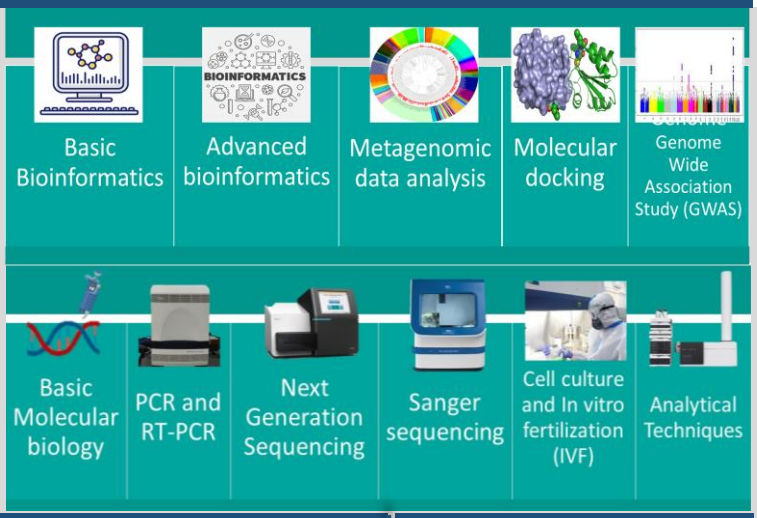
Department of Science & Technology
(Government of Gujarat)

GBRC NEWS

Volume IV, Issue II
June 2024

KAUSHALYA TRAINING PROGRAM FOR SKILL DEVELOPMENT IN BIOTECHNOLOGY 2024-25

***KAUSHALYA (K**nowledge **A**dvancement **U**shering **S**kills **on H**igh-end **A**pplied **L**ifetechnolog**Y for A**spirants)* is an initiative by GBRC to help in developing biotechnological skills of the researchers, academicians and other stakeholders. The program's aim is to provide learners extensive and specialized practical knowledge for the development of their functional skill set in biotechnology and related fields. Total 12 trainings has been planned under the program on the different advance tools and technologies in the subject area of biotechnology.



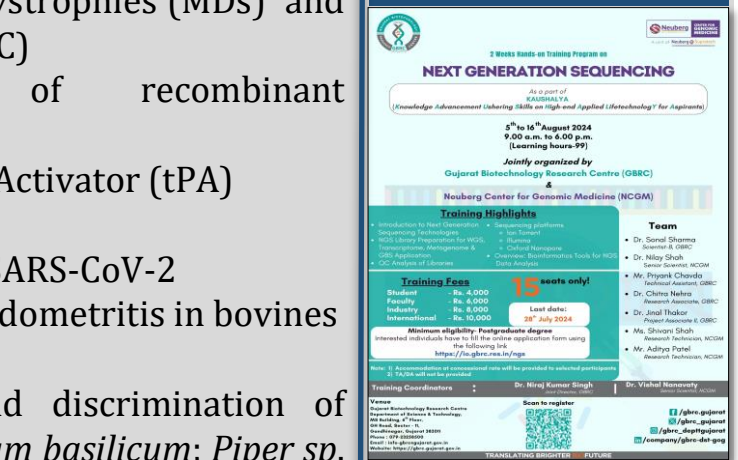
TRAININGS COMPLETED

REGISTRATIONS COMPLETED

TECHNOLOGIES

- Amplicon panel for diagnosis of Muscular Dystrophies (MDs) and Hereditary Breast and Ovarian Cancer (HBOC)
- Overproduction and purification of recombinant Serratiopeptidase
- and active recombinant tissue Plasminogen Activator (tPA)
- Dengue serotype diagnostic kit
- Method for detection of Omicron variant of SARS-CoV-2
- Developing probiotic formulation to treat endometritis in bovines
- Kit for sex determination in date palm.
- Molecular methods for identification and discrimination of *Ocimum tenuiflorum* syn sanctum and *Ocimum basilicum*; *Piper sp.* and *Carica papaya*; *Bacopa monnieri* L. and *Centella asiatica* L.

