

Curriculum Vitae

Personal and Contact Information

Ruchi Anand
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Education

1999-2004	PhD, Chemistry	Cornell University, Ithaca NY USA
1996-1998	MSc., Chemistry	Indian Institute of Technology (IIT) Kanpur, UP, India
1993-1996	BSc., Chemistry	Miranda House, Delhi University, Delhi, India

Professional Experience

05/2024- Present Head, Department of Chemistry and Institute Chair Professor
12/2018- Present Professor of Chemistry, IIT Bombay, Mumbai, India
07/2014-11/2018 Associate Professor of Chemistry, IIT Bombay, Mumbai, India
05/2008-06/2014 Assistant Professor of Chemistry, IIT Bombay, Mumbai, India
01/2005-06/2008 Post Doctoral Research Scientist, University of Pennsylvania/Wistar Institute, Philadelphia, Pennsylvania, USA
01/2003-12/2004 Post Doctoral Howard Hughes Fellow, Sloan Kettering New York, NY, USA
08/1998-05/2002 Teaching Assistant, Cornell University, USA

Awards and Honors

- Elected as *Fellow of The World Academy of Sciences (TWAS)*, 2025
- Elected as the *President of the Indian Biophysical Society (IBS)*, 2025
- Elected as the *President of the American Chemical Society Local Chapter* (West Region), 2024
- Inducted as an *Associate Editor* of *ACS Biochemistry*, 2024
- Recipient of the *J. C. Ghosh Memorial Award* (Indian Chemical Society), 2023
- Recipient of the *Sun Pharma Science Foundation Research Award*, 2023
- Inducted as a Member of editorial advisory board of *Journal of American Chemical Society*, 2023
- Inducted as a Member of editorial advisory board of *ACS Journal, J. Phys. Chem (A/B/C)* 2023.
- Inducted as a Member of the Advisory Board of *RSC Journal Chemical Society Reviews* 2023
- Recipient of the *Prof. S.C. Bhattacharya Award, Excellence in Research in Pure Sciences*, 2023
- Fellow of *Indian National Science Academy (INSA)*, 2023
- Institute Chair Professor, *Indian Institute of Technology Bombay*, 2022
- Fellow of *Indian Academy of Sciences (IASc)*, 2022
- IIT Bombay Impactful Research Award, *Indian Institute of Technology Bombay*, 2021
- Inducted into the International Advisory Board of *Asian JOC*, 2021
- Member of International *IUPAC CHEMRAWN* committee, 2021
- Inducted as a Member of the *Research Council* of Indian Institute of Chemical Technology, 2020

- Elected member of the *Guha Research Conference*, 2020
- Recipient of the **AV Rama Rao Foundation Lecture Award** at JNCSAR, 2020
- Recipient of the *Chemical Research Society of India (CRSI)* bronze medal, 2020
- Inducted as a Research Council Member of Indian Institute of Chemical Technology, 2020
- Selected member of *Chemical Research Society of India (CRSI) Council*, 2020-2023
- Recipient of the *India Alliance DBT-Wellcome Trust Senior Research Fellowship*, 2019
- Elected fellow of the *National Academy of Sciences (FNASc)*, 2019
- Core committee member: *Water Innovation Centre (WICTRE)*, 2019
- Member of *International Program Committee* for *AsCA*, 2019
- Elected *Secretary, Royal Society of Chemistry (RSC) West India Section*, 2019 onwards
- Elected member *Executive Council of the Indian Biophysical Society*, 2019-22
- Elected member of the *International Gender Equity and Diversity Committee of IUCr*, 2019
- Inducted as a Member of the *Asian Chemical Biology Initiative (ACBI)*, 2019
- Recipient of *B.K Bachhawat International Travel Grant*, 2019
- Recipient *National Women Bio-scientist Award*, Department of Biotechnology, 2018
- Recipient *Young Outstanding Researcher Award*, International Conference on Recent Trends in Material Science and Technology, October, 2018
- Member *Editorial Advisory Board “ACS Sensors”* an American Chemical Society Journal, 2016
- *Faculty Mobility Award* for Faculty Exchange to Northwestern University, 2016
- Royal Society of Chemistry, Mumbai Chapter, *Madam Curie Women Scientist Award*, 2012

Administrative and Academic Positions

- **Convener**, ACS Global Scientific Conference, IIT Bombay, 2025
- **Member of the Research Advisory Council** of National Institute of Immunology, Delhi, 2025
- **Member of the Research Advisory Council** of National Centre for Cell Sciences, Pune, 2025
- **Member of the Research Advisory Council** of Bose Institute, Kolkata, 2025
- **Convenor**, RNA Chemical Biology Symposium, 2025
- **Convenor**, FCS XV and OWLS, IIT Bombay, 2024
- **Convenor**, Physical Chemistry Symposium, SoPhyC, IIT Bombay, 2024
- **Adjunct Professor**, School of Natural Sciences, Shiv Nadar University, Delhi, 2024
- **Convener**, International Symposium on Understanding the Breathing of Biomolecules: Recent Advances in Cryo-EM and Chemical Biology, IIT Bombay, 2023
- **Convener**, SERB VORTEX Cryo-EM Workshop, IIT Bombay, 2022
- Received SERB grant for setting up the National Cryo-EM facility (28 cr. INR) at IIT Bombay, 2020
- **Expert Member** SERB committee for SERB - POWER Fellowship (Promoting Opportunities for Women in Exploratory Research), 2021
- **Expert Member**, Organic Chemistry Task Force, SERB, 2021 onwards
- **Expert Member**, SERM-STAR award committee, 2021 onwards
- **Convenor**, VORTEX on Present Status and Future Prospects on Preparedness of Utilization of SERB National Cryo-Electron Microscopy Facilities, 2021
- Special Invite **Expert Committee** for COVID-19 Research, SERB, 2020
- Special Invitee **Expert Committee** Interdisciplinary Biological Sciences Task Force SERB, 2020

