Center of Excellence in Emerging Diseases

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Brief Overview

Despite noticeable improvements in combating the global burden of newly emerged, re-emerged infectious and life-style diseases, millions of patients still fall prey to the unbridged gap in their understanding. Research at the Centre of Emerging Diseases focuses to delve into underlying molecular events behind pathogenesis of emerging viral and bacterial pathogens (host pathogen interactions, essential metabolic pathways of pathogens), along with life-style diseases such as cancer, cardiovascular diseases, etc. The faculty uses integrative structural biology approach to design novel diagnostics and therapeutics. The research activities at the Centre has generated ~ 7.5 crore extramural research funding from various agencies of Govt. of India including Department of Biotechnology (DBT), Department of Science & Technology (DST), Indian Council of Medical Research (ICMR) and All India Council for Technical Education (AICTE).

Of the many interests of the faculty associated with the Center for Emerging Diseases, at the Department of Biotechnology, Jaypee Institute of Information Technology, Noida, major emphases are laid on the following topics:

Newly emerged and re-emerged diseases in the recent past caused by SARS, Chikungunya (CHIKV)and other viruses have highlighted the vulnerability of developing and developed nations to such infectious diseases. Research efforts are on to understand the molecular and cell biology of pathogen-host-vector interactions in CHPV and CHIKV, pathogen specific remodeling processes of the host/vector cell, and to identify interactions which could be target for therapeutics and identify peptide-based inhibitors. In view of the rapid pace of emergence of multidrug resistant strains of almost all group of pathogens, the need for new antibacterial compounds cannot be overemphasized. Research efforts have been initiated to generate X-ray crystal structure(s) of potential drug targets from human pathogens, for early-stage rational drug discovery for a novel antimicrobial agent(s).

Another major area of focus is to gain insights into the underlying mechanism of natural compounds in combating various conditions such as cancer, cardiovascular diseases, urolithiasis, and other metabolic and neurological disorders. Besides the extensive use of Ayurvedic medicines, herbal remedies have lack rigorous scientific assessment at their molecular, biochemical and toxicological levels. Metabolic and neurological disorders are also

being studied through mitochondrial defects. Gene regulatory elements like miRNAs and transcription factors are researched extensively to understand the gene regulation, the outcome of which may lead to novel therapeutics.

Novel nanotherapeutic based interventions are being investigated through Drug loaded polymeric nanoparticles (chitosan, PLGA) to improve the delivery and bioavailability of anti-epileptic and antiAlzheimer's drugs, neuropathic pain and for some other CNS related drugs. Nano emulsions encapsulating some natural antimicrobial compounds (catechins and flavonoids) are being explored for enhanced efficacy and bioavailability. The increasing demand for early diagnosis of disease at curable stage, is the major driving force behind development of novel approaches for diagnostic tools. Controlled chemical synthesis of biocompatible nanoparticles is being exploited for development of biosensors with improved stability, sensitivity and response time. In addition to this, we are also striving towards development of nanoparticle-based vaccines.

-To explore and understand more about the genomic variations, genome-wide comparative and evolutionary studies with an eco-evolution perspective, host-microbiome association and interaction, trait variations and adaptations etc., are being carried out using Drosophila model. NGS Technology has resulted in submission of whole genome sequence of Indian *Drosophila* species and *Zaprionus indianus* (agriculturally important pest species) in the 'Genome' Bank for the first time from India. Furthermore, Bioinformatics team of this center is involved in constructing networks of complex systems, data mining & pattern recognition, machineleaning, and in developing sophisticated tools and pipelines to solve problems relevant to disease biology.

Faculties

S No.	Name	Designation	Qualification	Area of Research
1	**Sudha Srivastava**	Professor	Ph.D. (JNU)	Nanotherapeutics; Biosensors
2	**Reema Gabrani**	Professor	Ph.D. (NII Delhi)	Medical Biotechnology
3	**Sujata Mohanty**	Professor	Ph.D. (BHU)	Comparative Genomics, Host-Microbe Interaction
4	**Vibha Rani**	Professor	Ph.D. (JNU)	Transcriptomics, Cardiovascular disease
5	**Shweta Dang**	Professor	Ph.D. (Jamia Hamdard Univ.)	Novel Drug Delivery Systems
6	**Vibha Gupta**	Associate. Professor	Ph.D. (Vrije Universiteit Brussel, Belgium)	Structure Biology
7	**Shalini Mani**	Associate. Professor	Ph.D. (CCMB Hyderabad)	Mitochondrial Disease Genomics
8	**Chakresh K Jain**	Assistant Professor	Ph.D. (Jiwaji Univ. Gwalior)	Network Biology, Drug designing and simulations
9	**Priyadarshini**	Associate. Professor	Ph.D. (JUIT Waknaghat)	Proteomics & Kidney stone disease
10	**Manisha Singh**	Assistant Professor	Ph.D. (JIIT Noida)	Novel Drug Delivery Systems
11	**Shazia Haider**	Assistant Professor	Jamia Millia University, NewDelhi	Bioinformatics
12	**Sonam Chawla**	Assistant Professor	Ph.D. (DRDO, Delhi /Bharathihar University, Tamil Nadu)	Hypoxia Biology & Ageing Research
13	**Nidhi Batra**	Assistant Professor	Ph.D. (University of Delhi)	Bioinformatics

Sponsored Research Projects

1. Project Ongoing

S. No.	Principal Investigator	Co-Principal Investigator (Co -PI)/Co-Investigator (Co -I)	Title	Funding Agency	Start Date	End Date	Grant Amount (In Lakhs)
1.	Dr Chakresh Kumar Jain	Prof. Shweta Dang (Co-PI)	Deciphering potential gene markers and variants associate with Adrenoleaukodystrophy based on machine learning and system biology approaches on RNA-seq data towards therapeutics	DBT	Feb 2024		28.43
2.	Dr. Sudha Srivastava	Dr. Deepshi Thakral (Co-PI)	Development of Electrochemical biosensorfor detection of circulatingtumor DNA mutations in Acute myeloid leukemia	ICMR	July 2022	July 2025	18.211 for first year
3.	Prof. Vibha Rani	Prof. Pammi Gauba	Study to explore Cross Kingdom Regulation of Anticancerous Indian Herbs derived XenomiRs in Lung cancer: Basic research for Future herbal oncotherapeutics	ICMR	Feb 2023	Feb 2025	45

4.	Prof Shweta Dang	Prof Pammi Gauba	Nano-carrier based nose to brain delivery for anti-psychotic drugs and natural compounds	ICMR	01.02.2023	31.01.2026	INR 11 (for first Year)
5.	Prof. R.K. Gupta (RLA college, DU)	Vibha Gupta (JIIT) Dr. Prerna Diwan (RLA college)	Targeting biofilm formation by inhibiting Cysteine biosynthesis pathway enzymes in ESKAPE pathogens with natural products.	ICMR	1-02-2021	31-01-2024	42.3
6.	Dr. Shazia Haider	Prof. Pammi Gauba	Identification of key regulators and their controlling Mechanism in a combinatorial amyotrophic lateral sclerosis Network:an integrated bioinformatics analysis	Life Sciences Research Board (LSRB), DRDO	June2022	June 2025	24
7.	Prof. Pammi Gauba & Prof. Vibha Rani	Prof. Shweta Dang (Co-pi) Centre Representatives : Prof. Reema Gabrani & Prof.Indira Sarethy	Development of Natural Product Laboratory for Advance Research	DST-FIST	2022	2027	66

