellowships, Hot labs| Mentoring: Ignition Program, Kick-Start Program, Eklavya Service| Networking: BioPune, Stories of Science Entrepreneurship, Campaigns, Awarenes talks (http://venturecenter.co.in/activities-map.php).

| BIRAC-BISS facility has created approximately 12 jobs; within the start-ups so far 83 jobs have been created. | | |
|---|--|--|
| ~ 35 technologies developed by incubatees; 9 patents filed; 7 know-how licensed. | | |
| 8 resident companies have raised either VC funding or grants | 1 company has exited from BioIncubator | |
| from other agencies like: BMGF, Wellcome Trust. | | |

 CSR activities targeted for incubatees : MoU with National Instruments (http://india.ni.com/) for setting up "Tinkering Lab" (hardware and software) | MoU with Lexinnova (http://www.lex-innova.com/) for IP services like: Patent landscaping. FTO, Filing, Drafting etc. | In talks with Emmes Corp (www.emmes.com) for services related to designing a Clinical Trial, Biostatistical analysis of the studies.



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Centre for Cellular and Molecular Platforms, Bangalore



Nurturing Innovations & Biotech Start-ups

Focus area(s):

Biotechnology I Molecular Biology I Healthcare

| Total lab space | 6000 sft |
|---|--|
| Office space | 2000 sft |
| Wet lab facility | Analytical lab, Mass Spectrometry, Confocal imaging, flow cytometry, next generation genomics, High throughput screening |
| Shared Facility | Sophisticated analytical facilities, Clean room for Cell-culture, Meeting room, Video Conferencing facility , Plug & Play office space, Basic & high end equipment facility |
| Mentoring through Innovation Accelerator | Development of Novel Technologies & Tools Entrepreneurship Development in collaboration with IIM-Bangalore Consulting for research and market; Due Diligence; IP awareness; Technology transfer; Govt/Private funding; Regulatory affairs etc. |
| Impact | Incubating 12 resident start up companies & 35 associates Jobs generated: 55 Technologies developed by start ups/individual: 15 Patents filed: 10 Venture Funding support: 6 |



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SIDBI Innovation & Incubation Centre (SIIC) IIT Kanpur



Nurturing Biotech Revolution

Focus area(s):

Biologics/BioPharmaceuticals I Biomedical Instrumentation I Nano-Biotechnology

| Total lab space | 7000 sft |
|-------------------|---|
| Office space | 3000 sft |
| Wet lab facility | Analytical lab, DSP lab, Microbial lab, Utility Lab, Bio-molecular Analytics |
| Shared Facility | Sophisticated analytical facilities, Clean room for Cell-culture, Meeting room, Video Conferencing facility , Residential facility on Campus, Plug & Play office space |
| Mentoring through | Strategic Checkups: Advisor support to start ups Business Plan development & Business Promotion Legal & IP Support |
| Funding | Seed Funds by SIIC Other Govt. funding Schemes : PRISM (Promoting Innovations in Individuals, Start-ups and MSMEs) Department of information technology (DIT) Syndicate Bank Entrepreneurship Research and Training Centre |
| Other Support | Motwani Ideation Accelerator, E-Cell, Tinkering Lab |
| Impact | Incubating 10 start up companies Jobs generated: 72 (This includes the manpower hired in incubating companies) Technologies developed by start ups/individual: 15 |



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IITM BioIncubator IIT Madras Research Park



Nurturing Biopreneurs

Focus area(s):

Healthcare Diagnostics I Industrial Biotechnology

| Total lab space | 10000 sft |
|--|---|
| Wet lab facility | Microbiology and Cell Culture; Molecular Biology; Bioprocess Development; Bio- molecular Analytics |
| Shared Facility | Sophisticated analytical facilities; Cold room; Clean room for Cell-culture; Meeting room; Video Conferencing facility |
| Mentoring through IITM Incubation Cell (IITMIC) | Business Support in legal, accounting and company secretaryship IPR services |
| Funding | Funding support from the Entrepreneurship Support Scheme of the IITM Alumni as well as other venture capitalists and DST. |
| Networking | Vast network of researchers, faculty, businessmen, industrialists, alumni, venture capitalists, governmental agencies and other service providers |
| Potential Future Services | Consulting; Technology development; Training |
| Impact | Incubating 4 start up companies; Jobs generated: 15 |