- **Chairperson** IIT Bombay Hospital Management Committee, **2019-2021**
- Member Special **Expert Committee**, DST for Water Technology Initiative, **2019**
- **Convener**, Indo-German Joint Workshop in Chemical Biology, IIT Bombay, **2019**
- **Convener**, Vigyan Jyoti Program: Three Week DST Women in Science Initiative to enhance awareness of science and technology among school girls, **2018**
- **Expert Member Committee** DBT-RA National Program in Biotechnology & Life Sciences **2019-21**
- **Member Technical Expert Committee**, Energy, Environment and Biodiversity Conservation for North Eastern Region, Department of Biotechnology, **2018**
- **Member Executive Council**, Royal Society of Chemistry West India Section, **2018**
- **Member PG Board** of Studies Bioinformatics & Comp. Biology, Pondicherry University, **2018-21**
- **Member** Environmental Biotechnology, Task Force, Department of Biotechnology, **2018 onwards**
- **Member** Women in Science, Task Force, DST, Chemical Science, **2016 onwards**
- **Expert Member** of Best Thesis Selection Committee, TIFR Mumbai, **2016 onwards**
- **Vice Chairperson**, Graduate Aptitude Test, IIT Bombay (GATE), **2016**
- **Convener**, of symposium celebrating 100 years of Crystallography, on “Recent Advances in Crystallography” IIT Bombay, Mumbai, India, **2015**
- **Member** organizing committee Indo-US symposium on “Recent Advances in Structural Biology and Drug Discovery”, IIT Roorkee, India, **2014**
- **Member** organizing committee 16th CRSI National Symposium in Chemistry , IIT Bombay, **2014**
- **Session Chair** “Macromolecular Complexes and Assemblies” at the 12th Asian Crystallography Society Meeting, Hong Kong, **2013**
- **Member** organizing committee 42nd National Seminar on Crystallography and International workshop for application of X-ray diffraction for Drug Discovery, Delhi, **2013**
- **Session Chair** , “Macromolecular Complexes and Assemblies” at the 12th Asian Crystallography Society Meeting, Dec 7-10th, **2013**, Hongkong, China
- **Convener and organizer** of 4-day International Conference and Indo-US Workshop on Modern Trends in Macromolecular Structures **2011**, Mumbai, India

Publications

1. “Liposome-based delivery of DNA aptamers to inhibit erythromycin methyltransferase-mediated antibiotic resistance.” Patra, S.*, Sahu, D., Badgujar, L. L., Pradeepkumar, P.I, Anand, R.* **Chemical Communications.** (2026) **62**, 4050-4053.
2. “DNA Aptamers Mediated Inhibition of Pathogenic Erm42 Enzyme Involved in Antimicrobial Resistance” Badgujar, L. L., Sahu, D., **Anand, R***, Pradeepkumar, P.I*, **ACS Infectious Diseases** (2025) **12**, 212-223.
3. “Mechanistic Insights into 50S Precursor Targeting and Recognition by Erythromycin Resistance Methyltransferase” Sengupta, S., Mukherjee, R., Pilsel, M., Bagale, S., Adhikary, A.D., Borkar, A., Pradeepkumar, P.I., Engel, C., Chowdhury, A., Kaushal, P., **Anand, R*.**, **Science Advances** (2025) **11**, eaea1545.
4. “Mechanism of Deamination of Mycobacterial Deaminase Selectively Targeting Mutagenic Bases” Porathoor, S., Choudhury, A. R., Chakrabarti, R., **Anand, R*.**, **Nucleic Acid Res.** (2025) **53**, gkaf171.