REGISTRATIONS OPEN



NEXT GENERATION SEQUENCING

CONTENTS

WORKSHOPS

GENOMIC SURVEILLANCE OF AMR

Hands-on Training Program on "Genomic Surveillance of AMR" was organized by Gujarat Biotechnology Research Centre (GBRC), Gandhinagar in collaboration with the Food and Agricultural Organization of the United Nations (FAO), India for Indian Council of Agricultural Research (ICAR) - Indian Network for Fisheries and Animal Antimicrobial Resistance (INFAAR) group from 27th May - 31st May, 2024. Participants include the senior and junior scientists/ faculty.

NANOTRAP MICROBIOME PARTICLES AS A SURVEILLANCE TECHNIQUE

Hands-on Training Program on "Nanotrap Microbiome Particles as a Surveillance Technique" was organized by Gujarat Biotechnology Research Centre (GBRC), Gandhinagar from 17th June - 20th June, 2024 as a part of the project 'Environmental Surveillance as a key public health strategy in India'. All the partners in the projects along with their research fellows attended the training. Mr Daniel Golfarb, Field Application Scientist, Ceres Nanoscience, Inc., Manassas, Virginia, United States provided training to the team.

RECENT PUBLICATIONS

OVERCOMING CHALLENGES IN DNA EXTRACTIONS FROM TRIPHALA INGREDIENTS: A WAY FORWARD FOR OPTIMIZATION OF CONVENTIONAL AND DIGITAL PCR ASSAYS FOR MOLECULAR AUTHENTICATION

Journal: Food Analytical Methods

Impact factor: 2.9

Terminalia bellirica (TB), *Terminalia chebula* (TC) and *Phyllanthus emblica* (PE) fruits are renowned for their diverse therapeutic benefits, propelling their cultivation and use in herbal remedies. However, the global surge in demand driven by the awareness and long-term benefits of using herbal medicines has inadvertently led to a rise in adulteration practices within the herbal market. Recent advancement in DNA authentication of herbal products is constrained by poor quality and quantity of PCR amplifiable DNA obtained from the dried and polyphenol-rich fruits of processed herbal products, resulting in inconsistent PCR amplification due to heterogeneous secondary metabolites. This study tailored a DNA isolation protocol by optimizing buffering strength to stabilize pH and adding phenolic compound scavenger additives, such as polyvinylpyrrolidone, during the cell lysis step. The implemented procedure resulted in significant enhancements in both the quantity and quality of PCR amplifiable DNA. PCR amenability was evaluated using ITS2 metabarcode. Later, species-specific assays, targeting ITS-based SCAR markers specific to TB, TC and PE were performed on six market powders for each plant species. TB, TC, and PE were detected in 100, 83.3, and 50% of the six market samples, respectively. Digital PCR increases the assay's sensitivity by two-fold compared to conventional PCR. To the best of our knowledge, this is the first instance of utilizing dPCR for authenticating TB, TC, and PE fruits. The improvised DNA extraction protocol successfully demonstrates how a comprehensive analysis of PCR amplifiable DNA isolation and PCR dynamics enables the effective resolution of challenges related to poor DNA quality and quantity, as well as the inconsistency encountered during PCR due to the heterogeneity of polyphenols.

A COMPARATIVE STUDY OF THE EFFECTS OF GRAPHITE, WOLLASTONITE, AND TITANIUM DIOXIDE FILLERS ON THE PROPERTIES OF STARCH BASED BIODEGRADABLE PLASTIC FILM

Authors: Avani Thakkar, Nisha Choudhary, Rajat Patel, Santosh Sahu, Madhvi Joshi, Virendra Kumar Yadav, Dipak Kumar Sahoo, Ashish Patel

Journal: Environmental Science and Pollution Research

Impact factor: 5.8

This research paper aims to explore the effect of graphite, wollastonite, and titanium dioxide as reinforcing fillers on starch-based biodegradable plastic (SBP) films. GF-SBP (Graphite filler containing SBP), WF-SBP (wollastonite containing SBP) and TF-SBP (titanium dioxide containing SBP) films were developed and analyzed for various properties such as thickness, density, tensile strength, elongation break, morphology, thermal stability, solubility, moisture content, moisture absorbance, biodegradability, and antibacterial activity. The results reveal that WF-SBP films had highest tensile strength of 5.43 MPa and greatest elongation break value of 22% as compared to other films. Thermogravimetric analysis (TGA) showed that SBP films with and without filler degraded slowly between 150°C and 600°C. The highest thermal stability was recorded for TF-SBP films which showed stability (11% weight loss) up to 150°C. The biodegradability test conducted using soil burial method suggested that TF-SBP film degraded within 90 days, GF-SBP films degraded completely in 120 days and WF-SBP films took more than 120 days to degrade. The synthesized SBP films were analyzed for their antibacterial potential against gram positive and gram-negative bacteria and results showed that WF-SBP film exhibited the best antibacterial activity by producing a large zone of inhibition (ZOI) against *Escherichia coli.*

