CURRICULUM VITAE

Dr. Sanjit Kumar
Associate Professor
Department of Biotechnology
School of Interdisciplinary Education and Research
Guru Ghasidas Vishwavidyalaya, Bilaspur
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Education:

- PhD (All India Institute of Medical Sciences (AIIMS), New-Delhi).
- MSc (DAVV Indore)

Work Experience

March2023- Present: Associate Professor, Department of Biotechnology GGV, Bilaspur, Chhattisgarh
January2023-Feb2023: Associate Professor, Centre for Bio-separation and Technology, VIT-Vellore
March2014-December2022: Assistant Professor, Centre for Bio-separation and Technology,VIT-Vellore
Feb 2013 –Feb2014: DST-Young Scientist Investigator, NIT, Rourkela, Odisha

EXPERTISE:

Structure Biology & Protein Biochemistry

- Biological X-ray Crystallography
- Protein Biochemistry
- Activity and Structures of enzymes
- Biochemical characterization of proteins/enzymes
- Structure based design of enzyme inhibitor molecules of therapeutic interest for pharmaceutical applications

CURRENT RESEARCH INTERESTS

- Biochemical and structural characterization of Lectins.
- Structural and function studies of Ubiquitin ligase
- Antimicrobial resistant /t-RNA modifying enzymes
- Development of Monoclonal Antibodies

RESEARCH SKILLS

- **Protein Chemistry:** Well versed with cloning, expression, extraction, isolation and purification of proteins using various types of chromatographic techniques, including FPLC, HPLC, AKTA Purifier systems. Purified various enzymes and proteins.
- **Crystallization:** Expertise in different techniques used in crystallization of bio-macromolecules. Such as vapour diffusion, capillary and batch methods
- **Macromolecular crystallography and Bio-informatics:** Expertise in software used in datacollection, data processing, structure solution, refinement, structure validation etc. in x-ray crystallography of biomacromolecules. Collected many dataset on image plate scanners using in house data collection facility at AIIMS.and ESRF Grenoble
- **Computer knowledge**

  Operating systems- Windows, Graphic workstations O2, Iris etc. with UNIX. Use to MS Office (MS Word, MS Excel, MS Power Point etc.). Internet Searching

using various browsers and search engines. Applications of internet in biological experiments

HONOURS AND AWARDS (Best 05)

- DST young scientist fellowship 2013
- Best Poster award in International Biophysics Congress-2005 Montpellier, France
- Selected as a participant In RAPID DATA 2010 course work in Brookhaven National Laboratory, New-York in April 10-17th 2010.
- Data collection in synchrotron at ESRF, Grenoble, France from 29th Sep to 2nd of October 2011
- Data collection in synchrotron at ESRF, Grenoble, France from 15th June to 24th of June 2012

RESEARCH PROJECTS (09)

	Project Title	Source of Funds	Amount	Duration
1.	Understanding the mechanistic role of adenosine deaminase in purine salvage pathway of *Mycobacterium tuberculosis* (Role: **PI)**	SERB-CRG Grant	49.5 Lakhs	Approved (2023-2026)
2	Characterization of tRNA Adenosine Deaminase from *Pseudomonas aeruginosa.* (Role: **Co-PI**)	ICMR New-Delhi	52.0 Lakhs	Approved (2023-2026)
3	A simple, rapid and affordable vitamin D diagnostic microfluidic strip. (Role: **Co-PI**)	ICMR New-Delhi	20.4 Lakhs	2022-2025
4	Development and trial of potential inhibitors of Biofilm formation in MDR bacteria: Novel approach to combat nosocomial infections (**Role-PI**)	ICMR New-Delhi	15.0 Lakhs	2021-2024
5	Structure based inhibitors design for Lpx-H (UDPdiacylglucosaminepyrophosphohydrolase) involved in Gram-negative bacterial lipid A biosynthesis (**Role : PI**)	ICMR New-Delhi	32.0 Lakhs	2019-2023 (Extension)
6	A simple microfluidic diagnostic chip for rapid and sensitive evaluation of Vitamin D deficiency. (Role: **Co-PI**)	DBT New-Delhi	42 .0 Lakhs	Completed (2019-2022)
7	A simple and robust microchip to screen post translational modifications in Human Plasma, **(Role: Co-PI)**	SERB-DST	28.0 Lakhs	Completed (2019-2022)
8	"Structural and functional characterization of SRrp508'' CSIR-Gov of India as CO-PI sanction for 2016-2019.	CSIR	23.0 lakhs	Completed (2016-2019)
9	Structural studies of Plant pathogenesis related proteins (PI)	SERB-DST	18.0 Lakhs	Completed (2013-2016)

Constancy Grant: In-Silico analysis of various insulin variants (Role-PI) Sekkei (SEKII) Bio Pvt. Ltd., 3lakhs