5. “Mechanism of conformational Selection of tRNA^{Arg2} by Bacterial Deaminase TadA” Jessy Mariam, J., Porathoor, S., **Anand, R*.,** *Biochemistry*. (2025) 64, 1530 - 1540.
6. “Substrate-Induced Dynamic Regulation of the Catalytic Loop in Assisting Allosteric Communication in Formylglycinamide Synthetase” Singh, S., Kistwal, T., Datta, A., **Anand, R*.,** *J. Phys. Chem. Lett.* (2025), 16, 1582-1589.
7. “Biosensing of multiple aromatic xenobiotics in water by in-house fabricated prototype device” Sahu, S., Ramachandran, S., Bandyopadhyaya, R.*, **Anand, R*.,** *Biosensors and Bioelectronics* (2024), 250, 116077.
8. “Ultrasensitive detection of aromatic water pollutants through protein immobilization driven organic electrochemical transistors” Sahu, S., Kumar, L., Das, S., Gupta, D., **Anand, R*.,** *Chemical Science* (2024), 15, 710-719.
9. “Identifying Selectivity Filters in Protein Biosensor for Ligand Screening” Sahil, M., Singh, J., Sahu, S., Pal.K. S., Yadav, A., **Anand, R*.,** Modal, J.*, *JACS Au*. (2023), 3 (10), 2800–2812.
10. “Porous silica nanospheres: a nanoplatfrom towards protein immobilization and cogent design of biosensors for aromatic water pollutant detection” Das, S., Sahu, S., Bandyopadhyaya, R., **Anand, R*.,** *Environmental Science Nano*. (2023), 10(10), 2799-2809.
11. “Diverse strategies adopted by nature for regulating purine biosynthesis via fine-tuning of purine metabolic enzymes” Singh, S., **Anand, R*.,** *Current Opinion in Chemical Biology* (2023), 73, 102261.
12. “Phenol sensing in nature is modulated via a conformational switch governed by dynamic allostery” Singh, J., Sahil, M., Ray, S., Dcosta, C., Panjikar, S., Krishnamoorthy, G., Mondal, Jagannath., **Anand, R*.,** Horowitz, A., *Journal of Biological Chemistry* (2022), 298(10), 102399.
13. “Cooperativity in ATP Hydrolysis by MopR is Modulated by its Signal reception Domain and by its Protein and Phenol Concentrations” Singh, J., **Anand, R*.,** Horowitz, A.*, *Journal of Bacteriology* (2022), 204(8), e00179-22.
14. “Identification of allosteric hotspots regulating the ribosomal RNA binding by antibiotic resistance-conferring Erm methyltransferases” Bhujbalrao, R., Gavvala, K., Singh, R.K., Singh, J., Boudier, C., Chakrabarti, S., Patwari, G.N., Mély, Y., **Anand, R*.,** *Journal of Biological Chemistry*, (2022), 298(8), 102208.
15. “Decoding the Mechanism of Specific RNA Targeting by Ribosomal Methyltransferases” Singh, J., Raina, R., Vinothkumar, KR., **Anand, R*.,** *ACS Chemical Biology* (2022), 17(4) 829–839.
16. “Harnessing the Potential of Biological Recognition Elements for Water Pollution Monitoring” Sahu, S., Roy, R., **Anand, R*.,** *ACS Sensors* (2022), 7(3) 704–715.
17. “Mechanism of Coordinated Gating and Signal Transduction in Purine Biosynthetic Enzyme Formylglycinamide Synthetase” Sharma, N., Singh, S., Tanwar, A.S, Mondal, J., **Anand, R*.,** *ACS Catalysis* (2022), 12(3) 1930–1944.

18. "Tunnel Architectures in Enzyme Systems that Transport Gaseous Substrates" Singh, S., **Anand, R*.**, *ACS Omega* (2021), 6(49), 33274–33283.
19. "The Coenzyme A Level Modulator Hopantenate (HoPan) Inhibits Phosphopantotenoylcysteine Synthetase Activity" Mostert, KJ., Sharma, N., van der Zwaag, M., Staats, R., Koekemoer, L., Anand, R., Sibon, OC., Strauss, Eric*, *ACS Chemical Biology* (2021), 16(11), 2401–2414.
20. "Insights into the Dual Shuttle Catalytic Mechanism of Guanine Deaminase" Sen, A., Gaded, V., Jayapal, P., Rajaraman, G.*, **Anand, R*.**, *J. Phys. Chem. B.* (2021), 125(31), 8814 - 8826.
21. "Deciphering protein microenvironment by using a cysteine specific switch-ON fluorescent probe" Mariam, J., Ashoka, A, H., Gaded, V., Ali, Firoz., Malvi, H., Das, A.*, **Anand, R*.**, *Organic & Biomolecular Chemistry* (2021), 19, 5161-5168.
22. "Structure Guided Mutagenesis Reveals the Substrate Determinants of Guanine Deaminase" Singh, J., Gaded, V., Bitra, A., **Anand, R*.**, *J. Struct. Biol.* (2021), 213(3), 107747.
23. "Tunable Multiplexed Whole-Cell Biosensors as Environmental Diagnostics for ppb-Level Detection of Aromatic Pollutants" Roy R., Ray S., Chowdhury* A., **Anand R*.**, *ACS Sensors* (2021), 6(5), 1933–1939.
24. "Role of Allosteric Switches and Adaptor Domains in Long Distance Cross-Talk and Transient Tunnel Formation" Sharma, N., Ahalawat, N., Sandhu, P., Strauss, E., Mondal, J., **Anand, R*.**; *Science Advances* (2020); 6, eaay7919.
25. "Structural basis for differentiation between two classes of thiolase: Degradative vs biosynthetic thiolase" Bhaskar S., Steer D., **Anand R.**, Panjikar S.* *Journal of Structural Biology* (2020), 100018.
26. "Use of 6-Methylisoxanthopterin, a Fluorescent Guanine Analog, to Probe Fob1-Mediated Dynamics at the Stalling Fork Barrier DNA Sequences"; Mariam, J., G, Krishnamoorthy, and **Anand, R*.**; *Chemistry–An Asian Journal* (2019); 14,4760 –4766.
27. "Deciphering Determinants in Ribosomal Methyltransferases that Confer Antimicrobial Resistance" Bhujbalrao, R.; **Anand, R*.**; *Journal of American Chemical Society* (2019), 141, 1425-1429.
28. "Design of Ultrasensitive Protein Biosensor Strips for Selective Detection of Aromatic Contaminants in Environmental Wastewater" Ray S., Senapati, T, Sahu, S; Bandyopadhyaya, R, **Anand, R*.**; *Analytical Chemistry* (2018), 90 (15), 8960-8968
29. "Design of Protein based Biosensors for Selective Detection of Benzene Group of Pollutants", Ray, S., Panjikar, S., **Anand, R*.**; *ACS Sensors* (2018), 3(9), 1632–1638
30. "Nucleobase Deaminases as potential enzymes for new therapies", Gaded V, **Anand R*.**, *RSC Adv.*, (2018),8, 23567-23577.
31. "Fluorescence Quenching studies of γ -butyrolactone-Binding Protein (CprB) from *Streptomyces coelicolor* A3(2) ", Mariam J., **Anand R*.**; *Methods Mol Biol.* (2018), 1673, 131-143.