RECENT PUBLICATIONS

WHOLE-GENOME SEQUENCING OF MARINE WATER-DERIVED *CURVULARIA VERRUCULOSA* KHW-7: A PIONEERING STUDY

Authors: Payal Baranda, Shaikhul Islam, Ashish Modi, Harsh Mistry, Sami Obaid, Mohammad Ansari, Virendra Kumar Yadav, Ashish Patel, Madhvi Joshi, Dipak Kumar Sahoo, Himanshu Bariya

Journal: Frontiers in Microbiology

Impact factor: 5.2

Marine microorganisms are renowned for being a rich source of significant new secondary. The fungi strain KHW-7 was isolated from the seawater collected from the Gulf of Khambhat, India, and identified as *Curvularia verruculosa* KHW-7. On a next-generation sequencing platform, *C. verruculosa* KHW-7's whole-genome sequencing (WGS) and gene annotation were carried out using several bioinformatic methods. The 31.59 MB genome size, 52.3% GC, and 158 bp mean read length were discovered using WGS. This genome also contained 9,745 protein-coding genes, including 852 secreted proteins and 2048 transmembrane proteins. The antiSMASH algorithm used to analyze genomes found 25 secondary metabolite biosynthetic gene clusters (BGCs) that are abundant in terpene, non-ribosomal peptide synthetase (NRPS), and polyketides type 1 (T1PKS). To our knowledge, this is the first whole-genome sequence report of *C. verruculosa* which indicated that this marine-derived fungus could be an efficient generator of bioactive secondary metabolites and an important industrial enzyme, both of which demand further investigation and development.

DEVELOPMENT, VALIDATION AND APPLICATION OF SINGLE MOLECULE MOLECULAR INVERSION PROBE BASED NOVEL INTEGRATED GENETIC SCREENING METHOD FOR 29 COMMON LYSOSOMAL DISORDER IN INDIA

Authors: Harsh Sheth, Aadhira Nair, Riddhi Bhavsar, Mahesh Kamate, Vykuntaraju Gowda, Ashish Bavdekar, Sandeep Kadam, Sheela Nampoothiri, Inusha Panigrahi, Anupriya Kaur, Siddharth Shah, Sanjeev Mehta, Sujatha Jagadeesan, Indrani Suresh, Seema Kapoor, Shruti Bajaj, Radha Rama Devi , Ashka Prajapati, Koumudi Godbole, Harsh Patel, Zulfiqar Luhar, Raju Shah, Anand Iyer, Sunita Bijarnia, Ratna Puri, Mamta Muranjan, Ami Shah, Suvarna Magar, Neerja Gupta, Naresh Tayade, Ajit Gandhi, Ajit Sowani, Shrutikaa Kale, Anil Jalan, Dhaval Solanki, Ashwin Dalal, Shrikant Mane, C Ratna Prabha, Frenny Sheth, Chaitanya Joshi, Madhvi Joshi, Jayesh Sheth

Journal: Human Genomics

Impact factor: 4.5

The research describe a novel low-cost and high-throughput sequencing assay using single-molecule molecular inversion probes (smMIPs) to screen for causative single nucleotide variants (SNVs) and copy number variants (CNVs) in genes associated with 29 common LSDs in India. 903 smMIPs were designed to target exon and exon-intron boundaries of targeted genes and extensively validated in a cohort of 50 patients. A diagnostic yield of 83.4% was observed in patients with prior biochemical diagnosis of LSD. Furthermore, diagnostic yield of 73.9% (n = 54/73) was observed in patients with high clinical suspicion of LSD in contrast with 2.4% (n = 1/40) in patients with low clinical suspicion of LSD. In addition to detecting SNVs, the assay could detect single and multi-exon copy number variants with high confidence. Critically, Niemann-Pick disease type C and neuronal ceroid lipofuscinosis-6 diseases for which biochemical testing is unavailable, could be diagnosed using our assay. Authors developed a flexible and scalable assay to reliably detect genetic causes of 29 common LSDs in India. The assay consolidates the detection of multiple variant types in multiple sample types while having improved diagnostic yield at same or lower cost compared to current clinical paradigm.