8.	Vibha Gupta (JIIT)	Prof Punit Kaur (AIIMS) Dr Jyoti Sharma (Institute of Bioinformatics)	Reverse pharmacology and multi-target approach for designing of novel therapeutics and candidates for Covid-19.	ICMR	15.04.2022	14.04.2024	INR 10,51,160 for first year
9.	Dr. Jyoti Sharma (Institute of Bioinformatics)	Vibha Gupta (JIIT)	Development of computational framework for COVID-19 multi-omics data analysis.	ICMR	01.05.2022	30.04.2024	INR 5,47,660 for first year

2. Project Completed

S. No.	Principal Investigator	Co-Principal Investigator (Co-PI)/Co-Investigator(Co-I)	Title	Funding Agency	Start Date	End Date	Grant Amount (in lakhs)
1	Dr Shweta Dang	Prof Pammi Gauba	Nose to brain delivery of surface-modified drug loaded PLGA nanoparticles for management of Trigeminal Neuralgia.	ICMR, Govt of India	2020	2023	40.6
2	Dr. Vibha Rani		Investigating microRNAs as the Next Generation Therapeutic Targets in Diabetic Cardiomyopathy.	SERB	2018	2022	39
3	Dr. Sanjay Gupta	Dr. Reema Gabrani	Identification of cellular targets of Chikungunya virus non-structural proteins	ICMR	2016	2019	34.1
4	Vibha Gupta (JIIT)	Late Dr. Chittaranjan Rout (JUIT)	Development of glyoxylateand methyl-citrate cycles essential for persistence of Mycobacterium tuberculosis	ICMR	2015	2018	33.7
5	Dr. Sudha Srivastava	Dr. Vibha Gupta	Nanoparticles based amperometric biosensorsfor detection of thyroid	DST	2014	2017	37.30
6	Dr Sujata Mohanty	-	Studies on the Phylogenomics and Population Genomics ofIndian *Drosophila*	DST	2014	2017	34. 01

7	Dr Shweta Dang	Prof Reema Gabrani Prof Javed Ali	Development and evaluation of green tea catechins based intravaginal nanoemulsiongel for treatment of urinary tract infections	DBT	2013	2016	23.35
8	Vibha Gupta (JIIT)	Dr. Punit Kaur (AIIMS)	Structural Biology of Cysefrom pathogenic organisms - Potential for rationaldrugdesign.	DBT	2013	2017	42.9
9	Dr. Nidhi Gupta	Dr. Sanjay Gupta/Dr . D.K. Adhikari (Indian Institute of Petroleum, Dehrad un).	Development of a biocatalyst for dearomatization of diesel	DBT	2013	2015	24
10	Dr. Vibha Rani		Stage Specific microRNAsprofiling from developing chick embryonic heart	DBT	2012	2016	42.4
11	Dr. Vibha Rani		Effect of Curcumin on Cardiac hypertrophy.	DBT	2012	2016	32.9
12	Dr. Vibha Rani		Cardio-protective properties of Curcumin: Molecular Interaction of Cardiac Transcription Factors	DST	2012	2016	19.9

13	Dr Shweta Dang	Dr Manisha Singh Prof Javed Ali	Nanoparticle based Drug delivery system of some antiepileptic drugs for brain drug delivery through nasalroute	DBT	2011	2014	25
14	Dr. Sanjay Gupta	Dr. Reema Gabrani	Viral-viral and viral– host protein interaction in Chandipura virus	DST	2010	2013	35.57
15	Dr. Sudha Srivastava	Dr. Nidhi Gupta	Designing a nanoparticlebased glucose biosensor	AICTE	2009	2012	8.4
16	Dr. Sanjay Gupta	Dr. Reema Gabrani	Mapping ofinteraction among Chikungunya proteins	DBT	2008	2012	24.87
17	Dr Sujata Mohanty	-	Inferring the Origin, Population Structure and Demographic History of *Drosophila malerkotliana*with Population Genomic Approach.	DST	2007	2010	7.44

3. Project Sanctioned

S. No.	Principal Investigator	Co- Principal Investigatorr (Co- PI)/Co-Investigator r(Co-I)	Title	Funding Agency	Start Date / Yea r	End Date / Year	Grant Amount
1	Vibha Gupta (JIIT)	Punit Kaur (AIIMS); Jyoti Sharma (Institute of Bioinformatics)	Reverse pharmacologyand multi-target approach for designingof novel therapeutics and candidates for Covid-19.	ICMR	15-04-2022	14-04-2024	42.9 lakhs
2	Jyoti Sharma (Institute of Bioinformatics)	VibhaGupta (JIIT)	Development of computational framework for COVID-19 multi-omics data analysis.	ICMR	1-05-2022	30-04-2024	28.3 lakhs

Fellowship Projects

1. Structural studies of Cysteine Synthase from Klebsiella pneumoniae. MOBLILEX fellowship awarded to Mr. Shubham Semwal under the joint supervision of **Dr. Julie Bouckaert** (Université Lille, France) and **Vibha Gupta** (JIIT, Noida). **Grant value: €650/month (Feb. - July, 2020)**; Completed

2. Designing an alternative cancer therapy by study of anticancerous herbs for their potential mitocan activity. NFST (Ministry of Tribal affair). **Duration: 2018-23. Grantamount: 22.082 Lacs.** PhD student: Geeta Swargiary; **Mentor: Dr Shalini Mani**

3. Development PLGA nanoparticles loaded with donepezil and memantine for Brain Drug Delivery through nasal route in Alzheimer's disease, BIOCARE-DBT, PI: Ms Atinderpalkaur(PhD student), **Mentor: Dr Shweta Dang, 2017-2020, Rs 26 lakhs**

4. "Rational Structure-based development of potent inhibitors targeting mycobacetrial cysteine biosyntheticpathway: in silico and experimental drug design against M. tuberculosis CysE. DST Fellow, Rs. 15,95,000, PI Sunita Gupta (PhD), **Mentor: Dr. Vibha Gupta**, 2015-2018.
5. Identification of peptide/protein binders of Chikungunya, DST - Inspire Fellowship, Rs.16,60,000, Garima Agarwal, **Mentor: Dr. Sanjay Gupta** (2015-2020)

6. Structure, Function and Inhibition of Isocitrate Lyases of Mycobacterium tuberculosis, DST - Inspire Fellowship, Ms Monika Rs.11.64 Lakh, **Mentor: Dr. Vibha Gupta**, 2016- 2021

7. Fabrication of Nanotechnology based Point of Care device for Diagnosis of Thyroid Dysfunctioning, DST - Inspire Fellowship, Mr. Rahul Saxena Rs. 11.68 lakh, **Mentor: Dr. Sudha Srivastava**, 2015-2020

8. Nanoparticle based vaccine development against Hepatitis E Virus, DST - Inspire Fellowship, Ms. Dibya rani Rs. 11.92 lakh, **Mentor: Dr. Sudha Srivastava**, 2015-2020

9. Differential expression pattern of miRNAs in rice root during Cr (VI) stress. DST: Grant value: Rs. 33 Lakh, **Mentor: Vibha Rani**) Scientist: Sonali Dubey (2015-2018).