TEACHING EXPERIENCE

- Taught UG/PG/PhD. Students
- **Subjects Taught, Theory and Lab:**
  - ✓ Protein Engineering.
  - ✓ Protein Engineering and Design
  - ✓ Molecular Biology
  - ✓ Biochemistry
  - ✓ Food Health and Nutrition
  - ✓ Molecular Modeling and Drug Design
  - ✓ Structural Biology and Bioinformatics
  - ✓ Analtytical techniques in Biotechnology

PhD Students guiding/guided

PhD students guided

	PhD student Name	Title	PhD VIVA Date	Current Employment
1	Dr. Sanjay Naik	"Purification, Biochemical characterisation and Therapeutic Applications of lectins from *entada rheedii* and *hyacinth orientalis* plants"	22/12/2021	Post-doc in cold spring harbour laboratory https://www.cshl.edu/research/postdoctoral-research/postdocs/sanjay-naik/
2	Dr. Ramesh R	"Autoimmune and Inflammatory Features in Psychiatric Disorders	13/05/2022	Assistant scientific manager (ASM) Biocon Chennai
3	Dr. Ravindra Singh Rawat kundan	"Cloning, Expression, Purification and Biochemical Characterization of Adenosine Deaminase from Mycobacterium tuberculosis (MtbADA)"	13/02/2023	Assistant scientific manager (ASM) Biocon Bangalore

PhD Students guiding

- **Sudhir Kumar Pal :** Structural and functional studies of Zn2+-metalloamidase LpxC from *Salmonella Typhi:* The rate limiting enzyme for the synthesis of Lipid A endotoxin **05July2017**
- **Suraj Singh :** Biochemical characterization, substrate specificity, and molecular understanding of Sortase A from *Enterococcus faecalis* **18July2018**
- **Divyapriya K**: Structural and functional studies of Lpx-H (UDP-diacylglucosamine pyrophosphohydrolase) from Salmonella typhi: A key enzyme in gram-negative bacterial lipid A biosynthesis **08 Jan 2020**
- **Jansi Rani Malaiyappan :** Structural and functional studies of tRNA modifying enzymes **20 Dec 2021**
- **Harshil Samir Bhatt:** Rational Structure Based Inhibitors Design against enzymes responsible for causing Nosocomial Infections. **07 July 2022**

International PhD Students

- **SILEU DOMBOU Armelle Leslie:** DBT-TWAS programme (March 2022- September2023)

PUBLICATIONS (40) https://scholar.google.com/citations?user=wGxiEdoAAAAJ&hl=en

Best Ten Papers

1. Shukla PK, Bissell JE, **Kumar S**, Pokhrel S, Palani S, Radmall KS, Obidi O, Parnell TJ, Brasch J, Shrieve DC, Chandrasekharan MB. Structure and functional determinants of Rad6-Bre1 subunits in the histone H2B ubiquitin-conjugating complex ***Nucleic Acids Res***. (2023) Mar 21;51(5):2117-2136. doi: 10.1093/nar/gkad012 (**IF: 19.1**)

2. Pal SK, **Kumar S.,** LpxC (UDP-3-O-(R-3-hydroxymyristoyl)-N-acetylglucosamine deacetylase) inhibitors: A long path explored for potent drug design ***Int J Biol Macromol***. (2022) Dec 21:S0141-8130(22)03090-2. doi: 10.1016/j.ijbiomac.(**IF:8.08**)

3. Naik S., **Kumar S**., Lectins from plant and algae act as anti-viral against HIV, influenza and coronaviruses, ***Molecular Biology Reports***, (**2022**) DOI: 10.1007/s11033-022-07854-8 (**IF:2.8**)

4. Naik S., Deora N., Pal S.K., Ahmed M.Z., Alqahtani A.S., Shukla P.K., Venkatraman K., **Kumar S.,** Purification, biochemical characterization, and DPP-IV and alpha-amylase inhibitory activity of Berberine from Cardiospermum halicacabum, ***Journal of Molecular Recognition,*** (2022)DOI: 10.1002/jmr.2983 (**IF: 2.5**)

5. Chakraborty D., Ghosh D., **Kumar S.,** Jenkins D., Chandrasekaran N., Mukherjee A.,Nano-diagnostics as an emerging platform for oral cancer detection: Current and emerging trends, ***Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology,*** (2022) DOI: 10.1002/wnan.1830 (**IF: 9.4**)

6. Jadaun P., Seniya C., Pal S.K., **Kumar S**., Kumar P., Nema V., Kulkarni S.S., Mukherjee A., Elucidation of Antiviral and Antioxidant Potential of C-Phycocyanin against HIV-1 Infection through In Silico and In Vitro Approaches, (2022) ***Antioxidants***, Vol:11, Issue: 10, DOI: 10.3390/antiox11101942 MA (**IF: 7.6**)