RECENT PUBLICATIONS

HETEROLOGOUS EXPRESSION, PURIFICATION AND SINGLE STEP EFFICIENT REFOLDING OF RECOMBINANT TISSUE PLASMINOGEN ACTIVATOR (RETEPLASE) FROM *E.COLI*

Authors: Meha Bhatt, Haidar Abbas Masi, Amrutlal Patel, Niraj Kumar Singh, Chaitanya Joshi

Journal: Protein Expression and Purification

Impact factor: 1.6

Reteplase (recombinant plasminogen activator, rPA) is a mutant non-glycosylated tissue-type plasminogen activator (tPA) have promising thrombolytic activity than its original counterpart. This study aimed to produce and optimize the purification process of recombinant tissue-type plasminogen activator (tPA) known as Reteplase (rPA). rPA was expressed as an inclusion body in *E. coli* and its biological activity was achieved after single step solubilization, purification and refolding. The strategy of Slow Refolding using Gradual Dialysis (SRGD) in which a refolding buffer containing glutathione oxidized (1 mM GSSG) and glutathione reduced (3 mM GSH) and pH 9.0 was used. Using the SRGD method, authors were able to successfully obtain the protein in its active form and obtained 4.26 mg of active refolded protein from a 50 mL culture that was scaled up in a bioreactor. The purity and homogeneity of rPA was evaluated by SDS-PAGE, western blotting and mass spectrometry. Circular dichroism spectroscopy was conducted to evaluate the refolding and stability of the refolded rPA in comparison to reference standard rPA. The thrombolytic potential of rPA was assessed by fibrin plate assay and *in vitro* clot lysis assay. The presented protocol offers a viable approach for enhancing both the yield and refolding efficiency of reteplase, potentially resulting in an increase in yield.

MULTI-EPITOPE VACCINE, SARS-COV-2, GENETIC VARIATIONS, IMMUNOGENICITY, GLOBAL COVERAGE, MULTI -EPITOPE

Authors: Jinal Thakor, Unnati Panchal, Dhaval Patel, Slawomir Filipe, Urszula Orzeł, Ramasamy Paulmurugan, Katja Hanack, Dorian Liepmann, Venkatesan Renugopalakrishnan, Chaitanya Joshi, Madhvi Joshi

Journal: Journal of Biomolecular Structure and Dynamics

Impact factor: 4.4

This study focuses on an in-depth analysis of the structural proteins (Spike (S), Nucleocapsid (N), Membrane (M), and Envelope (E) protein) of SARS-CoV-2 and its variants, aiming to develop a multiepitope vaccine construct that targets the virus independently of its variants. The analysis began by examining genetic variations in viral proteins relative to the reference strain WuhanHu2, particularly in the S, M, N, and E proteins. T-cell epitope predictions for MHC Class-I and Class-II binding were conducted, shedding light on potential cytotoxic and helper T lymphocyte recognition. Identification of linear B-cell epitopes laid the groundwork for antibody-based humoral immune responses. The safety and efficacy of these epitopes were assessed for antigenicity, allergenicity, toxicity, immunogenicity, and conservancy. Population coverage analysis indicated promising global effectiveness of the designed vaccine construct. By incorporating 28 epitopes, authors validated the designed vaccine construct for stability through structural analysis. Molecular dynamics simulations and docking studies revealed its robust interaction with Toll-like receptor 4 (TLR4). Immune simulation studies suggested that the vaccine construct could induce a potent immune response by enhancing antibody titers, B-cell proliferation, memory cell development, and activation of T cells and natural killer cells upon administration. This comprehensive approach offers a promising multiepitope vaccine against SARS-CoV-2, with the potential for broad global coverage and strong immunogenicity. Further experimental validation holds the prospect of introducing a novel candidate vaccine to aid in the ongoing battle against the COVID-19 pandemic.