10. Deciphering the host interactions of Chandipura virus matrix protein (Ph.D. Student: Sreejith Rajasekharan) **(ICMR)**, **Grant Value: Rs 3.0 lakhs**, **Supervisor: Sanjay Gupta** (2014 – 2015)

Major resources available in area

(a) Physical

Equipments from EXTRA MURAL FUNDING (Exclusive for Centre for emerging diseases)					
S. No.	**Name of Equipment**	**No. of equipment**	**Cost (Rs.in lac)**	**Make / supplier**	**Date of Purchase**
1	AKTA PURE Purification system	1	31.20	GE Healthcare	Feb-14
2	Deep freezer (-20C)	3	1.86	Vestfrost	Nov-08, Mar-10, Mar-14
3	Dissolutio Test n Apparatus	1	1.50	Veego	May-12
4	Fluorescence Microscope	2	8.29, 6.43	Olympus	Dec-09, 2016
5	Gel dryer + small instruments	1	1.37	Macflow	Nov-09
6	HPLC (Isocratic)	1	6.63	Waters	Jun-12
7	Real time PCR wit hPC	1	15.51	Ther mo Scient ific	Oct-12
8	Spectrophotometer (UV-Vis an dnanodrop)	3	13.40	JH Bio, Eppendo rf, Shimadzu	Dec-08, Nov-09, Apr-12
9	Thermal cycler (PCR)	3	6.76,	Eppendorf	4/1/2007, Jan 13,
10	Ultra centrifuge	1	14.87	Beckman	Nov-09

11	Ultrasonicator	1	7.17	Hielscher	Dec-13
12	UV cross linker	1	1.11	Merck	Jan/14
13	Electrochemical Work Station + hand held galvanostat/potentiostat	1	10.548	CH Instruments	Mar 15
14	ELISA Reader	1	2.98	Thermo Scientific	2015
15	Work Station	1	2.3	DELL	2015
16	Refrigerated Centrifuge	1	2.1	Genetix	2014
17	Orbital shaker	1	1.97	Remi	2014
TOTAL (in Lakhs)			**138.498**		
Shared Facilties					
1	Centrifuge	7 (4 for CFED)	11.18	Eppendorf, Remi, G-Biosciences, Thermo Scientific, Genetix	Nov-08, Nov-09, Aug-12, Sep-10, Oct-12, Mar-14, Apr-14
2	Digital shaker Incubator	3 (2 for CFED)	8.58	New Brunswick, Remi	Nov-09, May-12, Mar-14
3	Laminar flow	3 (2 for cfed)	2.86	Atlantis, ISIC	Nov-08, Jan-11, Mar-14

4	Micropipettes	10 sets (5 sets for cfed)	5.00	Eppendorf, YVR LifeSci., Thermo Scientific,	Nov-08, Oct-09, Nov-09, Sep-10, Feb-12, Oct-12, Mar-14
5	Electrophoresissystem (Vertical&Horizontal)	5 (4 sets for cfed)	5.25	BioRad, Genei, MacFlow, G-Biosciences	Nov-08, Sep-10, Mar-14
6	PCR (thermal cycler 96 well simpli amp) modela24812ref	2	1.83	Thermo Scientific	2017
7	Thermo multi scan FC (ELISA reader)	1	3.15	Thermo Scientific	2017

Details of publications, patents and Process / Equipment / Software Developed

2024

1. Mody Deepansh, Joshi Priyanka, Antil Monika, Gupta Rakesh K. and Gupta Vibha. Insights into Kinases of ESKAPE Pathogens for Therapeutic Interventions, Cardiovascular & Hematological Agents in Medicinal Chemistry 2024; (Article in press). https://dx.doi.org/10.2174/0118715257267497231128093529
2. M. Gautam, and R. Gabrani, "Synergism of d-limonene and temozolomide on migratory and apoptotic behaviors of human Glioblastoma cell lines", Bioimpacts, Vol. 14(5), pp. 27681, January 2024 (IF: 4.0, SCOPUS, SCI)
3. M. Gautam and R. Gabrani, "Evaluation of the vanillin treatment on migration and anchorage-independent growth of glioblastoma cell line," Journal of Applied Biology and Biotechnology, Volume 12, Issue 1, January, 2024 (IF: 1.0, SCOPUS)

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4. Rai G, Sharma S, Bhasin J, Aggarwal K, Ahuja A, Dang S. Nanotechnological advances in the treatment of epilepsy: a comprehensive review. Nanotechnology. 2024 Jan 24;35(15). doi: 10.1088/1361-6528/ad1c95. PMID: 38194705. Scopus (IF 3.5)
5. Kumari P, Dang S. Evaluation of Enhanced Cytotoxicity Effect of Repurposed Drug Simvastatin/ Thymoquinone Combination against Breast Cancer Cell Line. Cardiovascular & Hematological Agents in Medicinal Chemistry. 2023 Oct. DOI: 10.2174/0118715257259037231012182741. Scopus (IF 0.409)
6. Surbhi Sharma, Amit Tyagi, Shweta Dang, Nose to Brain Delivery of Transferrin conjugated PLGA nanoparticles for clonidine, International Journal of Biological Macromolecules, Volume 252,2023,126471, ISSN 0141-8130. Scopus (IF 8.2)
7. https://doi.org/10.1016/j.ijbiomac.2023.126471
8. Surbhi Sharma, Shweta Dang, Polysorbate 80 surface modified PLGA nanoparticles: an in-vitro evaluation of cellular uptake and cytotoxicity on neuro-2a cells, Journal of Microencapsulation, 2023 Aug 23;1-15. Scopus (IF 4.2)
9. Garima Rai, Pammi Gauba, Shweta Dang, Recent advances in nanotechnology for Intra-nasal drug delivery and clinical applications, Journal of Drug Delivery Science and Technology, Volume 86, July 2023, 104726, ISSN 1773-2247. Scopus (IF 5.0)
10. Pallavi Kumari, Shweta Dang, Dual drug loaded nanostructured lipid carrier for cytotoxic effect against breast cancer-a drug repurposing approach., Surfaces and Interfaces, 2023, 103138, ISSN 2468-0230. Scopus (IF 6.2)
11. Garima Rai, Pammi Gauba & Shweta Dang, Surface modified biodegradable nanoparticles of Gabapentin. An approach to increase cell uptake. Materials Today Proceedings, 2023, ISSN 2214-7853, https://doi.org/10.1016/j.matpr.2023.04.238
12. U. Naithani, P. Jain, A. Sachan, P. Khare, R. Gabrani, "MicroRNA as a potential biomarker for systemic lupus erythematosus: pathogenesis and targeted therapy", Clinical and Experimental Medicine, Vol:23(8), pp. 4065-4077, Dec, 2023. (IF: 4.6, SCOPUS, SCI) doi: 10.1007/s10238-023-01234-7.
13. V. Prakash, R. Gabrani, An Insight into Emerging Phytocompounds for Glioblastoma Multiforme Therapy, Cardiovasc Hematol Agents Med Chem. Nov, 2023. Online ahead of print. (IF: 1.5, SCOPUS) doi: 10.2174/0118715257262003231031171910. Online ahead of print.
14. M. Gautam, R. Gabrani, "Evaluation of bromelain and temozolomide synergistic combination in human glioblastoma cells" Adv Tradit Med (ADTM), Oct 2023. https://doi.org/10.1007/s13596-023-00717-y (IF: 2.0, SCOPUS)

