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<https://www.scopus.com/authid/detail.uri?authorId=16679824700>

WORK EXPERIENCE

- Professor, Department of Biophysics, Panjab University, Chandigarh, Nov 2022 onwards
- Associate Professor, Department of Biophysics, Panjab University, Chandigarh, Nov 2016-2022.
- Assistant Professor, Department of Biophysics, Panjab University, Chandigarh, July 2010- Nov 2016.
- Post-Doctoral Research Fellow, Institute of Structural and Molecular Biology, University College London, United Kingdom 2014- 2015.
- Assistant Professor, Department of Bioinformatics- GGSDS College, Chandigarh, July 2007.
- Department of Biotechnology (DBT), India- Junior Research Fellow, March 2006 - June 2007.

AWARDS & HONORS

- Awarded International Travel Award from Schlumberger Foundation for presenting “*In silico* designing and *In vitro* Biovalidation of Novel Peptide Analog from Chicken Cathelicidin-2” at the Faculty for the Future Fellows and Alumnae Forum, **Abu Dhabi**, UAE, **2018**.
- Awarded the prestigious ‘Faculty for the Future International Fellowship’ of USD 40,000 by the Schlumberger Foundation for the year **2013-14** to carry out Post-doctoral research work at University College London, United Kingdom.
- International Travel Award from Panjab University to participate in the “RSC Macrocyclic and Supramolecular Chemistry Meeting (MASC11)”, held at the University of Bath, Bath- **United Kingdom** from December 19th – 20th Dec’ **2011**
- International Travel Award from Department of Biotechnology, Government of India for participating in the 6th Asian Biophysics Association Symposium, **Hong Kong**, January **2009**.
- *University Medal* for standing first in M. Sc. (Hons. School) Biophysics, Panjab University.
- *University Medal* for standing first in B. Sc. (Hons. School) Biophysics, Panjab University.

- *Certificate of Merit* for outstanding academic performance & being among the top 0.1% of successful candidates in Mathematics, of All India Secondary School Examination.
- *Awarded National Scholarships thrice* for maintaining excellent academic record in secondary school examination, B. Sc. (Hons. School) and M. Sc. (Hons. School) in 1997, 2003 & 2004 respectively.

ACADEMIC POSITIONS

- **Chairperson**, Department of Biophysics, Panjab University, Chandigarh **Nov 2020- 2023**.
- **Warden**, Working Women Hostel, Panjab University, Chandigarh **July 2018-2023**.
- **Coordinator**, Hands-On Training Program “Advanced Trends in Biomedical Sciences: Research and Skill Development” organized on 1-8 Aug 2022, by the Department of Biophysics in collaboration with CIL/SAIF, Panjab University, Chandigarh under the aegis of DST-STUTI Scheme
- **Organizing Secretary**, International Conference on Recent Trends in Biomolecules and Therapeutics (RTBT-2023) organized on 23-24 March 2023, by Department of Biophysics, Panjab University, Chandigarh.
- **Programme Coordinator**, Two-day National Workshop on Good Laboratory Work Practices and Biorisk Management, organized on 24-25 Feb 2022, by Department of Biophysics, Chandigarh.
- **Programme Coordinator**, Expert Talk Series 2020-21, 2021-22, 2022-23 Department of Biophysics, Panjab University, Chandigarh.
- **Coordinator**, Choice Based Credit System, Basic Medical Sciences, Panjab University, Chandigarh **Dec 2016-Nov 2020**.
- **Member Organizing Committee**, National Conference on “Role of Biophysics in Academia and Industry”, Panjab University Chandigarh **2017**, 12-13 October
- **Member Venue and Stage Committee**, 10th Chandigarh Science Congress 2016 Panjab University, Chandigarh **29-2-2016 to 2-03-2016**.
- **Organizing Committee Member**, National Seminar on “Biophysical Techniques in Drug Design and Disease”, Panjab University Chandigarh **2016**, 30th January.
- **Member of Executive Council** of Panjab University Teachers’ Association (PUTA), Chandigarh **2015- 2016**.
- **Timetable Incharge**, Department of Biophysics, Panjab University, Chandigarh **July 2015- 2024**.
- **President, Biophysical Society**, Department of Biophysics, Panjab University, Chandigarh **2011**.
- **Placement Officer**, Department of Biophysics, Panjab University, Chandigarh **2010-Nov 2018**.
- Member of Academic Committee, Technical Committee and Administrative Committee of the Department of Biophysics, Panjab University, Chandigarh.