RECENT PUBLICATIONS

ADVANCING HERBAL PRODUCT AUTHENTICATION: A COMPREHENSIVE REVIEW OF DNA-BASED APPROACH FOR QUALITY CONTROL AND SAFETY ASSURANCE

Authors: Tasnim Travadi, Sonal Sharma, Ramesh Pandit, Chaitanya Joshi, Madhvi Joshi, Preetam Joshi
Journal: Educational Administration: Theory and Practice
Impact factor: NA

The escalating popularity of herbal products in recent years has given rise to concerns about their quality and safety. The diverse origins of these products, rooted in local and traditional practices, pose challenges in defining and characterizing them, leading to varying regulatory frameworks and an influx of new dietary supplements and herbal medicines. This review explores the significance of DNA authentication methods, including species-specific PCR, DNA barcoding, metabarcoding, and digital PCR, in addressing the complexities of herbal product quality and safety. These techniques offer diverse applications, from rapid species identification to detecting trace contamination and quantifying adulterants. The review emphasizes the need for collaboration between regulatory authorities, industry stakeholders, and scientific communities to standardize and implement DNA-based authentication methods, establishing a new paradigm for ensuring authenticity and safety throughout the herbal product supply chain. The comprehensive examination of these DNA-based methods provides valuable insights into their role in safeguarding against contamination and adulteration while promoting sustainable sourcing practices in the herbal products industry.

OUTREACH, COLLABORATION, AND KNOWLEDGE DISSEMINATION

INVITED TALKS DELIVERED BY GBRC TEAM

Dr. Amrutlal Patel, Scientist D & Joint Director, GBRC delivered a lecture on “Recent advances in Vaccines and therapeutics” at the Five days Faculty Development Program on Biopharmaceuticals and PBPK Modelling: Concept, Case Study and Hands-on Training held at Parul University, Vadodara on 25th April, 2024.

Dr. Amrutlal Patel, Scientist D & Joint Director, GBRC delivered an expert lecture on “Genome Editing by CRISPR-Cas9: Basics and applications” during the Hands-on Training on “Design and Characterization of Gene Knockdown in *Escherichia coli* using CRISPR Interference System” held at the School of Science, Department of Biosciences, Indrashil University, Rajpur, Mehsana on 20th June, 2024.

MOU’s

Gujarat Biotechnology Research Centre signed an MoU with Pandit Deendayal Energy University, Gandhinagar on 9th April, 2024 to facilitate collaborative research in the field of biotechnology.

OUTREACH, COLLABORATION, AND KNOWLEDGE DISSEMINATION

MOU's

Gujarat Biotechnology Research Centre & Shree R. P. Arts, Shree K. B. Commerce, and Smt. B. C. J. Science College, Khambhat signed an MoU on 18th April, 2024 to encourage collaborative research in biotechnology.

Gujarat Biotechnology Research Centre (GBRC) signed an MoU with the Indian Institute of Teacher Education (IITE), Gandhinagar on 16th May, 2024 for fostering collaborative research, education and advanced training programs.

Gujarat Biotechnology Research Centre (GBRC) signed an MoU with ICAR - National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) on 31st May, 2024 to facilitate collaborative research in the field of biotechnology.

PAPER PRESENTED

PROGRAMME FOR RESEARCH IN EPIDEMIC PREPAREDNESS AND RESPONSE

Dr. Madhvi Joshi invited by PREPARE (Programme for Research in Epidemic Preparedness And Response) a national program of the Ministry of Health, Singapore for a workshop namely “Developing a Regional Agenda for Wastewater & Environmental Surveillance and Research for Epidemics and Pandemics” during 24th- 28th June, 2024. Two papers have been presented on the Global Consortium for Wastewater and Environmental Surveillance for Public Health (GLOWACON) concept paper on Research and Development and on Environmental Surveillance and High Pathogenic Avian Influenza in Wastewater and Environmental Surveillance for Pandemic Preparedness.

PRABODH

GBRC is conducting "PRABODH" (Promoting Research Awareness in Biotechnology for Development of Human Resource) to accelerate the research work and to develop research-oriented thought processes in staff.

