GUWAHATI
BIOTECH PARK
Discovering Through Partnership

Expression of Interest(EOI) for the Bio-informatics Facility (BIF) at Technology Incubation Centre of Guwahati Biotech Park, Amingaon

Reference: GBP/ 8.2.4.125/2022-23/ 5291 dated 31.10.2022

BRIEF DETAILS

Guwahati Biotech Park

"Guwahati Biotech Park (GBP)", the first of its kind in Northeast India, is a visionary initiative launched by Government of Assam to promote business in biotechnology and allied areas through entrepreneurship development particularly in the North-Eastern region of the country. The objectives of the park are to facilitate faster penetration of biotech industry and to accelerate the R & D activities in biotechnology and related fields with effective utilization of the rich natural resources of this region and to educate and utilize local human resources. GBP owns and manages the Technology Incubation Centre (TIC) which provides ready-to-use modular wet laboratories, fully furnished with core and shell utilities and specialized facilities viz. Central Analytical Instrumentation Facility, Micro-propagation, Bio-prospecting, Medicinal Plant Extraction, Fermentation, Bioinformatics Facility.

Charter

Guwahati Biotech Park is dedicated to building the Park to global standards of excellence and to making it an attractive destination for Entrepreneurs desiring to set up manufacturing or research units. Guwahati Biotech Park encourages and supports the start-ups, incubation and development of innovation led, high growth knowledge based business in the multidisciplinary area of biotechnology & allied areas.

Technology Incubation Centre

❖ **Aims & Objectives**

To setup an Incubation Centre that will serve as an incubation hub for start-ups in Health & Pharmaceuticals, Bio-technology, other emerging areas of social/national importance, Education and development of manpower/skill training.

❖ **Scope**

Pharmaceuticals, Bio-pharmaceuticals, Phytopharmaceuticals, Herbals, Biotechnology, other emerging areas of social/ national importance, Education, Skill Development.

❖ **Details of built up area**

The Incubation Centre is centrally located in the heart of Guwahati, the capital city of Assam. The city has many research institutes like IITG, NIPER, ICAR, Hospitals etc. This will provide extensive linkages for pharmaceutical start-ups and entrepreneurs. With proper incentives like the present incubator proposal, there is a good potential for development in these under-represented areas of our country. Guwahati Biotech Park is offering a space of about 100000 SFT for use by the Start-ups / innovators/Organizations etc.

❖ **Prospect**

Entrepreneurship in the area of Biotechnology, Pharmaceutical Sector and allied areas in India is on the verge of explosive growth. This also throws new opportunities for the eco-system to take shape. Vision and policies of the Government have given new hopes to the aspiring entrepreneurs.

Guwahati Biotech Park's Role:

- ✓ Hosting & Mentoring the Incubatee
- ✓ Consultancy to Start-ups
- ✓ Attract and manage start-ups
- ✓ Facilitation for entrepreneurship and innovations
- ✓ Infrastructural support
- ✓ Consultancy in setting up of MSMEs
- ✓ Policy initiatives for conducive growth of MSMEs
- ✓ Linkage between knowledge and applications

Opportunity for:

- ✓ Pharmaceutical Companies
- ✓ Phyto-pharmaceutical Companies
- ✓ Biopharmaceutical Companies
  - • Start-ups
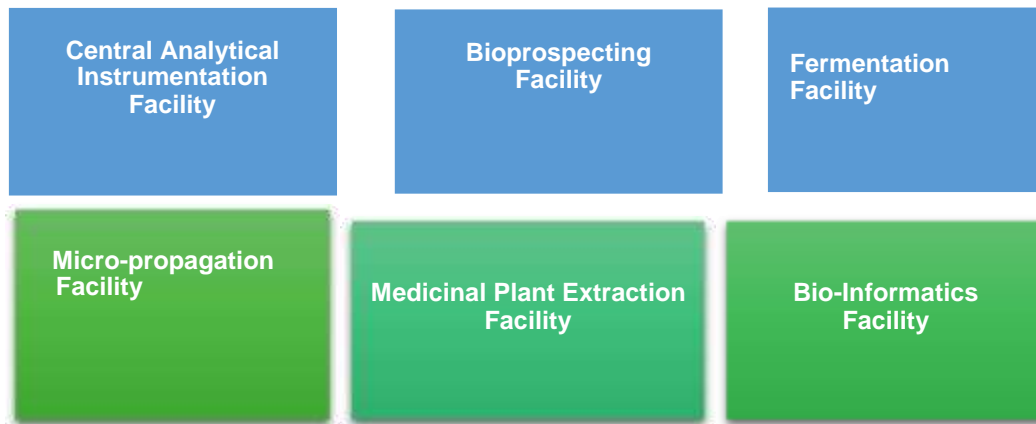 - • Innovators
  - • MSMEs