15. M. Gautam, R. Gabrani, "Comparative analysis of α-pinene alone and combined with temozolomide in human glioblastoma cells", Nat Prod Res. Sep 4:1-6. 2023 doi: 10.1080/14786419.2023.2252152. Online ahead of print.
16. M. Gautam, R. Gabrani, "Systematic Illustration of the Plant-Derived Compounds via Bioinformatics Tools" International Journal of All Research Education and Scientific Methods (IJARESM), Vol. 11(6), pp. 2522-2527, June 2023 ISSN: 2455-6211
17. Smriti Shreya, Md Jahangir Alam, Anupriya Anupriya, Saumya Jaiswal, Vibha Rani and Buddhi Prakash Jain* Lipotoxicity, ER Stress, and cardiovascular disease: Current Understanding and Future Directions. DOI: 10.2174/0118715257262366230928051902,2023. (International, Scopus, IF: 2.24).
18. Gupta P, Rani V. The Surging Mechanistic Role of Angiotensin Converting Enzyme 2 in Human Pathologies: A Potential Approach for Herbal Therapeutics. Curr Drug Targets. 2023 Oct 11. doi: 10.2174/0113894501247616231009065415. Epub ahead of print. PMID: 37861036. (International, Scopus, IF: 3.2).
19. Shivani Singhal and Vibha Rani*Therapeutic Potential of Syzygium aromaticum in Gut Dysbiosis via TMAO Associated Diabetic Cardiomyopathy, September 4, 2023, DOI: 10.2174/1871525721666230822100142. (International, Scopus, IF: 2.24).
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22. Bhadana R, Rani V*. A Patent Review on Cardiotoxicity of Anticancerous Drugs. Cardiovasc Hematol Agents Med Chem. 2023 Jan 20 (International, Scopus, IF: 2.24).
23. Tuli HS, Joshi H, Vashishth K, Ramniwas S, Varol M, Kumar M, Rani I, Rani V, Sak K. Chemopreventive mechanisms of amentoflavone: recent trends and advancements. Naunyn Schmiedebergs Arch Pharmacol. 2023 Feb 11. doi: 10.1007/s00210-023-02416-6. Epub ahead of print. PMID: 36773053. (International, Scopus, IF: 3.6).
24. Shilpa Gundagatti and Sudha Srivastava An optimization of blocking agents for designing reliable electrochemical biosensors for ovarian cancer, Materials Today: Proceedings 2023, ISSN 2214-7853, https://doi.org/10.1016/j.matpr.2023.04.460.
25. Namita Sharma and Sudha Srivastava miRNA 143 based nanobiosensor to diagnose pancreatic cancer, Materials Today: Proceedings, 2023, ISSN 2214-7853 https://doi.org/10.1016/j.matpr.2023.04.461
26. G. Kaur, S. Chawla, P. Kumar, and R. R. Singh, "Advancing Vaccine Strategies against Candida Infections: Exploring New Frontiers," Vaccines, vol. 11, no. 11, pp. 1658–1658, Oct. 2023, doi: https://doi.org/10.3390/vaccines11111658

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27. Sharma N. and Srivastava S. Diagnosis of Pancreatic Cancer Using miRNA30e Biosensor Interdisciplinary Sciences: Computational Life Sciences (2022) 14(4), 804- 813 /doi.org/10.1007/s12539-022-00531-1 [Impact factor: 3.49, Indexed in Scopus]
28. Gundagatti S. and Srivastava S. Development of Electrochemical Biosensor for miR-204 Based Cancer Diagnosis Interdisciplinary Sciences - Computational Life Sciences,(2022) 14(2), 596-606. doi: 10.1007/s12539-022-00508-0 [Impact factor: 3.49, Indexed in Scopus]

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36. K. Singhal and S. Mohanty, "Distribution and phenotypic effect of Wolbachia in natural population of Indian Drosophila", Journal of Vector Borne Diseases, in press,2022[Indexed in Scopus, Impact factor: 0. 735]
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42. Anubhuti Gupta, Kunal Singh, Sameen Fatima, Saira Ambreen, Silke Zimmermann, Ruaa Younis, Shruthi Krishnan, Rajiv Rana, Ihsan Gadi, Constantin Schwab, Ronald Biemann, Khurrum Shahzad, Vibha Rani, Shakir Ali, Peter Rene Mertens, Shrey Kohli, and Berend Isermann, Neutrophil, Extracellular Traps Promote NLRP3 Inflammasome Activation and Glomerular Endothelial Dysfunction in Diabetic Kidney Disease. Nutrients, 2022, 14, 2965. (International, Scopus, IF: 6.706).
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Patents

S. No	Patent ApplicationNo (PAN)	Patent Title	Author	Filing Date	Status	Tyoe of Student
1	PAN 202111001763	Synergistic combination of temozolomide and d-limonene for glioblastoma multiforme treatment	M. Gautam and R. Gabrani		Granted Patent No.: 501913 (22/01/2024)	
2	PAN 201911047575	Synergistic effect of temozolomide and phytocompound in human glioblastoma multiforme cell lines	M. Gautam and R. Gabrani		Granted Patent No.: 424890	
3	PAN 202311007033	PROTAMINE SULFATE COATED PAROXETINE PLGA NANOPARTICLES AND METHOD OF PREPARATION THEREOF	Surbhi Sharma and Prof. Shweta Dang		Granted Patent No.: 494580	
4	PAN 202311020039	Acoustics Based Grasshopper population Controller	Dr. Kapil Dev Tyagi and Dr. Chakresh Kumar Jain	22.03.2023	Published (12.05.2023)	