32. "Site-specific fluorescence dynamics to probe polar arrest by Fob1 in replication fork barrier sequences", Biswas A., Mariam J., Kombrabail M., Narayan S., Krishnamoorthy G., **Anand R***; *ACS Omega* (2017), 2, 7389-7399.
33. "Functional insights into the mode of DNA and ligand binding of TetR family regulator TylP from *Streptomyces fradiae*", Ray, S., Maitra, A., Biswas, A., Panjikar, S., Mondal, J., Anand R* ; *Journal of Biological Chemistry* (2017), 292, 15301-15311.
34. "Selective deamination of Mutagens by mycobacterial Enzymes ", Gaded, V., Anand, R.*; *Journal of American Chemical Society* (2017), 139(31), 10762-10768.
35. "TetR Regulators: A Structural and Functional Perspective" Bhukya, H. & **Anand, R.***; *Journal of Indian Institute of Science* (2017), 97, 245.
36. "Structural and Dynamics Studies of the TetR Family Protein, CprB from *Streptomyces coelicolor* in complex with its Biological Operator Sequence" Bhukya, H., Jana, A.K., Sengupta, N., Anand, R.*; *Journal of Structural Biology* (2017), 198; 134–146.
37. "Rassf Proteins as Modulators of Mst1 Kinase Activity" Bitra, A., Sistla, S., Mariam, J., Malvi, H., **Anand, R.***; *Scientific Reports* (2017), 7, 45020.
38. "Structure Guided Design of Protein Biosensors for Phenolic Pollutants" Ray, S., Panjikar, S., **Anand, R***; *ACS Sensors* (2017), 2(3), 411-418.
39. "Structural Basis of Selective Aromatic Pollutant Sensing by the Effector Binding Domain of MopR, an NtrC Family Transcriptional Regulator" Ray, S., Gunzburg, M., Wilce, M., Panjikar, S., **Anand, R***; *ACS Chemical Biology* (2016), 11, 2357–2365.
40. "Determination of formylglycinamide ribonucleotide amidotransferase ammonia pathway by combining 3D-RISM theory with experiment", Tanwar, A.S., Sindhikara, D.J., Hirata, F, **Anand, R***; *ACS Chemical Biology* (2015), 10(3), 698-704.
41. "Mode of DNA Binding with γ -utyrolactone Receptor Protein CprB from *Streptomyces coelicolor* revealed by Site-specific Fluorescence Dynamics", Biswas, A., Narayan, S., Kallianpur, M., Krishnamoorthy, G. Anand, R*; *Biochimica et Biophysica acta* (2015), 1850(11), 2283-92.
42. "Fluorescence Quenching Studies of γ -Butyrolactone Binding Protein (CprB) from *Streptomyces coelicolor* A3(2)", Biswas, A., Swarnkar, R. K., Hussain, B., Sahoo, S.K., Pradeepkumar, P.I., Patwari, G.N., **Anand, R.***; *J Phys Chem B*. (2014), 118(34):10035-42.
43. "Structural and functional basis of transcriptional regulation by TetR family protein CprB from *S. coelicolor* A3(2)", Bhukya, H., Bhujbalrao, R., Bitra, A., **Anand, R.***; *Nucleic Acid Res.* (2014), 42(15), 10122-33.
44. "Importance of hydrophobic cavities in allosteric regulation of formylglycinamide synthetase: insight from xenon trapping and statistical coupling analysis", Tanwar, A.S., Goyal, V.D., Choudhary, D., Panjikar, S., **Anand, R***; *PLoS One* (2013) 8(11), e77781.