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Biotechnology Business Incubation Facility (BBIF), IIT Delhi



Focus area(s): Bio-medical devices I Healthcare technologies I Diagnostics

| Total lab space | 3500 sft |
|---|--|
| Lab Capacity for Start- ups /individuals | 12 Independent Labs-4 Work benches-8 |
| Equipment Faciility | Biosafety cabinet Class II; UV-Vis Spectrophotometer; Shaker Incubator; Agarose gel Electrophoresis unit; SDS PAGE / Western blot unit; Water purification system; Gas Chromatography system |
| Shared Facility | Sophisticated analytical facilities; Clean room for Cell-culture; Meeting room; Video Conferencing facility; Residential facility within campus; Plug & Play office space |
| Mentoring through | An associated IIT Delhi experts as mentor , IIT Delhi tech-connect, Business links, Investment avenues, Business Coaching, IP advice, Mentorship |
| Other Support | Motwani Ideation Accelerator, E-Cell, Tinkering Lab |
| Impact | No. of resident start-ups : 3 Jobs generated: No. of resident start-ups : 3: 1 (VC funded) |



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Life Science Incubator, IKP Knowledge Park, Hyderabad



Innovation Knowledge Progress

IKP Knowledge Park has set up a Life Science Incubator (LSI) with fully furnished dedicated lab space, shared equipment and an assistance programme

Focus area(s): Pharmaceuticals I Biotechnology I Medical diagnostics

| Total lab space | 6500 sft |
|--------------------|---|
| Equipment facility | Digital Confocal Microscope; NMR; LC-MS/MS; ÄKTApurifer UPC100 Core System, GC-MS; Polarising microscope; HPLC/GC |
| Shared Facility | Sophisticated analytical facilities; Clean room for Cell-culture, Meeting room; Video Conferencing facility; Plug & Play office space; Animal Cell Culture Facility |
| Mentoring through | Technical Training Programs & Workshops; IP & Technology Management & Legal |
| | Business Promotion |
| Funding | Seed Fund support from NSTEDB & DST Grant Programs-Technopreneur Program (TePP) & BIRAC BIG Partner |
| Impact | No. of start up/individual incubatees: 35 Jobs generated: 4 Technologies developed by start ups/individual: 31 |



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BIRAC BioIncubator ZTM & BPD Unit, IARI, New Delhi



ZTM & BPD Unit

Indian Agricultural Research Institute, (IARI) helps technology start-ups in Agri-business sector for technology up-scaling & development

Focus area(s): Agri Biotech I Seed Technology I Bio-fertilizer I Biomass I Startups and Entrepreneurs

| Total Jah space | 5000 sft |
|---|---|
| Total lab space | 5000 SIL |
| Office space | 3000 sft |
| Wet lab facility/ microbial fcaility | Analytical lab, Microbial lab, Utility Lab, Bio-molecular Analytics for bio fertilizers |
| Shared Facility | Specialized Facility: • Microbial Fermentation/ Bio-fertilizer Unit • Agro Processing Unit |
| Mentoring through | Technical and business mentoring to farmers, agri startups Business Plan development & Business Promotion Legal & Intellectual property protection in the form of patent/ copyright/ trademark and varieties protection under PPV &FR Act. Workshops, Training |
| Other Support | Commercialization of Technology |
| Impact | Incubating 3 start up companies; Companies graduated: 2; Technologies developed and commercialized: 29; Trained 114 entrepreneurs |



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Golden Jubilee Biotech Park for Women, Chennai



Vision for Biofuture

Focus area(s):