5	PAN 202211072496	A process to inhibit Mycobacterium tuberculosis isocitrate lyases through vasicine	Dr. Vibha Gupta, Harpreet Singh and Monika Antil	15.12.2022	Under Examination	
6	PAN 202211060672	*Syzygium aromaticum* extract compounds as trimethylamine inhibitor in diabetic cardiomyopathy	Ms. Shivani Singhal and Prof .Vibha Rani	25.10.2022	Published (28.10.2022)	PhD
7	PAN 202111052498	Orange flavored synbiotic corn chocolate: composition andamethod of preparation thereof	Dr. Smriti Gaur and Shubhi Singh	16.11.2021	Published (28.01.2022)	M.Tech
8	PAN 202111032404	Development of synbiotic corn cinnamon chocolate and its functional analysis.	Dr. Smriti Gaur and Shubhi Singh	19.07.2021	Published (28.01.2022)	M.Tech
9	PAN 202111005772	Polynucleotide novel moleculeincardiovascular therapeutics	Prof. Vibha Rani and PriyankaMathur	10.02.2021	Published (22.02.2022)	PhD
10	PAN 202111001763	Synergistic combination of temozolomide and d-limonene for glioblastomamultiforme treatment	Reema Gabrani andMegha Gautam	14.01.2021	Granted Patent No.: 501913 22/01/2024	PhD

11	PAN 202111005269	Mitochondria targeting abilityofnatural compound in breast cancer and its synergisticeffect with existing therapy	Geeta SwargiaryDr. Shalini Mani	08.02.2021	Published (11-03-2022)	PhD
12	PAN 202011020344	Poly ribonucleotide sequence [(tag)7c2] as type iv collagenase natural inhibitor	Prof. Vibha Rani, PriyankaMathur	14.05.2020	Published (19-11-2021)	PhD
13	PAN 202011019986	Synergistic Effect ofHerbal Plant Extract Against Urolithiasis	Dr. Priyadarshiniand Chetna Faujda	12.05.2020	Published (19.11.2021)	PhD
14	PAN 202011001014	Co-delivery of Baclofen &Lamotrigine viaPLGA nanoparticles	Dr. Shweta Dang, Kuldeep Nigam andAmit Tyagi	09.01.2020	Published (17.01.2021), FER Submitted, Hearing (25.02.2022) Granted 22.09.2022)	PhD
15	PAN 201910475 75	Synergistic effectof temozolomide &phytocompound in human glioblastomas multiforme cell lines.	Reema Gabrani and Megha Gautam	21.11.2019	Granted Patent No.: 424890 13/03/2023	PhD

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17	PAN 2782 /DEL /20 10	Thermally Stable Enzymes With Improved Biocatalytic ActivityAnd A Process To Prepare The SameBy Making Their Nanoparticles	Prof. Sudha Srivastava and Shikha Sharma	16.12.201 1	Granted PatentPate ntNo. 309474	Ph D PhD
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DETAILS OF SIGNIFICANT NATIONAL COLLABORATIONS

S. No.	Name of the collaborator	Organization
1.	Prof. Vijay K. Chaudhary	Professor and Head, Department of Biochemistry, University of Delhi South Campus (UDSC)
2.	Prof. Sudhanshu Vrati	Dean, Translational Health Science & Technology Institute, (THSTI)
3.	Dr. Dinesh Gupta	Research Scientist, International Centre for Genetic Engineering and Biotechnology (ICGEB)
4.	Dr. Amita Gupta	Associate Professor, Department of Microbiology, Univ. of Delhi, South Campus
5.	Dr. Manish Sharma	Research Scientist, Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi
6.	Dr Shyamal K Goswami	Professor, School of Life Sciences, JNU
7.	Dr. Punit Kaur	Professor and Head, Department of Biophysics,All India Institute of Medical Sciences, Delhi
8.	Prof Malcolm Schug	Associate Professor and Director of Undergraduate Studies, Univ. of North Carolina, Greensboro
9.	Dr. Aparup Das	Director, National Institute of Tribal Health and Research, ICMR, New Delhi
10.	Prof. K. K. Biswas/ Yamuna Prasad	Department of Computer Science andEngineering, IIT Delhi
11.	Dr. Gulshan Wadhwa	Joint Director, Dept. of Biotechnology, Govt. ofIndia

12.	Dr. R.T. Narendhirakannan	Assistant Professor (SG), Department ofBiotechnology, School of Biotechnology and Health Sciences, Karunya University,Coimbatore
13.	Dr. UmeshC. S. Yadav	Associate Professor and Coordinator, School ofLife Sciences, Central University of Gujarat
14.	Prof Javed Ali	Professor and HOD, Department of Pharmaceutics, Jamia Hamdard, New Delhi.
15.	Prof. John Baines	Professor, Max Plank Institute for Evolutionary Biology, Germany
16.	Dr. S. P. Singh	Associate Prof., Dept. of Biochemistry, Banaras Hindu University (BHU), Varanasi
17.	Dr Amit Tyagi	Scientist F, INMAS, DELHI
18.	O'Kennedy R	Biomedical Diagnostics Institute (BDI), DublinCity University, Dublin 9, Ireland; School of Biotechnology, Dublin City University, Dublin 9, Ireland.
19	Dr. Kanwaljeet Kaur	Staff Scientist, NationalInstitute ofImmunology (NII), Delhi
20	Prof Andrew M. Lynn	School of Computationaland IntegrativeSciences, JNU
21	Dr Sébastien Gouin	University of Nantes, France
22	Dr. Julie Bouckaert	Centre National de Recherche Scientifique, France

RESRACH HIGHLIGHTS

Sudha Srivastava, Ph.D.

Research area: Diagnostic devices – Nanotechnology; Biosensors

Brief on Research activities:

The increasing demand for early diagnosis of disease at curable state, is the major driving force behind development of novel approaches for diagnostic tools. Nanoparticles are exploited for development of biosensors with improved stability, sensitivity and response time. A nanoparticle-based glucose biosensor has been developed and investigations are ongoing for thyroid biosensor as well as immunosensor for cancer diagnosis as point of care device development. Our group has developed expertise in controlled chemical synthesis of biocompatible nanoparticles of metallic, non-metallic materials as well as biomolecules. In addition to this, we are also striving towards developed of nanoparticles-based vaccine.

Reema Gabrani, Ph.D.

Research area: Medical Biotechnology

Brief on Research activities:

Current research interests include exploring the anti-microbial and anti-proliferative aspects ofplant active compounds & antimicrobial peptides and their nano-encapsulated forms to understand the scientific basis of their activity which could lead to the development of unique drugs. Also, part of studies on protein-based interactions of Chandipura and Chikungunya virus with viral and host factors to understand the pathogenesis and disease progression. Notably such work can lead to the generation of novel therapeutic strategies.

Sujata Mohanty, Ph.D

Research area: Molecular Genetics and Genomics

Brief on Research activities:

Drosophila has clearly evolved as a model organism for a wide array of genetic and evolutionary studies. With recent development in genomic applications in biomedical and agricultural research, initial information has come from studies with Drosophila model. India is rich in biological diversity with many flora and fauna present in many eco-climatic zones. Inferring genetic inter-relationship among closely related species is not only important for academic point of view but also to understand how species diversity has been accompanied by small changes at the nucleotide level. Our study specifically focuses on genome wide comparative analysis using novel whole genome sequences (WGS) of Indian *Drosophila and Zaprionus* (pest) species generated through NGS Technology. Several WGS submitted to

therole of ecological factors influencing the genome variations. Our research also focuses on studying the genomics of *Wolbachia*, an obligate endosymbiont bacteria of *Drosophila* host and host-microbe association. Understanding this endosymbiont genome in different eco-geographical conditions have become imperative for the recent use of Wolbachia in medical entomology as a vector-control agent.