APRIL-2024

INVITED GUESTS

Shri Ashok Sharma, IAS,

Vice Chairman & Managing Director,

Gujarat State Road Transport Corporation

(GSRTC)

Topic: Motivational interaction with GBRC

PRESENTATIONS FROM GBRC MEMBERS

Article: Plasmid-encoded toxin defence mediates mutualistic microbial interactions

Journal Name: Nature Microbiology

Impact Factor: 28.3

Mr. Priyank Chavda
TA

MAY-2024

INVITED GUESTS

Prof. Anil Bhardwaj, Director,

Physical Research Laboratory (PRL),

Ahmedabad

Topic: Lunar exploration program of India

PRESENTATIONS FROM GBRC MEMBERS

Article: A gut derived hormone regulates cholesterol metabolism

Journal Name: Cell Press

Impact Factor: 66.85

Dr. Jinal Thakor
PA II

PRABODH

JUNE-2024

INVITED GUESTS

Pujya Guruma Samananda Saraswatiji,

Samadarshan Ashram, Gandhinagar

Topic: Science and spirituality

PRESENTATIONS FROM GBRC MEMBERS

Article: A model-driven approach to upcycling recalcitrant feedstocks in *Pseudomonas putida* by decoupling PHA production from nutrient limitation

Journal Name: Cell Reports

Impact Factor: 8.9

Dr. Vijay Nimkande
RA

Article: Vaginal lactobacilli inhibit growth and hyphae formation of *Candida albicans*

Journal Name: Scientific Reports

Impact Factor: 4.3

Ms. Kajal Patel
TA

INVITED GUESTS

Dr. G. Umapathy, Chief Scientist,

CSIR-Centre for Cellular and Molecular Biology

Hyderabad

Topic: Biotechnological tools in biodiversity conservation

ARRIVAL & DEPARTURE

GBRC wishes best for the future of the bright minds who had left

Dr. Rukhsar Bamji
Dr. Khyati Bhardwaj
Ms. Unnati Panchal
Ms. Sonal Patil
Ms. Priyanka Panwar
Ms. Malaika Baddela
Dr. Jyoti Pathak
Ms. Tasnim Travadi
Ms. Bhoomi Italiya
Mrs. Brindangnanam Pownraj
Dr. Vijay Nimkande
Ms. Mansi Jani
Mr. Fenil Parmar

STAFF WELFARE CLUB ACTIVITIES

The main objective of the Staff Welfare Club is to establish, promote, subsidize, encourage, provide, maintain, organize, undertake, manage, equip, develop, recondition, operate, conduct and to run for in the music, dance, sports, social welfare, carry out scientific and technical, other than political activities.

ANNUAL AWARDS 23-24

HIGHEST IMPACT FACTOR GAINER- 1ST POSITION

Mr. Nitin Shukla
SRF

HIGHEST IMPACT FACTOR GAINER- 2ND POSITION

Dr. Krishna Bharwad
RA

HIGHEST IMPACT FACTOR GAINER- 3RD POSITION

Ms. Zarna Patel
SRF

BEST EXTRAMURAL PROJECT

Dr. Bhumika Prajapati
Scientist-B

Dr. Ramesh Pandit
Scientist-B

BEST PRESENTATION IN PRABODH

Mr. Tejas Shah
Principal Project Associate

APRIL-2024

BEST MONTHLY PRESENTATION AWARD

Dr. Jinal Thakor
PA II

AWARD FOR BEST QUESTION IN PRABODH

Dr. Vamsi Satyavolu
TA

EMPLOYEE OF THE MONTH AWARD

Mr. Nitin Shukla
SRF

BEST CUBICLE AWARD

Molecular Biology Laboratory

STAFF WELFARE CLUB ACTIVITIES

MAY-2024

BEST MONTHLY PRESENTATION AWARD

Ms. Jill Gada
PA II

AWARD FOR BEST QUESTION IN PRABODH

Dr. Chitra Nehra
RA

EMPLOYEE OF THE MONTH AWARD

Mr. Vikas Patidar
TA

BEST CUBICLE AWARD

Animal Tissue Culture Laboratory

JUNE-2024

BEST MONTHLY PRESENTATION AWARD

Ms. Meha Bhatt
SRF

AWARD FOR BEST QUESTION IN PRABODH

Dr. Anubhav Tamrakar
RA

EMPLOYEE OF THE MONTH AWARD

Ms. Shreya Johnson
JRF

BEST CUBICLE AWARD

Proteomics and Metabolomics Laboratory

MONTHLY EVALUATION ACTIVITY

GBRC has internal evaluation system of the project progress where all the fellows present their work for the month and their performances are also evaluated in front of external expert.