Drug/Devices/Diagnostics/Diet and Neutraceuticals; Value Chain: Value addition to Bioresources- Agri and allied, Horticulture/NTFP/Bioprospecting

| Total lab space | 20 acres; land modules - 9.2 acres; 1000 sq ft modules - 20 in 1.2 acres; statuary and common area – 6.8; available for expansion – 2.8 acres and the proposed 5000 sq ft incubation facility |
|---|--|
| Wet lab facility/Shared Facility | Sophisticated analytical facilities, Plant tissue culture, Meeting room, Video Conferencing facility , RPlug & Play office space |
| Mentoring through | Strategic Checkups: Advisor support to start ups; Business Plan development & Business Promotion; Legal & IP Support; Training to Students, Teachers, Entrepreneurs and others in areas of Plant Tissue Culture and Horticulture. |
| Technical Resource Centre | Technical Resource Centre to assist in the field of Quality Testing, Technology Development and Training. |
| | Research Laboratory aimed at Quality Testing and virus diagnosis of Tissue Culture raised plants, has been set-up |
| Impact | No of resident Incubatee - 11; Till date Park has turned over 500 skilled woman entrepreneurs, technocrats and workers; Presently the park has close to 200 women Entrepreneurs & Technocrats and workers with 40% of them being skilled; About 2,500 interns and about 100 incubates/start ups are likely to benefit from the park activities before 2010 |
| Note: The facility under BIS is yet not operational. It will be made operational by 2016. | |



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KIIT-TBI BioIncubator KIIT University, Bhubaneswar



Imagine, Innovate, Transform

BIRAC Bioincubator at KIIT is the first incubator in Odisha that provides a holistic ecosystem for nurturing and incubating ideas into commercially feasible ventures in various areas of Life

Focus area(s): Pharma-biotech Agri Biotechnology & Biomedical Instrumentation

| Total lab space | 6000 sft |
|------------------------|---|
| Office space | 2000 sft |
| Wet lab facility | Analytical lab, Microbial lab, Utility Lab, Analytical Instrumentation Facility,Product development and Validation Lab; Fermentors for pilot level up-scaling; Clean room facilities |
| Shared Facility | Business office suite, Laboratory/Workshop for R&D, Basic utilities, Central Laboratory/Workshop equipped, Conference Room, Auditorium , Board/Meeting space, audio-visual equipment, Guest House |
| Mentoring through | Strategic Checkups: Advisor support to start ups |
| | Business Plan development & Business Promotion |
| | Legal & IP Support |
| Funding from Incubator | NSTEDB Seed Fund Support Scheme; TDB Seed Support Scheme MSME Support Grant; Technopreneur Promotion Programme (TePP); Technology Incubation and Development of Entrepreneurs (TIDE); Biotechnology Ignition Grant |
| Impact | Incubating 6 resident start up & 10 Associates; Jobs generated: BIS Facility: 4, Start Ups: 37; Technologies developed by start ups/individual: 1 |



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Biotechnology Incubation Centre Genome Valley Hyderabad

Biotech solutions from concept to commercialization

Focus area(s): Biotechnology I Biopharmaceutical I Discovery Services

| Lab/Office space | Lab Suites of 500 to 3000 sft custom designed with Biosafety Cabinets & Fume Hoods along with centralized utilities such as Compressed Air, Vacuum & piping provision for Ultra High Purity gases. |
|--|---|
| Analytical Facility | Analytical lab, Mass Spectrometry, Confocal imaging, flow cytometry, next generation genomics, High through put screening. |
| Other facilities | Pilot Plant facility for Microbial & Cell Culture activities with 20 L, 30 L & 200 L fermenters, Meeting room, Video Conferencing facility , Plug & Play office space |
| Mentoring | Development of Novel Technologies & Tools; Entrepreneurship Development Consulting for research and market; IP awareness, Technology transfer, Regulatory affairs etc. |
| Impact | Incubating 7 resident start up companies & 3128 associates; No. of companies exited from BIS facility – 06; No. of companies raised VC or another funding – 01. Multivalent Pneumococcal conjugate vaccine (PCV-15) by Tergene Biotech was developed in the facility; Tergene Biotech entered in to a joint venture with Aurobindo Pharma |
| Note: Under BIS BIRAC has supported a High end equipment facility at SBTIC. Other facilities have been created under DBT support. | |





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Healthcare Technology Innovation Centre IIT Madras Research Park, Chennai