RESEARCH INTERESTS

Our research focuses on the Design and Structural Characterization of novel peptides and peptidomimetics to address the challenges posed by existing molecular systems. To achieve this, we employ an integrated approach combining Computational Biology, Molecular Biophysics, and

Biophysical Chemistry to investigate the structure, dynamics and target interactions of these macromolecules.

A major thrust of our work involves development of peptide-based nanomaterials. Functionalization of abiotic nanosurfaces with active biomolecules such as peptides significantly expands the application potential of nanomaterials by enhancing their biocompatibility, biorecognition, and functional specificity. These properties lead to improved performance in biosensing and diagnostic platforms.

We also explore the application of these biomaterials in medical implant coatings and wound healing, along with other biomedical and material science applications.

Many of our projects are directed towards biologically and clinically relevant problems with therapeutic and diagnostic significance. Our research benefits from strong interdisciplinary collaborations within Panjab University as well as with National and International research institutions.

RESEARCH PROJECTS

- Machine Learning and AI-Guided Design and Validation of Cost-Effective Next-Generation Antimicrobial Peptides Against Multidrug Resistant Pathogens. **(ICMR) (2025-2028)** Rs 1.2 crore.
- Peptide-Functionalized Nanoconjugates for Biomedical Surfaces: Advanced Infection-Resistant Implant Technologies. **(ICMR-DHR) (2025-2028)** Rs. 50,00,000. *As Mentor*
- Development of an eco-friendly, biodegradable antimicrobial packaging material. **(DST-UT) (2024)** Rs. 2,00,000.
- Development of a novel antibacterial and antibiofilm coating for biomaterial implants and medical devices. **(ICMR) (2022-2025)** Rs 50,00,000.
- Development and biovalidation of a sustainable antimicrobial peptide conjugated Collagen scaffold against infectious bacterial pathogens. **DST-UT (2022)** Rs 1,20,000.
- Antimicrobial surface coatings for public places in the city beautiful (Co-PI) **DST-UT (2021)** Rs 1,50,000.
- Evaluation of a colon targeted nisin loaded nano-formulation for anticancer therapy. (Co-PI) **DST-UT (2021)** Rs 1,50,000.
- Development of peptide functionalized antifouling graphitic nano coating. (WOS-B, DST) **(2021-2024)** as *Mentor*
- Studies on the consequences and prevention of the intra cellular amyloid B- aggregation and cognitive decline in progression of Alzheimer's disease. Department of Science & Technology-Cognitive Science Research Initiative **(2019-2022)** as *Mentor*
- Design and Development of Novel Peptides/Peptoids against selected pathogens. Defense Research and Development Organization **(DRDO) (2017-2021)** Rs 59, 52, 876/-.
- Design and Bio validation of novel antimicrobial peptides. **UGC-BSR (2016-2020)**.

RESEARCH PUBLICATIONS

- Maan M., Joshi S., Barman P., Sharma S. and **Saini A. 2026**. Development of a synthetic antimicrobial peptide targeting MDR wound pathogens and biofilms: effective therapeutics for chronic wound management. **J. Mater. Chem. B**. DOI: [10.1039/D6TB00557H](https://doi.org/10.1039/D6TB00557H).