45. "Diversity oriented approach to triazole based peptidomimetics as mammalian sterile 20 kinase inhibitors." Kotha, S., Goyal, D., Bitra, A., Thota, N., Kruger, G., Anand, R.*; *RSC Adv.* (2013) 3, 24447-24454.
46. "Structural basis of the substrate specificity of cytidine deaminase superfamily Guanine deaminase" Bitra, A., Biswas, A., **Anand, R.***; *Biochemistry* (2013) 52(45), 8106-14.
47. "Identification of Function and Mechanistic Insights of Guanine Deaminase from *Nitrosomonas europaea*: Role of the C-Terminal Loop in Catalysis" Bitra, A., Hussain, B., Tanwar, A.S., **Anand, R.***; *Biochemistry* (2013), 52(20):3512-22.
48. "Formylglycinamide ribonucleotide amidotransferase from *Salmonella typhimurium*: role of ATP complexation and the glutaminase domain in catalytic coupling" Tanwar, A.S., Morar, M., Panjikar, S., **Anand, R.***; *Acta Crystallographica D* (2012), 68, 627-36.
49. "Development of a Potent and Specific Organoruthenium Mammalian Sterile 20 Kinase Inhibitor", **Anand, R.**, Pagano, N., Maksimoska, J., Wong, E., Diamond, S. L., Meggers, E., Marmorstein, R.; *Journal of Medicinal Chemistry* (2008), 52(6):1602-11.
50. "Structural Basis for DNA Recognition by FoxO1 and its Regulation by Post-Translational Modification", Brent, M., **Anand, R.**, Marmorstein, R.; *Structure* (2008), 16(9):1407-16.
51. "Biochemical Analysis of MST1 Kinase: Elucidation of a C-Terminal Regulatory Region", **Anand, R.**, Kim, A., Brent, M., Marmorstein, R.; *Biochemistry* (2008), 242, (25); 6719-6726
52. "Structure and mechanism of lysine-specific demethylase enzymes", **Anand, R.**, Marmorstein, R., *J. Biol. Chem.* (2007) 282(49):35425-9.
53. "Structure and mechanism of lysine-specific demethylase enzymes ", Morar, M., **Anand, R.**, Stubbe, J., Ealick, S.E.; *Biochemistry* (2006), 45(50):14880-95.
54. "A model for the *Bacillus subtilis* formylglycinamide ribonucleotide amidotransferase multiprotein complex", **Anand, R.**, Hoskins, A. A., Bennett, E. M., Sintchak, M.D., Stubbe, J., Ealick, S.E.; *Biochemistry* (2004) 43(32), 10343-52.
55. "Domain organization of *Salmonella typhimurium* formylglycinamide ribonucleotide amidotransferase revealed by X-ray crystallography", **Anand, R.**, Hoskins, A.A., Stubbe, J., Ealick, S.E.; *Biochemistry* (2004) 43(32):10328-42.
56. "The formylglycinamide ribonucleotide amidotransferase complex from *Bacillus subtilis*: metabolite mediated complex formation", Hoskins, A.A., **Anand, R.**, Ealick, S.E., Stubbe, J.; *Biochemistry* (2004) 43(32):10314-27.
57. "Structure of Purine 2'-Deoxyribosyltransferase, Substrate Complexes and the Ribosylated Intermediate at 1.75 Resolution", **Anand, R.**, Kaminski, V.S., Ealick, S.E.; *Biochemistry* (2004), 43(9), 2384-93.
58. "Designer Gene Therapy Using an *Escherichia coli* Purine Nucleoside Phosphorylase/Prodrug System", Bennett, E.M., **Anand, R.**, Allan, P.W., Hassan, A.E., Hong, J.S., Levasseur, D.N.,

McPherson, D.T., Parker, W.B., Secrist III, J.A., Sorcher, E.J., Townes, T.M., Waud, W.R., Ealick, S.E.; ***Chemistry and Biology*** (2003) 10(12), 1173-81.

59. "Structure of Oxalate Decarboxylase from *Bacillus subtilis* at 1.75 Resolution", **Anand, R.**, Dorrestein, P.C., Kinsland, C., Begley, T., Ealick, S.E.; ***Biochemistry*** (2002), 41(24), 7659-69.

Patents

1. IPA No. 202521127001, (2025) Title: "Next generation peptide antibiotic conjugate for targeting antibiotic resistance mechanisms" in the name of Indian Institute of Technology Bombay. Inventors: Criss Dcosta, Suvarn S. Kulkarni and **Ruchi Anand**.
2. IPA No. 386217, (2018) Title: "Biosensors for detecting organic pollutants and Process for producing the same" in the name of Indian Institute of Technology Bombay. Inventors: **Ruchi Anand** and Shamayeeta Ray.
3. IPA No. 201821016035, (2018) Title: "Design of Ultrasensitive Protein Biosensor strips for selective detection of Aromatic Contaminants in Environmental Wastewater" in the name of Indian Institute of Technology Bombay. Inventors: **Ruchi Anand**, Rajdip Bandyopadhyaya, Shamayeeta Ray and Tamasri Senapati.
4. IPA No. 431170, (2023) Title: Organic Electrochemical transistor-based biosensor for the detection of DNA binding proteins and method for preparation thereof. Inventors: **Ruchi Anand**, Dipti Gupta, Lokesh Kumar, Subhankar Sahu and Siddarth Kurup.
5. IPA No. 474656 (2023) Title: Protein immobilized organic electrochemical biosensor for detecting phenolic pollutants and process for producing the same. Inventors: **Ruchi Anand**, Dipti Gupta, Subhankar Sahu, Lokesh Kumar and Sumita Das.

Book Chapters

1. Sahu, S., and **Anand R.** "Strategies for Development of Protein-Based Biosensors for Detecting Aromatic Xenobiotics in Water." *The World Scientific Reference of Water Science: Volume 1 Molecular Engineering of Water Sensors*. 2023. 101-136.
2. Mariam J., **Anand R.**, Fluorescence Quenching studies of γ -butyrolactone-Binding Protein (CprB) from *Streptomyces coelicolor* A3(2), *Quorum Sensing: Methods and Protocols*, Methods in Molecular Biology 2018, 1673, 131-143.

Select Research Seminars and Invited Talks

1. "Structural and Biochemical Studies on Mechanism of Ammonia Channeling in Purine Biosynthetic Enzyme FGAM Synthetase" **42nd Meeting, Structure and Function from Macromolecular Crystallography: ORGANIZATION IN SPACE AND TIME**, Erice, Italy, 2010 **Invited Participant**.