APRIL-2024

Dr. Sachidanand Singh
Associate Professor,
Pandit Dindayal Energy University (PDEU), Gandhinagar

MAY-2024

Dr. P. Sivaperumal, Division Head, Chemical Sciences Division, ICMR-National Institute of Occupational Health, Ahmedabad

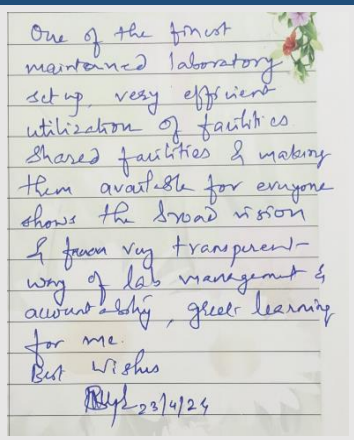
JUNE-2024

Dr. Amee Nair, Assistant Professor,
Institute of Science,
Nirma University, Ahmedabad

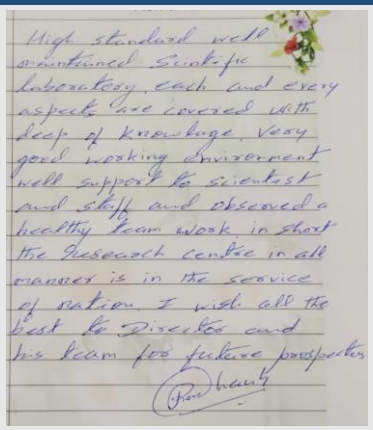
VISIT BY DIGNITARIES

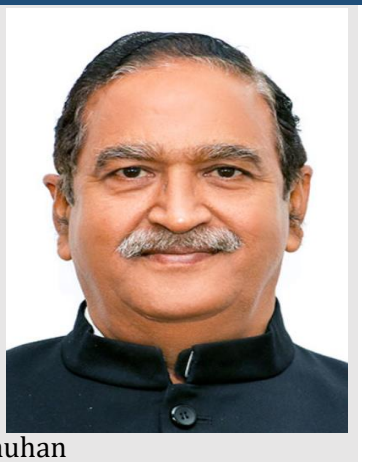
Shri Manish Gurwani, Mission Director of the Gujarat State Biotechnology Mission (GSBTM) and the Gujarat State Electronics Mission (GSEM) visited GBRC

TESTIMONIALS



Dr. Basavaraj Mathapati
Scientist D,
ICMR-National Institute of Virology (NIV)
Dibrugar

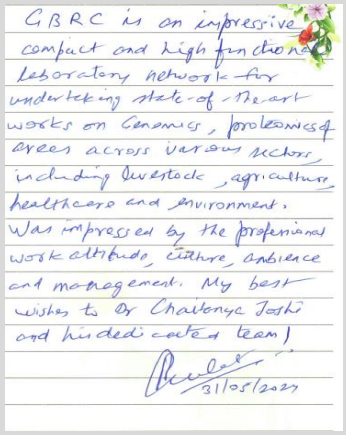




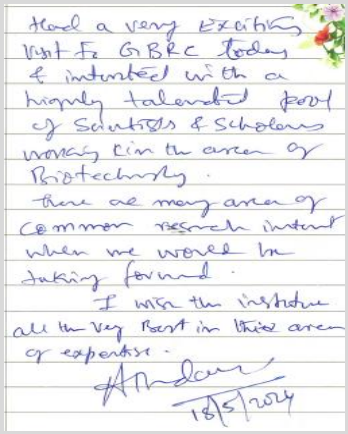
Dr. R. M. Chauhan
Hon'ble Vice Chancellor,
Sardarkrushinagar Dantiwada Agricultural University (SDAU),
Sardarkrushinagar