COLLABORATE • INNOVATE • IMPACT

Focus area(s):

Healthcare technologies : MedTech

| Total lab space | 20000 sft Incubation :4000 st Core Facility: 4000 sft Technology R&D and Knowledge Management; 7000 sft |
|---|---|
| Lab/Office space | 300 sft each |
| Medtech Core Facility | Analytical lab, fabricating lab, PCB Prototyping, CNC machines,, CAD/CAM Designing, embedded SW IDE, configuration management systems, multi-utility wet lab |
| Technology R&D and Knowledge Management | Market analysis of products and technologies, landscaping of unmet clinical needs, medtech concepts, idea technologies, medtech policy issues, workshops, training etc |
| Shared Facility | Meeting room, Video Conferencing facility , Plug & Play office space |
| Mentoring through | Strategic Checkups: Advisor support from industry, clinicians, hospitals and venture capitalist; Business Plan development & Business Promotion; Legal & IP Support |
| Other Support | Acceleration support from InnAccel for company formation, product engineering and development, business development, invest seed capital, raise capital, licensing events etc |
| Impact | Incubating 10 start up companies; Jobs generated: 72; Technologies developed by start ups/individual: 15 |



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PERD Centre Ahmedabad



Empowering Biotechnovation to Enterprise

| Total lab space/Office Space | 5000 sft |
|--|--|
| Wet lab facility | Common wet lab; Clean rooms (BSL-2); Imaging area, Genomics area Proteomics area; Instrumentation area; Fermentation area, Sterilization area |
| Equipments | Biosafety cabinet, CO2 incubator, Upright microscope, Inverted microscope, PCR, Real time PCR, ChemiDoc, Multimode reader, 2-DIGE, FPLC, FACS, Refrigerated shaker, Refrigerated centrifuge, Deep freezer, Fermentors, Autoclave, common lab instruments |
| Shared Facility | Meeting room, Well stocked and spacious library, Seminar hall and auditorium |
| Mentoring through | Expert Services of scientific and technical personnel Business Plan development & Business Promotion Legal & IP Support Advisory services and mentoring to incubatees Networking of industry, academia and suppliers Approvals from IBSC, IAEC, etc |
| NOTE: The facility will be operational by 2016 | |



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Core Facilities Created Under BIPP



INTAS Pharmaceutical Ltd.



State of Art Integrated facility

for high end structural and functional characterization of protein therapeutics and peptides

Focus area(s):

Physiochemical characterization of biologics

Services Offered

- Intact Mass analysis
- Peptide Mass Fingerprinting
- N-Terminal AA Sequencing
- Specialized Test for CMC dossier
- Post Translational Modification by MS
- Glycan Profile Characterization; Carbohydrate Analysis

Facilities Available

- Water Synapt G2 HD MS: ESI/MALDI-TQF
- AB-ScieX-Triple TOF 4600 system
- UPLC, CGE, CIEF, CZE, CE-SDS
- Differential Scanning Calorimetry
- Fluorescence Spectrometry
- CD- Near and Far UV
- Beckman Coulter-CZE-PA800 and PA800 Plus
- Applied Biosystem-Procise AA analyzer
- MicroCal-VP-DSC
- Dionex ICE 3000-HPEAC-PAD



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SPAN Diagnostics Ltd.



cGMP compliant Bioprocess facility

for large sacle production of microbial antigens and monoclonal antibodies

Focus area(s): Rapid immuno and molecular diagnostic assays for infectious diseases

Salient features

- cGMP-compliant bulk production facility for monoclonal antibodies and antigens
- Contract Manufacturing and Process Development services for academic researchers and start ups/ SMEs
- cGMP Training center

Facilities Created

- Total Area 5721 sft
- BSL-1 Facility total area = 1561 sft at Udhna Plant, SDL, Surat is fully functional for production of Antisera for blood grouping.
- BSL-2 & BSL-3 Facility total area = 4160 sq ft at Sachin Plant, SDL, Surat .
- Differential Rental model for usage available for academicians, researchers, SMEs and Start up companies for developing process and pilot scale production based on their proof of concept and initial laboratory work



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(A Govt. of India Enterprise)

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