2. “Insights into Mechanism of Ammonia Channeling, IBS - Institut de Biologie Structurale, Grenoble, France, June, 2010, **Invited Talk**.
3. “Structural Biology of Enzyme Complexes”, Jülich Research Center, Germany, 2010, **Invited Talk**.
4. “Structure Based Drug Design Approaches in Mammalian Sterile 20 Kinases” **National Symposium in Computational Biology**, Pondicherry, September, 2010, **Invited Talk**.
5. “Structural biology of Purine Enzymes”, **Indo-Swedish symposium**, IISER Kolkata, March 2011, **Invited Talk**.
6. “Identification of Molecular Tunnels in Purine Biosynthesis as Passages for Unstable Intermediates”, **International Conference on Pure and Applied Chemistry**, Mauritius, 2012, **Plenary Speaker**.
7. “Purine Biosynthetic Enzymes”, EMBL, Hamburg, Germany, July 2012, **Invited Talk**.
8. “Structure Activity Relationship of an Enzyme with Unknown Function” **Biochemical Society of India**, Mumbai, Sept 2012, **Invited Talk**.
9. “From Form to Function” **National Symposium on Frontiers of Biophysics, Biotechnology & Bioinformatics**, IBS, Mumbai, Jan 2013 **Invited Talk**.
10. “Structure Activity Relationship of an Enzyme of Unknown Function” **IITB-Strathclyde Mini symposium**, Mumbai, Jan 2013, **Invited Talk**.
11. “Identification of Molecular Tunnels in Purine Biosynthesis as Passages for Unstable Intermediates” **IITB-Strathclyde Meeting**, Glasgow, UK, March 2013, **Invited Talk**.
12. Structural Insights into Mechanism of Transcription and Antibiotic Regulation by CprB: A γ -butyrolactone TetR-family protein from *Streptomyces coelicolor*, **Asian Crystallography society Meeting**, Hong Kong, China, Dec 2013, **Invited Talk**.
13. “Structural Insights into Mechanism of Transcription by quorum sensing protein CprB from *Streptomyces coelicolor*”, **42nd National Seminar on Crystallography and International workshop for application of X-ray diffraction for Drug Discovery**, Delhi, 2013, **Invited Talk**.
14. “Insights into Ammonia Channeling of Purine Biosynthetic Enzyme PurL” March 2014, Ritsumeikan University, Japan, **Invited Talk**.
15. “Structural Insights into Mechanism of Antibiotic Regulation in *Streptomyces coelicolor*”, **23rd International Union of Crystallography Meeting**, Montreal, Canada, Aug, 2014 **Selected Talk**.
16. “Substrate channeling in enzyme systems” **Indo-US symposium on Recent Advances in Structural Biology and Drug Discovery**, Oct 2014, IIT Roorkee, India, **Invited Talk**.
17. “Structure and Mechanism of the Tetracycline Receptor CprB from *Streptomyces*” **Monash University**, March 2015, Monash University, Australia, **Departmental Talk**.

18. "Protein Crystallization" Workshop on Structural Biology: An Introduction to Protein Crystallography, National Institute of Mental Health, Bangalore India, April 2015, **Invited Talk.**
19. "Structural based design of Aromatic biosensors" **Application of Structural Biology in Translational Research and; Structure Guided Drug Design** ACTREC, Mumbai, India Nov 2015, **Invited Talk.**
20. "Mechanism of Nucleobase Deamination" **Indo-US Symposium on "Advances in Enzymology: Implications in Health, Disease and Therapeutics"** ACTREC, Mumbai, 2016, **Invited Talk.**
21. "Basics of X-ray Structure Determination and Refinement" **Indo-US Symposium on "Advances in Enzymology: Implications in Health, Disease and Therapeutics"**, ACTREC, Mumbai, India, Jan, 2016 **Workshop Talk.**
22. "Motional Dynamics in Protein-DNA Complexes" **Indian Biophysical Society Meeting (IBS)**, Bangalore, India, Feb 2016, **Invited Talk.**
23. "Structural Biochemistry of Transcription Regulation in Biological Systems" University of Santa Cruz, June 2016, USA, **Departmental Talk.**
24. "Structural Insights into Antibiotic Regulation and Resistance in *Streptomyces*" **Gordon Conference on Drug Resistance**, University of New England, Biddeford, June 2016, USA, **Selected Speaker.**
25. "Development of Enzyme Based Biosensors for Xenobiotic Pollutants" **Current Trends in Protein Structure and Genome Analysis**, Centre of bioinformatics, Pondicherry University, Dec 2016, Pondicherry, India, **Invited Talk.**
26. "Transcription Regulation in Biological Systems" Uni. of Illinois, 2016, USA, **Departmental Talk.**
27. "Structural Biochemistry of Transcription Regulation in Biological Systems" Bowling Green State University Aug 2016, Chicago, USA, **Departmental Talk.**
28. "Design of Biosensors for Aromatic Pollutants" **Chemistry Interfacing with Biology and Physics (CIBP-2017)**, IISER Kolkata, India Jan 2017, **Invited Talk.**
29. "Design of Aromatic Biosensors" **New Dimension in Chemistry**, Jim Corbett National Park, Uttarakand, India, May 2017, **Invited Talk.**
30. "New Therapies to Combat Antibiotic Resistance" **Kaleidoscope, A discussion Meeting in Chemistry** Goa, July 2017, **Invited Talk.**
31. "X-ray Crystallography as a Tool to Determine Protein Structures" **Royal Society of Chemistry Event**, Hislop College, Nagpur, India, July 2017, **Invited Talk.**
32. "Structural Insights into Plasticity of DNA-Protein Interactions in Tetracycline Receptors", **International Union of Crystallography (IUCr 2017)**, Hyderabad, India, Aug 2017, **Selected Talk.**