Vibha Rani, Ph.D.

Research area: Medical Biotechnology

Brief on Research activities:

Heart development is a highly conserved process across all vertebrate organisms. MicroRNAs (miRNAs), the non-coding RNAs are researched extensively due to their newly found role as regulators of gene expression in developmental processes. Emerging evidences suggest that specific spatio-temporal miRNA expression is required for proper embryonic developmental processes such as cardiogenesis, myogenesis, hematopoisis and neurogenesis. These small RNAs are the critical regulator of differential gene expression. When, how and where they are expressed during the various stages of heart development is the objective of ongoing research that will increase understanding of gene regulation during vertebrate heart development and diseases.

Shweta Dang, M. Pharm, Ph.D.

Research area: Novel Drug Delivery system

Brief on Research activities:

Drug loaded polymeric nanoparticles (chitosan, PLGA) are being investigated to improve the delivery and bioavailability of anti-epileptic drugs, anti-Alzheimer's drugs, neuropathic pain and for some other CNS related drugs. Nanoemulsions encapsulating some natural antimicrobial compounds (catechins and flavanoids) are being investigated for enhanced efficacy and bioavailability. These nano carriers-based formulations help improve the stability of hydrophobic drugs, rendering them suitable for administration, improving biodistribution and pharmacokinetics, resulting in improved efficacy, reduction in adverse effects because of less peripheral circulation.

Vibha Gupta, Ph.D

Research area: Structural Biology

Brief on Research activities:

In view of the rapid pace with which multidrug resistant strains of almost all group of pathogens are emerging, the need for new antibacterial compounds cannot be overemphasized. Research efforts of the Structural Biology group are focused towards deciphering the structure-function of novel drug targets from human pathogens responsiblefor infecting respiratory and/or gastrointestinal tract and understanding how the target contributes to the virulence processes of the pathogen. Research techniques employed to unravel the molecular structure and functional mechanism of a target protein of interest are recombinant DNA technology, protein purification, X-ray crystallography, biochemistry, binding affinity studies, bioinformatics tools including molecular dynamic simulations. Our Current focus is on following potential drug targets:

1. CysE / Serine acetyltransferase - The enzyme is known to be essential for survival of persistent *M. tuberculosis, E. histolytica, H. Influenzae*, etc. and are absent in *Homo sapiens*. Therefore, this pathway is worth exploring for developing new antimicrobial compounds. Wehave performed the structural and kinetic analysis of two previously uncharacterized CysE from pathogenic bacteria. *Klebsiella pneumonia* (Kpn) and *Shigella flexneri* (Sfl). Crystal Structure of KpnCysE has been determined up to 3 Å. Detailed studies have revealed better substrate affinity and stability of the former enzyme compared to the later. A promising natural product inhibitor that inhibits KpnCysE, SflCysE and*E. coli* CysE better than physiological feedback inhibitor cysteine,has been identified and may form a basis for drug discovery and therapeutic development.

2. Isocitrate lyases involved in Glyoxylate and methylcitrate cycles: These have proven essentiality for persistence of *Mycobacterium tuberculosis* in its host and play an important role in metabolism of even and odd chain fatty acids via β-oxidation. Therefore, utilization ofthese fatty acids as carbon source allows *M. tuberculosis* to survive under nutrient deprived conditions in the host cell and hence helps in its persistence. We have characterized ICL2 of *M. tuberculosis* and identified a natural product inhibitor of both ICLs through *in silico* screening.

Chakresh Jain, M.Sc., MCA, ALCCS (eqvt. M. Tech-CS), Ph.D.

Research area: Bioinformatics

Brief on Research activities:

Research group focuses on the development of pathogenic microbial network specially *Bacillus anthracis ames* and *Aspergilus fumigates Af293* and identification of potential drug target using computational methods such as machine learning and phylogeneticprofiling and tools. Work is being carried out for new algorithms and pipelines for computational si/miRNAdesigning, novel antimicrobial peptide identification and database creation on microbial pathogens. Further *in-silico* target-ligand interactions and simulation studies are also

conducted for the investigation of neuaroprotective potentials of medicinal plant compounds from selected medicinal plants.

Shalini Mani, M Sc, Ph.D, Endeavour Research Fellow,

Australia Research area: Medical Biotechnology, Cellular

Bioenergetics Brief on Research activities:

Major research is focused upon the role of cellular bioenergetics in human health and diseases. Mitochondria, being a powerhouse of the cellular system are a most important organelle. Hence, any perturbation in mitochondrial metabolism may affect different organs which may in turn cause several diseases/disorders. Mitochondria, being a powerhouse of the cellular system, are a most important organelle. Along with ATP generation it also helps in removal ofoxidative stress from the system. Hence, any perturbation in mitochondrial metabolism may affect several organs and hence cause several diseases/disorders. In the last decade only, research based on various aspects of mitochondria started coming into the picture. As resultof which mitochondrial defects are suggested to be associated with a large number of metabolic and neurological disorders. However, the research exploring the detailed mechanism of participation of mitochondria, it's possible defects etc in causation and or progress of the large number of diseases are still in infancy. Hence, currently my primary research interest is to explore the mechanism of the pathogenic role of mitochondria in common metabolic diseases like cancer and diabetes. To understand the same, my lab is mainly focusing on bioenergetics of the cell system, redox imbalance, mitochondrial genome instability, copy number variation of mtDNA, its possible genetics and mitochondrial- nuclearcross talk during cancer and diabetes.

Our group is also exploring the therapeutic potential of several herbs, known to be rich in potential anti-cancerours natural compounds. Some of these herbs may target the mitochondria of cancerous cells and termed as herbal mitocans. We are aiming to study these herbs and their natural compounds for their anti-proliferative and mitochondria targeting ability using different in-silico (molecular docking and simulation) and in-vitro assays.

Priyadarshini, Ph.D.

Research area: Medical Biotechnology

Brief on Research activities:

My research focuses on understanding the molecular mechanism of urolithiasis. Since urolithiasis is a multifactorial disease, investigating the factors underlying the cause and curative management of this disease is the general goal of my research. Various biomolecules and reactive oxygen species is important factors which influence mechanism of kidney stone formation. The research work involved the identification and characterization of a novel protein

inhibitor against calcium oxalate crystal growth. Different phytocompounds have antiurolithiatic properties, we are trying to combine these phytocompuonds to prepare an effective anti-urolithiatic formulation.