Guwahati Biotech Park's Strengths:

- ✓ Established Laboratories conducive for innovations
- ✓ State of the art equipment facilities
- ✓ Space for start-ups
- ✓ Expertise in the relevant area
- ✓ Knowledge bank

.

❖ **Ensemble of Innovation Activities**

Aim

- Foster generation of ideas with commercialization potential

- Establish and validate proof of concept

- Encourage researchers to take technology closer to market through a startup

- Stimulate enterprise formation

Scope

- Pharmaceuticals

- Bio-pharmaceuticals

- Phytopharmaceuticals

- Herbal Drugs

- AYUSH Drugs

- Biologicals

Target Population

- Start-up companies

- Bio-Pharma Industries

- Academic and research organizations

- CSIR Laboratories / Government organizations

❖ **Existing platforms**

Central Analytical Instrumentation Facility	**Bioprospecting Facility**	**Fermentation Facility**
Micro-propagation Facility	**Medicinal Plant Extraction Facility**	**Bio-Informatics Facility**

What we do with this model!

✓ **Creation of a technology incubation and innovation platform**

✓ **Creation of co-working platform, in terms of laboratory and office infrastructure**

✓ **Creation of Networking Platform**

✓ **Creation of a digital platform to capture needs and ideas**

✓ **Creation of Skill-development platforms in cutting edge technologies**

Call for Expression of Interest for Bioinformatics Facility

Bioinformatics refers to the creation and advancement of algorithms, computational and statistical techniques, and theory to solve formal and practical problems arising from the management and analysis of biological data. Bioinformatics has become indispensable for applying genomic technologies to drug discovery and development. Nowadays, pharmaceutical and life sciences companies are placing increasing emphasis on bioinformatics investments in order to gain a competitive advantage in the drug discovery process. Bioinformatics is useful in early stages of target identification and the drug-target (usually proteins) validation process.

The Bioinformatics Facility at the Technology Incubation Centre, Guwahati Biotech Park is a high performance computing facility set up to cater to the computing requirements of the academia, startups, Entrepreneurs, Technopreneurs, Researchers etc. The Facility is supported by un-interrupted power supply to ensure non-stop computing facility to the user community.

Through this Expression of Interest (EoI), Guwahati Biotech Park invites proposals from prospective users for use of the Bioinformatics Facility including Space requirement, Source of budget & Business Model etc. The responsibilities and TOR of EOI can be discussed based on the particular project requirement.

EoI to be submitted to Chief Executive Officer, Guwahati Biotech Park, Near S.P. Office, Amingaon, Kamrup, Guwahati – 781031; E-mail: ceogbp@guwahatibiotechpark.com.

Contact Person: Dr Saurav Dey, Scientist (Tel: 9707770092)

Last date of submission: 30.11.2022

❖ **Details of the established Bio-Informatics Facility**

Sl.No	Bio-Informatics Facility Components	QTY
1.	Master Node-HPE proliant DL380 Gen10	1
2.	Compute Node- HPE proliant DL380 Gen10	2
3.	GPU Node -HPE proliant DL380 Gen10	2
4.	120TB Unified Storage Solution -Netapp FAS8200	1
5.	100Gbps Switch- HPE SN2700M 100GbE 32QSFP28 Switch	1
6.	Console for KVM Display- Netrack NR-W119	1
7.	16 Port KVM Switch- Netrack NR-CV-S1601	1
8.	Workstation - HP Z4 G4	1
9.	Desktop- HP PRODESK 600G5	4
10.	Rack - NETRACK NRS-42U	1