7. Naik S., **Kumar S.,** Biochemical Characterization of Lactose Binding Entadin Lectin from Entada rheedii Seeds with Cytotoxic Activity against Cancer Cell Lines, ***ACS Omega***, (2021) DOI: 10.1021/acsomega.0c00577 (**IF:4.2**)

8. Naik S., Rawat R.S., Khandai S., Kumar M., Jena S.S., Vijayalakshmi M.A., **Kumar S.,** Biochemical characterisation of lectin from Indian hyacinth plant bulbs with potential inhibitory action against human cancer cells, ***International Journal of Biological Macromolecules***,(2017)Vol:105,Pg.No(1349-1356),DOI:10.1016/j.ijbiomac.2017.07.170 (**IF:8.08**)

9. Extraction, purification, and biochemical characterization of serine protease from leaves of Abrus precatorius, Serge N.E., Laurette Blandine M.K., **Kumar S***., Clerg T., Vijayalakshmi M., (**2017**)***Preparative Biochemistry and Biotechnology,*** Vol:47, Issue: 10, Pg.No(1016-1024), DOI: 10.1080/10826068.2017.1373289 (**IF:3.1**)

10. Dwivedi AK, Gurjar V, **Kumar S**, Singh N.Molecular basis for nonspecificity of nonsteroidal anti- inflammatory drugs (NSAIDs). ***Drug Discov Today*.** 2015 Mar 17 **(IF:8.3)**

Book Chapters: (05)

Administrative responsibilities

- ✓ NAAC and IQAC member CBST VIT-Vellore (2016-23)
- ✓ ARIIA coordinator (2018-2020)

Recogonized journal reviewer

- ✓ *International Journal of Biological Macromolecules* (IF :8.08)
- ✓ *Journal of Biomolecular Structure and Dynamics* (IF:5.3)
- ✓ *Preparative Biochemistry and Biotechnology* (IF:3.2)
- ✓ *Journal of Molecular Recognition* (IF:2.5)

Conferences/Workshops (Best 05)

- ✓ Two week training programme on "A-Z in Biomedical Device Development from 24/05/2021 to 08/06/2021 organized KIT-TBI Nidhi **Attended**
- ✓ Organised two days online conference on "Covid-19 disease control- opportunities and challenges for drug discovery and development; drug repurposing and alternative medicine 24-25th July 2020
- ✓ International conference on Antibiotic resistance breakers and Diagnostic biomarkers (ICARB), BSAR Crescent University, Chennai, India (2017). **Delivered Oral lecture**
- ✓ One-week International Conference "iCBIT - International Conference on Biotechnology and Interdisciplinary Technologies 2021" in the Virtual mode from November 8th to 12th 2021 **Keynote Address and Session Chair**
- ✓ DAVV Indore, UGC-HRDC in Refresher Programme in Life Sciences (Core) (Online Mode) for University & College teachers starting from 14 th March 2023 to 27 th March 2023. **Delivered Oral lecture**

Research Collaboration

Dr. Kali Kishore Reddy Tetala (MPhil, PhD) Associate Professor Centre for Bioseparation Technology (CBST) Vellore Institute of Technology (VIT) Vellore, TN, India-632014 Email: Kishore.tetala@gmail.com / kishore.tetala@vit.ac.in	Dr. Nagendra Singh Assistant Professor Biotechnology University School Of BioTechnology Head Of The Department (HOD) Of Biotechnology Gautam Buddha University (Greater Noida)

Grant Reviewer: DBT- Biotechnology Industry Research Assistance Council (BIRAC)

Awards for Research team members

Student Name	Award/Grant	Name of the Conference	Location	Date	Year
Divyapriya Kartikeyan	AsCA travel award	17th conference of the Asian Crystallography Association	Jeju Island, South Korea	30th October – 2th November	2022
	Bursary award	From the Immunology Foundation for attending the AsCA meeting			2022
	Best oral presentation award	International Conference cum Workshop on Plant Molecular Biology & Bioinformatics organized by Indian Science Congress Association (ISCA) and Pondicherry University	Pondicherry, India	13th -15th February	2023
Suraj Singh	Best poster award	International Conference cum Workshop on Plant Molecular Biology & Bioinformatics organized by Indian Science Congress Association (ISCA) and Pondicherry University	Pondicherry, India	13th -15th February	2023
Jansi Rani Malaiyappan	Best poster award	International Conference cum Workshop on Plant Molecular Biology & Bioinformatics organized by Indian Science Congress Association (ISCA) and Pondicherry University	Pondicherry, India	13th -15th February	2023
Sanjay Naik	Foreign travel grant	Asian Crystallography Association (AsCA)	Singapore	17th -20th December	2019

Dated: 25/03/2023 Sanjit Kumar