VISIT BY DIGNITARIES

TESTIMONIALS

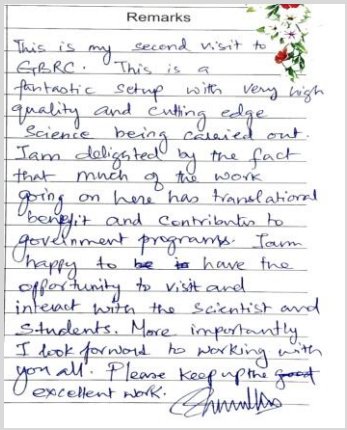


Dr. Baldev Raj Gulati
Director,
ICAR- National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI),
Bengaluru



Prof. Anil Bhardwaj
Director,
Physical Research Laboratory (PRL),
Ahmedabad

Dr. Arun Bandyopadhyay
Director,
Gujarat Biotechnology University,
Gandhinagar, Gujarat



Dr. Dhanasekaran Shanmugam
Scientist,
CSIR-National Chemical Laboratory,
Pune

VISIT BY COLLEGE/ ACADEMIC INSTITUTES

Students and faculty members from the Pramukh Swami Science and H. D. Patel Arts College, Hemchandracharya North Gujarat University, Kadi

VISIT BY COLLEGE/ ACADEMIC INSTITUTES

Students and faculty members from Department of Zoology, Gujarat University , Ahmedabad

Students and faculty members from Ganpat University, Mehsana

Faculty members from Parul University, Vadodara visited GBRC under faculty development program

VISIT BY COLLEGE/ ACADEMIC INSTITUTES

Students and faculty members from Parul Institute of Applied Sciences, Parul University, Vadodara

Students and faculty members from Department of Biosciences, Sardar Patel University, Gujarat

Contact Information

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Contact no.: +91-079- 23258500
Website: https://gbrc.gujarat.gov.in; http://gbrc.res.in
For Shared Lab Facility : https://gbrc.org.in/

GUJARAT BIOTECHNOLOGY RESEARCH CENTRE

DEPARTMENT OF SCIENCE & TECHNOLOGY

GOVERNMENT OF GUJARAT

ANNOUNCES

Shared LAB

Online System

- NGS Illumina NovaSeq 6000
- NGS Illumina MiSeq
- NGS Ion S5 & S5 Plus
- NGS IonChef
- BD Flow Cytometer & Cell sorter
- Capillary ABI 3500 Sequencer
- PCR + Gel Doc
- Nanodrop, Qubit
- Lyophilizer
- HPLC
- GC-MS (Clarus 680/Clarus SQ8C)
- LC-MS
- Digital PCR
- Real time PCR machine
- HPC Server & Param Shavak Server for Bioinformatics (with CLC Genomics)

GBRC shared lab online booking system:

https://gbrc.org.in


KAMDHENU UNIVERSITY
GANDHINAGAR, GUJARAT


THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
सत्यं शिवं सुन्दरम्


ADGE
INDUSTRIES


AMITY UNIVERSITY
MUMBAI


ADVAIT
THERAGNOSTICS


AIIMS
New Delhi


AAU
कृणवन्तो राष्ट्र कृषि संपन्नम्


BABA GHULAM SHAH BADSHAH UNIVERSITY RAJOURI J&K


हरियाणा केंद्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF HARYANA
विद्याधनं सर्वधनप्रधानम्


कृषिमित् कृषस्व
SDAU


VNSGU
VEER NARMAD
SOUTH GUJARAT
UNIVERSITY


BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
ज्ञानं परमं बलम्


CSIR·INDIA


HNGU


गुजरात केन्द्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF GUJARAT


CONCORD BIOTECH
Biotech for Mankind...


GANPAT
UNIVERSITY
॥ विद्यया समाजोत्कर्षः ॥


GUJARAT TECHNOLOGICAL UNIVERSITY


CHARUSAT
CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
अमृतं तु विद्या


INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
ज्ञानम् परमम् ध्येयम्


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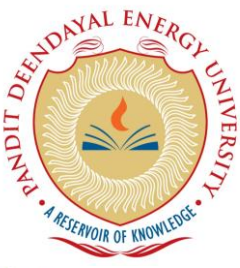
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