❖ **Specification**

1) Master Node

Features	Specification
Processors	10 Core with 1 x Intel Xeon Silver 4210R 2.4Ghz, 10C/20T, 9.6GT/s, 13.75M Cache, 105W
Chipset	Latest OEM chipset supporting an optimized for the above processor
Memory	128 GB DDR4 2666MT/s, with 24 DIMM for future upgradability
Hard Disk Drives	3 x 960GB SSD SATA Mix Use Hot-plug Drive
HDD Bays	HDD bays supporting SAS, SATA, SSD Drives
I/O slots	6 nos. PCIe slots including 3 nos. x16 slots
RAID Controller	12Gbps PCIe 3.0, 2GB cache, RAID 1, 5, 6, 10 for higher performance, IOPS among the HDD
Network Interfaces	2 no of USB port and 1 VGA Port
	2 Nos of 1 GbE Ports and 1 port of 100Gbps QSFP20 Port
	FC HBA Card dual port 16 Gbps populated with SFP modules to connect the Storage.
Server Management	OEM embedded controller and Server Management Tool from same OEM, Real-time power meter & graphing, Power thresholds, alerts & capping, Historical power counters, Temperature monitoring & graphing, Proactive notification/alert of actual or impending components failures like CPU, HDD, Memory etc., Directory services (AD, LDAP), two-factor authentication & single sign-on, Real-time out-of-band hardware performance monitoring & alerting & firmware inventory, Zero-touch auto configuration to auto deploy a baseline server configuration profile, Support for Redfish API for simple and secure management of scalable platform hardware Virtual Media, Virtual Folders, Remote File Share, Virtual Console
HTML5 support	HTML5 access to virtual console & virtual media without using Java or ActiveX plugins

Features	Specification
Server security	Secure default passwords, Detection of configuration and firmware drift from user defined configuration template & remediation of misconfigurations, Persistent event logging including user activity, Secure alerting, Automatic BIOS recovery, Drive Security, including secure system erase for instant secure erasure for every drive (HDD, SSD, NVMe), Dynamically enabled USB ports to protect the servers from USB-based attacks by shutting off USB ports – yet is able to dynamically enable them as needed for technicians, Protection against firmware which executes before the OS boots, Configuration upgrades is only with cryptographically signed firmware and software, UEFI secure boot with custom certificates, System lockdown feature to lock down configuration and firmware, protecting the server from inadvertent or malicious changes

2) Compute Node

Features	Specification
Processors	32 Core with 2 x Intel® Xeon® Gold 5218 2.3G, 16C/32T, 10.4GT/s, 22M Cache, Turbo, HT (125W) DDR4-2666
Chipset	Latest OEM chipset supporting an optimized for the above processor
Memory	256 GB DDR4 2666MT/s, with 24 DIMM for future upgradability
Hard Disk Drives	3 x 960GB SSD SATA Mix Use Hot-plug Drive
HDD Bays	HDD bays supporting SAS, SATA, SSD Drives
I/O slots	6 nos. PCIe slots including 3 nos. x16 slots
RAID Controller	12Gbps PCIe 3.0, 2GB cache, RAID 1, 5, 6, 10 for higher performance, IOPS among the HDD
Network Interface	2 USB ports and 1 VGA Port
	2 Nos of 1 GbE Ports and 1 port of 100Gbps QSFP20 Port
	FC HBA Card dual port 16 Gbps populated with SFP modules to connect the Storage
Server Management	OEM embedded controller and Server Management Tool from same OEM, Real-time power meter & graphing, Power thresholds, alerts & capping, Historical power counters, Temperature monitoring & graphing, Proactive notification/alert of actual or impending components failures like CPU, HDD, Memory etc., Directory services (AD, LDAP), two-factor authentication & single sign-on, Real-time out-of-band hardware performance monitoring & alerting & firmware inventory, Zero-touch auto configuration to auto deploy a baseline server configuration profile, Support for Redfish API for simple and secure management of scalable platform hardware Virtual Media, Virtual Folders, Remote File Share, Virtual Console
HTML5 support	HTML5 access to virtual console & virtual media without using Java or ActiveX plugins
Server security	Secure default passwords, Detection of configuration and firmware drift from user defined configuration template & remediation of misconfigurations, Persistent event logging including user activity, Secure alerting, Automatic BIOS recovery, Drive Security, including secure system erase for instant secure erasure for every drive (HDD, SSD, NVMe), Dynamically enabled USB ports to protect the servers from USB-based attacks by shutting off USB ports – yet is able to dynamically enable them as needed for technicians, Protection against firmware which executes before the OS boots, Configuration upgrades is only with cryptographically signed firmware and software, UEFI secure boot with custom certificates, System lockdown feature to lock down configuration and firmware, protecting the server from inadvertent or malicious changes