Manisha Singh, BPT, MPT (Neurology), FNR, PhD

Research area: Novel Drug Delivery Systems

Brief on Research activities:

The main difficulty to treat CNS disorders is to deliver the drug at site as the complex anatomy of the brain and "blood brain barrier" put a restriction to most of the molecules to cross and reach inside the brain. Nasal route is chosen for drug delivery as it can cross the olfactory pathway by one or a combination of pathways. My research work is inclined towards developing a drug delivery system that has targeted affinity, site specificity in case of Central Nervous System Disorders (CNS Disorders) like Alzheimer's disease, Epilepsy, Psychosomatic disorders etc., which can reduce their dose, adverse effects and can enhance rate and extent of drug transport. I have developed many such nanoformulations such as - Polymeric nanoparticles by different methods (ionic gelation, Coacervation etc.), metallic NPs (Gold NPs, Graphene oxide), nano/microemulsions, Hydrogels, nanogels, microspheres and other novel formulations like - transdermal patches etc. were explored to encapsulate various plant basedmedicinal (*Gingko biloba,* Catechin hydrate, etc.) and drugs (Gabapentin, Escitalopram, hydrochlorothiazide) compounds for targeted delivery. Further, their characterizations and *in vitro* toxicity and safety evaluation were also done on cell lines (NB41A3, RPMI2650, Vero etc) models. These nanoformulations help in increasing theefficacy, bioavailability and stability of these compounds and make them more therapeuticallypotential.

Sonam Chawla, PhD

Research Area: Ageing and Hypoxia Biology

Brief Overview of Research Activities

Ageing population worldwide is a beckoning burden on the healthcare industry in the near future. Oxygen is a participant in maximum number of biochemical reactions. Its' biological levels – low (hypoxia) or high (hyperoxia) both can have pathological consequences, especially in the elderly. My research focuses on investigation of oxygen homeostasis in mammalian systems and its influence on the ageing process. I am also keen on developing suitable biological models to simulate ageing and investigate herbals/phytomolecules for regulation ofoxygen homeostasis and the ageing pathways. The expanding geratric population is also susceptible to infections in light of the prevalent inflammaging and co-morbidities. Thus, I am keen to investigate novel antimicrobials with minimal side-effects.

Shazia Haider

Research Area: Bioinformatics

Brief Overview of Research Activities

Another major area of research is in Systems Biology of Bioinformatics. The experimental study of human protein and microRNA, transcription factors in the area of Cancer and its associated diseases. Dysregulation or inhibition of apoptosis favours cancer and many other diseases. Understanding of the network interaction of the genes involved in apoptotic pathway, therefore, is essential to look for targets of therapeutic intervention. By network theory methods, using experimentally validated sets of apoptosis-regulatory-proteins, identifying important genes for apoptosis regulation separately, which demonstrated a hierarchical scale-free fractal network. The approach of Systems Biology study can be disseminated in two sections, first to study Protein-Protein Interaction network and second byconstructing combinatorial regulatory Interaction network which involves the regulatory genes interaction with TF and microRNA. In future, biochemical investigation of the observedhub-interacting partners could provide further understanding about their role in the pathophysiology of cancer.

Nidhi Batra

Research Area: Bioinformatics

Brief Overview of Research Activities

Major research area focuses on utilizing molecular modeling techniques including structure modeling, molecular dynamics simulations and computer-aided drug design to answer various aspects of disease biology ranging from diseases like tuberculosis to neurological disorders to skin cancers. I have utilized molecular simulations to understand the mechanism and biology of critical autophagy proteins, RNA-protein interactions and many GPCRs. My area of research mainly involves utilizing molecular modeling approaches to understand various aspects of GPCR Biology which includes activation mechanism, decoding the effect of various post-translational modifications on structural and functional dynamics of GPCRs. Pursuing research for all these years helped me in gaining a profound understanding of core computational techniques viz. molecular modeling mainly focusing on computational structural biology, molecular dynamics simulation and CADD. This allows me to extend my expertise to other areas of disease biology. In addition, I have also started to broaden my horizon to other areas of computational genomics including big data analysis and systems biology to gain experience and expertise.

v LIST OF DOCTORAL STUDENTS

A. Completed

S. No.	Enrollment No.	Name	Research Topic	Supervisor(s)	Ph.D. Awarded
1	8401003	Shikha Shamra	Development of nanoparticle based glucose biosensor	Prof Sudha Srivastava	2012
2	6401007	Aditi Shrivastav	Investigating dererminants of sweetness in sweet molecules	Prof. Sudha Srivastava	2013
3	6401002	Kapila Kumar	Intraviral Protein Interactions of Chandipura virus	Prof. Sanjay GuptaDr. Reema Gabrani	2013
4	10401003	Sonal Gupta	Nano carrier based intra vaginal drug delivery system	Dr. Shweta Dang;Dr. Reema Gabrani	2015
5	10401005	Jyoti Rana	Molecular Interactions ofChikungunya	Prof. Sanjay Gupta	2015
6	10401006	Sreejith R.	Viral host Protein interactions inChandipura virus pathogenesis	Prof. Sanjay Gupta	2015
7	8401005	Namrata Dudha	Mapping interactions of Chikungunya virus structural proteins	Prof. Sanjay Gupta; Dr .Reema Gabrani	2015
8	11401104	Nidhi Bajpai	Implementation of clinical data management of vaccines with respect to data management activates in an indian pharmaceutical company	Prof. Sanjeev K.Sharma; Dr. Shweta Dang	2015
9	10401004	Neha Atale	Effect of *Syzygiumcumini* in glucose induced cardiac inflammation	Dr. Vibha Rani; Dr. Sujata Mohanty	2016

10	12401105	Deepak Sharma	Investigation of nanoparticle approach for improved brain delivery of antiepileptic drugs through nasal route	Dr. Shweta Dang; Prof. S. K. Sharma; Prof Javed Ali	2016
11	11401107	Ragini Raghav	Development of a nanoparticle based immunosensor for cancer antigen ca-125	Prof Sudha Srivastava	2016
12	9401006	Jaisri J.	Constructing comprehensivemap of molecules implicated in obesity using computational approaches	Dr. Kamal Rawal	2017
13	12401101	Garima Sharma	Purification, characterizationand antibacterial studies of bacteriocin from dairy forms isolates	Dr. Reema Gabrani; Prof .Sanjay Gupta	2017
14	13401105	Yashika Rustagi	Profiling and characterization of microRNAs from 10th day of chick embryonic heart	Dr. Vibha Rani	2018
15	13401101	Nancy Taneja	Study of mitochondrial defects and VDR polymorphisms in Type-2 diabetes	Dr. Shalini Mani; Dr. Priyadarshini	2019
16	14401008	Aditi Jain	Effect of curcumin on druginduced cardiotoxicity	Prof. Vibha Rani	2019
17	14401010	Radhika Khanna	Novel sequences generation and comparative analysis of Indian Drosophila and Zaprionus species	Dr. Sujata Mohanty	2019
18	14401011	Samiya Khan	Development of a biocatalyst forrefining diesel	Prof. Sanjay Gupta; Prof. Pamm iGauba	2019
19.	16401006	Atinderpal Kaur (BioCARe-Women Scientist)	Development of drug loaded nanoemulsion based formulations	Dr. Shweta Dang	2020