33. "Structural Insights into Plasticity of DNA-Protein Interactions in Tetracycline Receptors" **Indo-German Conference on NMR Meets Biology**, Sept 2017, Institut für Medizinische Physik und Biophysik, Leipzig Germany, **Invited Talk**.
34. "Motional Dynamics in Protein-DNA Complexes" **FCS Meeting**, IIT Guwahati, Guwahati, India, December 2017, **Invited Talk**.
35. "Development of Enzyme Based Biosensors for Xenobiotic Pollutants" **Indo-German Conference on Elementary Reactions in Functional Materials: From Biophysics to Technological Applications**, Nov 2017, University of Heidelberg, Heidelberg, Germany, **Invited Talk**.
36. "Using Structural Biology to Combat Drug Resistance" Indian Institute of Technology, Roorkee, India, January 2018, **Departmental Talk**.
37. "Transcription Regulation in Biological Systems" Indian Institute of Science and Education (IISER) Bopal, India. January 2018, **Departmental Talk**.
38. "Insights into Mechanisms of Drug Resistance" Innovations in Frontier Chemistry, IISER Pune, 2018, **Invited Talk**.
39. "Strategies to Combat Drug Resistance" **National Bioorganic Chemistry Conference (NBCC)**, Celebrating 65th year of DNA Structure, (NISER)-Bhubaneswar, December 2018, **Invited Talk**.
40. "Using Structural Biology as a Tool to Decipher Origins of Antibiotic Resistance" **Asian Crystallographic Association Meeting**, Auckland, New Zealand, December 2018, **Invited Talk**.
41. "Why does Antibiotic Resistance Arise" **6th World Congress on Nanomedicine & Chemistry Biology Interface Synergistic in New Frontiers**, Vigyan Bhavan, Delhi January 2019, **Invited Talk**.
42. "Structural Insights into Origins of Resistance" **Asian Chemical Biology Initiative Meeting**, Yangon, Myanmar, January 2019, **Invited Talk**.
43. "Strategies to Combat Drug Resistance" **International Conference on Multiscale Simulation and Mathematical Modelling (JNU)**, New Delhi, India. January 2019, **Invited Talk**.
44. "Structural biochemistry: A versatile tool to study biological reactions" **Empowering women in Chemistry, IUPAC 2019 symposium**, Miranda House, February 2019, **Invited Talk**.
45. "Strategies to Combat Drug Resistance" **8th National symposium on recent advances in chemical sciences**, Amritsar, February 2019, **Invited Talk**.
46. "Allosteric Regulation in Transient Molecular Tunnels" **Diamond Jubilee Chemistry Symposium**, IIT Bombay, India, February 2019, **Departmental Talk**.
47. "Structural Biochemistry: Photography at atomic level" Department of Biophysics, Calcutta University, March 2019, **Invited Talk**.

48. “Strategies to combat antibiotic resistance” **Weizmann India exchange: Chemical Biology and Material Science conference**, Weizmann Institute of Science, Israel, May 2019, **Invited Talk**.
49. “Role of allosteric switches and adaptor domains in long distance cross talk and transient tunnel formation” **Kaleidoscope, Goa**, July 2019, **Invited Talk**.
50. “Molecular Insights into Ribosomal Methyltransferases Mediated Antibiotic Resistance” **Indo-German workshop on “Emerging Trends in Chemistry and Materials”**, IIT Bombay, August 2019, **Invited Talk**.
51. “Understanding Allosteric Regulation in Transient Tunnels” **10th Toyota Riken international workshop: Science of life phenomenon woven by water and biomolecules**, Toyota Physical and Chemical research Institute, Japan, September 2019, **Invited Talk**.
52. “Understanding Molecular Mechanism of Drug resistance” **OCS2019@IIT Kanpur**, IIT Kanpur, September 2019, **Invited Talk**.
53. “Strategies to Combat Antibiotic Resistance” **Chemistry Seminar Series**, IISER Trivandrum, September 2019, **Invited Talk**.
54. “Understanding Molecular Mechanism of Drug Resistance” **Indo-German workshop Multivalent and Adaptive Bioinspired Materials**, University of Dusseldorf Essen, Germany, September 2019, **Invited Talk**.
55. “Molecular Insights into the Mechanism of Methyltransferase Mediated Antibiotic Resistance” **88th Annual Meeting of the Society of Biological Chemists**, Bhabha Atomic Research Centre & Homi Bhabha National Institute, Bombay, October 2019, **Invited Talk**.
56. “Molecular Insights into the Mechanism of Methyltransferases Mediated Antibiotic Resistance” **8th Annual Conference of ICBS-2019**, CSIR-Indian Institute of Chemical Technology, Hyderabad, Nov 2019, **Invited Talk**.
57. “Allosteric Regulation and Ammonia Tunnels” **Let there be light**, Udaipur, 2019. **Invited Talk**.
58. “Strategies to Combat Antibiotic Resistance” **16th Asian Crystallographic Association Meeting**, NUS, Singapore Dec 2019, **Keynote speaker**.
59. “Unravelling the Allosteric Regulation Mechanism of Purine Biosynthetic Pathway Enzyme” **12th Asia-Pacific Microscopy Conference (APMC-2020)**, Hyderabad, 2020, **Invited Talk**.
60. “Allosteric Regulation of Molecular Tunnels” **Modern Approaches in Chemistry and Biology**, Bangalore, February, 2020, **Invited Talk**.
61. “Structural Biochemistry: A Versatile to Study Biological Reactions” **W-CHEM, Women In Science**, MS University, Baroda, March 2020, **Invited Talk**.
62. “Crystallography: Photography at the Atomic Level”, **ACS Webinar Series**, April 2020, **Invited Talk**.