3) GPU Node

Features	Specification
Processors	32 Core with 2 x Intel® Xeon® Gold 5218 2.3G, 16C/32T, 10.4GT/s, 22M Cache, Turbo, HT (125W) DDR4-2666
Chipset	Latest OEM chipset supporting an optimized for the above processor
Memory	256 GB DDR4,with 24 DIMM
GPU	1 x Nvidia Tesla V100 32GB GPU(5120 Cuda Cores)
Hard Disk Drives	3 x 960GB SSD SATA Mix Use Hot-plug Drive
HDD Bays	HDD bays supporting SAS, SATA, SSD Drives
I/O slots	6 nos. PCIe slots including 3 nos. x16 slots
RAID Controller	12Gbps PCIe 3.0, 2GB cache, RAID 1, 5, 6, 10 for higher performance, IOPS among the HDD
Network Interface	Two USB ports and 1 VGA Port
	2 Nos of 1 GbE Ports and 1 port of 100Gbps QSFP20 Port
	FC HBA Card dual port 16 Gbps populated with SFP modules to connect the Storage.
	1 Nos single Port 100GbE QSFP28 PCIe Adapter card with QSFP Transceivers/ DAC Cables to connect with 100 G L3 Switch
Server Management	OEM embedded controller and Server Management Tool from same OEM, Real-time power meter & graphing, Power thresholds, alerts & capping, Historical power counters, Temperature monitoring & graphing, Proactive notification/alert of actual or impending components failures like CPU, HDD, Memory etc., Directory services (AD, LDAP), two-factor authentication & single sign-on, Real-time out-of-band hardware performance monitoring & alerting & firmware inventory, Zero-touch auto configuration to auto deploy a baseline server configuration profile, Support for Redfish API for simple and secure management of scalable platform hardware Virtual Media, Virtual Folders, Remote File Share, Virtual Console
HTML5 support	HTML5 access to virtual console & virtual media without using Java or ActiveX plugins
Server security	Provides effective protection, reliable detection & rapid recovery using:Secure default passwords, Detection of configuration and firmware drift from user defined configuration template & remediation of misconfigurations, Persistent event logging including user activity, Secure alerting, Automatic BIOS recovery, Drive Security, including secure system erase for instant secure erasure for every drive (HDD, SSD, NVMe), Dynamically enabled USB ports to protect the servers from USB-based attacks by shutting off USB ports – yet is able to dynamically enable them as needed for technicians, Protection against firmware which executes before the OS boots, Configuration upgrades is only with cryptographically signed firmware and software, UEFI secure boot with custom certificates, System lockdown feature to lock down configuration and firmware, protecting the server from inadvertent or malicious changes

4) 120TB Unified Storage Solution

Description	specification
Controllers	System is configured with 2 or more controllers in redundant ACTIVE-ACTIVE mode. Controllers is true active-active so that a single logical unit can be shared across all controllers in symmetrical fashion, while supporting all the major functionalities like Thin Provisioning etc.