20.	16401004	KopalSinghal (CSIR- SRF)	Comparative genomics of Wolbachiaendosymbiont from Indian drosophilaspecies	Dr. Sujata Mohanty	2020
21.	14401012	DeepaliVerma	Biochemical and structural studies of CysE from pathogenic bacteria causing respiratory a nd gastrointestinal infections	Dr. Vibha Gupta	2020
22.	15401005	Sharad Saxena (CSIR-SRF)	Characterization of MMP7 potential therapeutic target cardiac stress	Prof. Vibha Rani	2020
23.	15401008	Rahul (Inspire Fellow)	Fabrication of nanotechnology based pointof care device for diagnosis of thyroid dysfunctioning	Prof. Sudha Srivastava	2020
24.	16401006	Atinderpal Kaur	Development of Drug loaded nanoemulsion ba sedformulations for Urinary tract infection	Dr Shweta Dang, Prof. Reema Gabrani	2020
25.	14401012	Deepali Verma	Biochemical and structural insights into bacterial CysEs: Rational discovery of novel inhibitors for AMR interventions	Dr Vibha Gupta	2020
26.	16401001	Kuldeep Nigam	Nano-Carrier Based Approach for Neuropathic Pain Management	Dr Shweta Dang	2020
27.	14401013	Garima Agarwal	Identification and Characterization of Peptide Binders for Chikungunya	Prof. Reema Gabrani	2022

			VirusEnvelope 2 Protein		
28	15401009	Sunita Gupta (Women Scientist)	Inhibitor discovery for mycobacterial biosynthetic pathway to cysteine	Dr. Vibha Gupta	2023
29.	15401007	Monika Antil (InspireFellow)	Development of inhibitors to target isocitratelyases of *M.Tuberculosis*	Dr. Vibha Gupta	2023
30	15401001	Dibya Rani (Inspire Fellow)	Nanoparticle based vaccine against Hepatitis E virus	Dr.Sudha Srivastava Dr. B. Nayak	2023
31	17401001	Chetna Faujder	Anti-urolithiatic potential of selected Indian medicinal plants	Dr. Priyadarshini	2023
32	17401006	Ritu Ghildiyal (CSIR- SRF)	Elucidation of host chikungunya virus nonstructural protein interactions and in silico analysis for co-infrection	Dr. Reema Gabrani	2023
33	18401013	Priyanka Mathur	Investigating microRNAs as the Next Generation Therapeutic Targets in Diabetic cardiomyopathy	Dr Vibha Rani	2023

B. Ongoing PhDs

S. No.	Name	Research Topic	Supervisor(s)	Year of Registration
1	17401004	Megha Gautam	Identification and characterization of drug combination for Glioblastoma Multiforme	Dr. Reema Gabrani	2017

2	17401005	Preeti Thakur	Water pollution and remediation	Prof. Pammi Gauba	2017
3	17401009	Geeta Swargiary	Anticancerous herb as mitocans	Dr. Shalini Mani	2017
4	18401016	SakshiTyagi	Vitamin D as anticancerousagent	Dr. Shalini Mani	2018
5	18401002	Pankaj Kr. Tripathi	Computational method forpotential gene identification	Dr. Chakresh K Jain	2018
6	18401004	Yogender Thakur	Mobile genetic elementsincancer	Dr. Chakresh K Jain	2018
7	18401009	Abhay Gautam Bankar	Key gene identification inlung cancer therapeutics	Dr. Chakresh K Jain	2018
8	18401017	Shilpa Gundagatti	miRNA Based Electrochemical Biosensor for Ovarian Cancer Diagnosis	Prof. Sudha Srivastava	2018
9	18401010	VandanaTandasi	Development of aptamer-based biosensor	Prof. Sudha Srivastava	2018
10	18401015	Shikha Mishra	Diabetic nephropathy	Dr. Priyadarshini	2018
11	18401001	Shivani Sharma	Biological pathwaysand diseases	Dr. Priyadarshini	2018
12	18401005	Kumkum Sharma	Cardio-protective effect of aged garlic extract	Dr. Vibha Rani	2018
13	19401001	Pallavi Kumari	Nanocarriers for the therapeutics for effective drug delivery	Dr. Shweta Dang	2019
14	19401002	Surbhi Sharma	Drug deliverythrough Nanotechnology in Brain	Dr. Shweta Dang	2019
15	19401003	Renu Bhadana	Cardiovascular Pharmacology	Dr. Vibha Rani	2019

16	19401004	Namita Sharma	Development of Biosensor for early diagnosis of Pancreatic Cancer	Prof.Sudha Srivastava	2019
17	19401006	Vijeta Prakash	Anti-cancer therapy	Dr. Reema Gabrani	2019
18	19401008	Divyanshi Jain	Understanding ecology and evolution perspective of trait variations in Indian *Drosophila*	Dr. Sujata Mohanty	2019
19	19401013	Shivani Singhal	Ayurvedic herbal formulations inmodulating gut microbiota associated withdiabetic cardiomyopathy	Dr. Vibha Rani	2019
20	19401014	Satyender SinghYadav	Cancer Biology	Dr. Susinjin Bhattacharya	2019
21	20401004	Shristi Sharma	Dissecting the molecular aspect of insecticide - induced behavioral response towards lifehistory traits in Drosophila model.	Prof. Sujata Mohanty	2020
22	20401005	Rupesh Kumar	A bioinformatics approachto understand amyotrophic lateral sclerosis (als)	Dr. Shazia Haider	2020
23	20401011	Nikita Bindal	Screening of potential nutraceuticals and toxicity assessment in health and diseaseusing drosophila model.	Prof. Sujata Mohanty	2020
24	20401007	Priyadarshini Gupta	Investigation of Indian herbs as ACE2 and TMPRSS2 modulator in Hydroxychloroquine induced Cardiotoxicity	Dr.Vibha Rani	2020
25	POP10019	Aayesha Gupta	Bioprospecting Indian MedicinalPlants for anti-ageing potential	Dr. Sonam Chawla	2020
26	POP10093	Shashikala	Computational Biology studyin rare disease	Dr. Shazia Haider	2020
27	POP10024	Abhimanyu	Investigation of DiseaseBased Molecular Interactions and networks using computational Techniques	Dr. Chakresh Jain	2020

28	20401013	Ritkia Garg	E- waste its remediation and impact	Prof. Pammi Gauba and Prof. Shweta Dang	2020
29	22401004	Garima Rai	Nano-carrier baseddrug delivery for CNS disorders	Prof. Shweta Dang	2022
30	PHG220019	Ankit Kumar	Potential role of Trigonellafoenum gracecium in diabetes and cancer.	Prof. Vibha Rani	
31	23401002	REKHA	High Altitude Biology	Dr. Sonam Chawla, Dr Rajkumar Tulsawani (DIPAS, DRDO)	
32	23401012	Piyush Kumar	miRNA based biosensor for cancer screening	Prof. Sudha Srivastava	
33	23401009	Shalini Sharma	Exploring combination therapies for CNS disorders	Prof. Shweta Dang and Dr. Surabhi Johari	
34	23401011	Nikita Arora	Novel Drug delivery for brain	Prof. Shweta Dang	
35	23401016	Divya Sharma	Targeted drug delivery for CNS disorders	Prof. Shweta Dang	