63. “Probing Mechanisms of Targeting and Allostery to Attain Specificity in Enzymatic Reactions” **AV Rama Rao Foundation Award Lecture**, JNC SAR 2020, **Webinar**.
64. “Probing Long Distance Allosteric Communication in Enzyme Systems” **First Virtual ACES-CRSI Symposium**, October 2020, **Webinar**.
65. “Strategies to Combat Antibiotic Resistance” **1st Virtual Indo-German Symposium**, 2021, **Webinar**.
66. Strategies to combat antibiotic resistance, **48th National Seminar on Crystallography**. IIT Roorkee 2021, **Seminar**.
67. Search for Molecular Tunnels in Enzyme Systems, **RSC-IISER Desktop seminar with OBC**, RSC-IISER 2021, **Invited Talk**.
68. Strategies to combat antibiotic resistance, **OIST mini symposium "New proteins by Evolution and Engineering"**, Japan 2021, **Seminar**.
69. Strategies to combat antibiotic resistance, IISER Tirupati 2022, **Institute Colloquium**.
70. Allosteric regulation of molecular tunnel, TIFR Mumbai, 2022, **Institute Colloquium**.
71. Allostery in Biological System, **Special International Women’s Day lecture**, 2022, IISER Kolkata. **Seminar**.
72. Women in Science, Lecture on International Women’s Day, **CBS**, 2022, **Seminar**.
73. From Laboratory Chemistry to Device fabrication, **One Day Virtual National Conference on Role of women Chemist and technologist for sustainable future** 2022, **Seminar**.
74. Antibiotic Resistance, **Let There Be Light**, 2022, Himachal Pradesh, **Seminar**.
75. Strategies to combat antibiotic resistance, **44th Indian Biophysical Society Meeting**, ACTREC, Mumbai 2022, Indian Biophysical Society, **Invited Talk**.
76. Cryo-EM as a Bio-imaging tool to Decipher origins of antibiotic resistance, **Biomedical, BIO-imaging & Therapeutics for healthcare**, **Institute Colloquia**.
77. Allostery in biological systems, **S. N. Bose National Center for Basic Science**, 2022, **Institute Colloquia**.
78. **CRSI Lecture Series**, Somaiya Vidyavihar University, Mumbai 2022, **Speaker and Local Convener**.
79. Deciphering the Mechanism of Ribosomal Methyltransferase-mediated Antibiotic Resistance, **IUPAC ISBOC-13**, NTU Singapore, 2023, **Invited Talk**.
80. Deciphering the Mechanism of Ribosomal Methyltransferase-mediated Antibiotic Resistance, **EBSA Stockholm**, 2023, **Invited Talk**.

81. Design of Protein based Biosensors for Selective Detection of Aromatic Group of Pollutants, **University of Bourdeaux, 2023, Invited Talk.**
82. Understanding macromolecular crystallography, **Indian Academy of Science (IAS) Outreach Program, 2024, Invited Talk.**
83. Methyltransferase induced antibiotic resistance: **SATHI SUMMIT, IIT Delhi, 2024, Invited Talk.**
84. Combatting Methylation induced antibiotic resistance: A war at the microscopic level, CRSI NSC-33, Hyderabad 2024, **Charusita Chakravarty Memorial Lecture.**
85. Understanding methylation based antibiotic resistance, **National Institute of Immunology (NII), 2025, Institute Colloquia.**
86. Combating Antibiotic resistance: war at the microscopic level, **47th Indian Biophysical Society Meeting, IIT Madras 2025, Plenary Talk.**
87. Understanding methyltransferase induced antibiotic resistance, **Acharya J. C. Ghosh Memorial Award Lecture, Indian Chemical Society 2025.**
88. Ribosomal Methyltransferase Mediated Antibiotic Resistance, **Pioneering Biophysical Tools and Structural, Single-Molecule, and Atomic Biophysics in South-East Asia, IUPAB/ ABA, Malaysia 2025, Invited Speaker.**
89. Combatting Ribosomal Methylation Based Antibiotic Resistance, University of Regensburg, Germany 2025, **Colloquium.**
90. Strategies to Combat Methylation Mediated Antibiotic Resistance, Imperial College London, UK 2025, **Colloquium.**
91. Deciphering the role of pathogenic Mtases in antibiotic resistance, **EMSI 2025, Invited Talk.**
92. Development of Enzyme Based Biosensors for Xenobiotic Pollutants, École normale supérieure de Lyon 2025, **Invited Talk.**
93. “Insights into Mechanisms of Drug Resistance” , University of Bristol, UK 2025, **Department Seminar.**
94. Molecular Insights into the Mechanism of Methyltransferases Mediated Antibiotic Resistance, Combating Target Modification based Antimicrobial Resistance: A War at the Microscopic Level, Ludwig Maximilian University, Munich 2025, **Invited Talk.**
95. Combating Target Modification based Antimicrobial Resistance: A War at the Microscopic Level, **Dynamics and Evolution of RNA Functions, TIFR-ICTS 2025, Invited Talk.**
96. Strategies to combat antibiotic resistance, Department of Organic Chemistry, IISc, 2025, **Department Seminar.**

- 97.** Combating Target Modification based Antimicrobial Resistance: A War at the Microscopic Level,
ACS Global Scientific Conference (GSC), IIT Bombay 2025, Invited Talk.