Cache	The system has128 GB of cache/ system memory across dual controllers. The cache is persistent across all controllers. Data in the cache is protected from unlimited period of power outage. Additionally, the same storage supports SSD / Flash as extended Read and Write Cache which can be added in future in the same storage system.
Disk Support	System supports drive SASand SSD drives. Storage has File level retention and 256 Bit encryption (FIPS 140-2 compliant)
Protocols and Ports Support	At least FC &iSCSI. The system is configured with 4 x 32Gbps FC ports scalable up to 8 x 32Gbps FC ports and 2 nos' of 10Gbps iSCSI/IP ports.
Software licenses	The system is configured with licenses for FC and iSCSI. CIFS, pNFS. Thin Provisioning, Virtualization integration software license is provided for entire system. Storage replication license is provided for entire system.
Performance Monitoring Software	Storage subsystem has Thin Provisioning, Snapshot, De-duplication, Compression, Performance Monitoring, and Quality of service on day 1 for the maximum supported capacity of array.
Storage Management	Support a browser based built in management. Is able to support automated email to vendor support center for proactive maintenance. There is a dedicated Ethernet port for management.
Snapshots	The system is configured with Snapshot licenses, snapshot restore licenses for the entire systems capacity.
Automated Tiering	Storage array be configured with license for automated tiering or equivalent management.
RAID Support	Supports RAID 10, 5 and 6.
Storage space	Configured for 120TB usable capacity net of RAID 5 / 6, using 10KRPM (or higher rpm) SAS or higher Drives.Storage supports Hard disk expendability up to 400HDD or higher.
NSPOF feature and QoS	The storage array is configured in a No single point of configuration including Array controller cards, Cachememory,FAN,Power supply etc. storage shall support quality of service for critical applicationsso that appropriate and required response time can be defined for application units at storage.
SAN Connectivity	Contains necessary hardware with min 8nos 16/32Gbps licensed interfaces/ports to establish SAN connectivity with the servers.
Replication	Storage array is configured with license for Replication. storage array system has two additional native IP/FC ports doe storage-based replication.

5) 100Gbps Switch

Features	Specification
Device Type	Switch is chassis or fixed form factor with full Enterprise Layer 3 image supporting IPv6 and BGP with the latest Firmware as available with Line rate non-blocking performance.
Ports Scalability	The switch supports 32 x QSFP28 interfaces along with 1 x 1Gb OOB Management port and 1 x Serial port.
Port Requirement	The switch has fully populated Optic/DAC cables for 100G for asked ports along with appropriate Port licenses as required
High Availability	The switch supports HA options in Active - Active or Active Backup configuration as required, all supporting features and licenses to be provided to support the same.
Interfaces to connect Switch	The switch supports relevant 10G/25G/40G/100G interfaces to connect Distribution/Access Switch.
Switching Capacity	6 Tbps backplane or more with non blocking performance supported by tolly/Miercom or equivalent reports.

TECHNOLOGY INCUBATION CENTRE

MAC Address Table Size	128K MAC addresses and ARP table
Memory and Buffer	Switch has 8GB RAM and 16MB packet buffer
802.1Q Vlans	4K 802.1Q vlans with 4K vlan ID support
Data Link Protocol:	10 Gigabit,25 Gigabit, 40 Gigabit, 100Gigabit
Routing Protocol	Supports L3 routing in hardware for both IPv4 and IPv6 packets
	Supports 64K route table capacity for IPv4 and IPv6 in hardware.
	Supports Static Route, OSPF, BGP from Day one for both IPv4 and IPv6 considering all License, software, hardware upgrades required if any.
Link Aggregation	Supports Link Aggregation Group (LAG) which will combine several same speed links into a single logical entity with the accumulated bandwidth of the originating ports
Status Indicators	Link activity, port transmission speed, port duplex mode, power, link OK, system
DHCP	Supports DHCP (Client, Snooping and Relay), with UDP helper
Multicast	MLD Snooping v1/v2, MLD snooping, IGMP Snooping v1/v2/v3, PIM technologies
Redundancy Protocols	Supports STP, RSTP, MSTP/PVST, Root Guard and BPDU Guard.
Qos	Supports and create Policy Maps using DSCP values, QoS Rate Adjustment, Strict-priority Queueing or Similar, Weighted Random Early Detection, 8 queues using 802.1p or similar
	supports remarking of 802.1p and DSCP priorities, along with Prioritization and Congestion Management.
Security Features	Supports all AAA functions with RADIUS and TACACS integration, Various strom control functions, Control Plane / CPU protection using ACL and Qo, 802.1x implementation using RADIUS, Ingress and Egress Acls, Is capable to support NAC implementation
Management Function	Supports encrypted communication between the user accessing the device namelyusing all access methods CLI, SSHv2, SSL, and SNMPv3 and Secure FTP/TFTPSupport be able to define various user Priviliege level mapped to various configurations modes.The Operating image is modular in architecture with the industry standard CLI along with SNMP and XML support.XML/PERL/Python/API integration support provides the ability to control IP addresses, configure both physical and logical interfaces, configure Access controls.The proposed switch has the ability to disaggregate software and hardware using SDN feature.The Switch OS provides Rest API integration and can work with configuration automation tools like Ansible, SALT, CHEF Etc.Supports Openflow to integrate with open source controllers, Zlow or equivalent, management vlans and Port namings to each interfaces, Link Layer Discovery protocols, management function like Ping, Telnet, Tracert for both IPv4 and IPv6
Redundancy	The switch has FANs module and Power supply Redundancy.

6) Workstation

Feature	Specification
Processor	Intel Xeon Processor with 10C 3.7GHz 4.7GHz Turbo HT 19.25MB 165W DDR4-2933 or higher
Chipset	Intel® C400 series or higher
RAM	64GB 4x16GB DDR4 2933MHz RDIMM ECC Memory, 8 DIMM Slots

HDD Controllers	Integrated: Intel Rapid Storage Controller 12.0 supporting SATA 6Gb/s and host based RAID 0/1/5/10
Hard Disk	1x 1 TB 2.5" SATA Solid State Drive , 1 x 2TB 3.5" 7200rpm SATA Hard Drive
Optical Drive	DVD+/-RW
Graphics Card	1 x NVIDIA Quadro P4000, 8 GB GDDR5
Monitor	21.5 inches with Resolution upto 1920 x 1080
Expansion Slots	2 NosPCIe x16 ,1 NosPCIe x16
Security and Management software	Security and Management Software Trusted Platform Module 2.0 and chassis Intrusion switch. Auto performance tuning software from same workstation OEM
Networking Port	Integrated Gigabit Ethernet controllers with Intel Remote Wake UP and PXE support
I/O Ports	8 x USB 3.1 and 2 x USB 3.1 Type C, 1 x Serial Port, 1 RJ45, 2 x PS2, Audio port 1 – Audio Line out, 1– Audio Line in/Microphone
Operating System	Genuine Microsoft Windows 10 Pro 64 bit for Workstations (4 cores plus) preloaded with driver media. System is certified for running RHEL and Ubuntu Linux.

7) Desktops

Feature	Specification
Processor	Intel @ 9th Generation Core i7-9700 (8Cores/12MB/8T/3.0GHz to 4.7GHz/65W); supports Windows 10/Linux.
Chipset	Latest OEMs Chipset
Memory	16GB (1x16GB) DDR4 2400 Memory Expandable up to 64 GB DDR4- 2666 MHz (at least 3 free DIMM slots for future expandability and redundancy of RAMs with 4DIMM.
Internal Storage	1 TB 7200RPM
Optical Drive	DVD+/-RW
Graphics	2 GB Graphic Card
Expansion Sots	Full Height PCIe x16, 1 Full Height PCIe x16(wired x4), 2 full height PCIe x1, 1 M.2 for storage
Ports and connectors	10 USB ports are available: 5 x 3.1 Gen 1 (1 Type-A front, 4 Type-A rear),1 USB Type-C x 3.1 Gen 2 (front), 2 Type A rear - 2 Smart Power On), 1 RJ – 45, 2 Display port,1 Universal Audio Jack, 1 Line-Out, 1 Serial Port
Communication	10/100/1000 Gigabit Network Connection
Operating System	Wind 10 Pro 64 Bit

Application for EOI
Bioinformatics Facility at GBP

Sl.No.	Details about the Entity	
1	Type of entity: Individual/ Student/ Partnership/ Company/Others (a) Name: (b) Country of incorporation: (c) Address of the registered office, corporate headquarters, and its branch office(s), if any, in India: (d) Registration no. of the entity, if any: (e) Date of incorporation and/or commencement of business(Please submit necessary documents of registration and proof of office address): (f) Phone No. and Email for communication:	
1.1	Name of the Project	
1.2	Brief description of the project	
1.3	Project Schedule	
1.4	Feasibility of the project	
1.5	Details of technical expertise	
2	**Project Requirements**	
2.1	Requirement of server space for the project	
2.2	Requirement of storage space for the project	
2.3	Requirement of other facilities, if any	
3	**Past experience**	
3.1	Area(Broad &Specific)	
3.2	Number of years in the relevant sector	
4	**Financial Arrangement**	
4.1	Mechanism of financing including financial status	
5	**Another relevant information**	

Name and Signature of the authorized official:
Date:
Seal:

TECHNOLOGY INCUBATION CENTRE