- Maan M, Joshi S and **Saini A. 2026.** Deciphering skin architecture, wound pathophysiology and molecular mechanisms of healing: insights into immune response and therapeutic strategies. **Front. Bioeng. Biotechnol.** 14:1812108. doi: [10.3389/fbioe.2026.1812108](https://doi.org/10.3389/fbioe.2026.1812108).
- Mazumder, S., Kapoor, S., Kaur, H. Thakur J., Hasija R., Daroch K., Walia H., Kumar S., Saini D., Thakur C., **Saini A.**, Saini S. **2026.** Bioinformatics-driven genome-wide identification of viral miRNAs in high spillover bat coronaviruses and their target genes in human. **Arch Microbiol**, 208, 366. <https://doi.org/10.1007/s00203-026-04901-x>.
- Barman, P., Kumar, S., Joshi, S., Kaur, M., Maan, M., Sharma, S., Kaushik, A., **Saini, A. 2026.** A colorimetric sensor for prostate-specific antigen in human blood and semen. **Materials Chemistry and Physics**, Vol 351, 131958, ISSN 0254-0584, <https://doi.org/10.1016/j.matchemphys.2025.131958>.
- Sharma, S., Rai, P., Maan, M., Joshi, S., Barman, P., Sharma, S., and **Saini, A. 2025.** Neuroprotective Role of Synthetic Peptide DP1 in Reducing Inflammation-Associated Brain Damage and Cognitive Impairments. **Chem. Biodiversity**, DOI: [10.1002/cbdv.202501139](https://doi.org/10.1002/cbdv.202501139).
- Barman, P., Sharma, S., Joshi, S., Maan, M., Sharma, S., **Saini, A., 2025.** Design, characterization, and validation of a high-affinity synthetic peptide as bioreceptor for label-free detection of prostate specific antigen. **Spectrochim Acta A Biomol Spectrosc.**, 15: 343: 126531. DOI: [10.1016/j.saa.2025.126531](https://doi.org/10.1016/j.saa.2025.126531).
- Joshi, S., Maan, M., Barman, P., Sharely, I., Verma, K., Preet, S., and **Saini, A. 2025.** Advances in Biomaterials for Wound Care Management: Insights from Recent Developments. **Advances in Colloid and Interface Science**, 343:103563. doi: [10.1016/j.cis.2025.103563](https://doi.org/10.1016/j.cis.2025.103563).
- Sharely, I., Joshi, S., Barman, P., Maan, M., Kaushal, N., **Saini, A. 2025.** Unleashing the biosensing potential of 2D inorganic nanomaterials: the journey of a decade. **Chem. Eur. J.** <https://doi.org/10.1002/chem.202501080>.
- Sharma, S., Chugh, M., Sharma, S., Maan, M., Dhawan, D.K., **Saini, A. 2025.** Biodistribution Studies of FITC Labelled DP1 and DP1 Encapsulated Coumarin-6 PLGA Nanoparticles in Murine Model. **Int J Pept Res Ther**, Vol 31, 69. <https://doi.org/10.1007/s10989-025-10730-1>.
- Sharma, S., Saini, S., Chadha, V.D., Saini, A., Dhawan, D.K., **2025.** A Computational and In Vitro Appraisal of Ostarine to Target Androgen Receptor in Glioma C6 Cells. **Cell Biochem Biophys**, 83(4):4695-4709. doi: [10.1007/s12013-025-01797-0](https://doi.org/10.1007/s12013-025-01797-0).
- Joshi, S., Barman, P., Maan, M., Goyal, H., Sharma, S., Kumar, R., ... & **Saini, A. 2024.** Development of a two-dimensional peptide functionalized-reduced graphene oxide biomaterial for wound care applications. **Nanoscale**, Volume 16, 20986-21001 <https://doi.org/10.1039/D4NR02233E>.
- Joshi, S., Sharma, D., **Saini, A.**, & Verma, G. **2024.** Peptide-reduced graphene oxide based functional paint: A sustainable alternative to toxic biocides. **Progress in Organic Coatings**, 195, 108636. <https://doi.org/10.1016/j.porgcoat.2024.108636>.
- Shubhi Joshi, Jatin Chadha, Kusum Harjai, Gaurav Verma, **Avneet Saini, 2024.** Synthetic peptide (DP1) functionalized graphene oxide: A biocompatible nanoformulation with broad-spectrum antibacterial and antibiofilm activity. **FlatChem**, Volume 44, 100626, ISSN 2452-2627, <https://doi.org/10.1016/j.flatc.2024.100626>.
- Mayank Maan, Hemant Goyal, Shubhi Joshi, Panchali Barman, Sheetal Sharma, Rajesh Kumar, Avneet Saini, **2024.** DP1, a multifaceted synthetic peptide: Mechanism of action, activity and clinical potential, **Life Sciences**, 340:122458. <https://doi.org/10.1016/j.lfs.2024.122458>.
- Saini, Sandeep, Rathore, Aayushi, Sharma, Sheetal, **Saini, A., 2024.** Exploratory data analysis of physicochemical parameters of natural antimicrobial and anticancer peptides: Unraveling the patterns and trends for the rational design of novel peptides. **Bioimpacts** 14(1):26438-26438. <https://bi.tbzmed.ac.ir/Article/bi-26438>.

- Kaur, R., **Saini, A.**, Singh, J., Avti, P.K., Kumar, Vivek, Kumar R., **2023** Surfactant mediated synthesis of noble metal nanoparticles and their cytotoxic effects on breast cancer cells. **Indian Journal of Pharmaceutical Sciences**, 85 (6): 1615-1624. DOI: [10.36468/pharmaceutical-sciences.1215](https://doi.org/10.36468/pharmaceutical-sciences.1215).
- Barman, P., Sharma, C., Joshi, S., Sharma, S., Maan, M., Rishi, P., Singla, N., **Saini, A.** **2023** In Vivo Acute Toxicity and Therapeutic Potential of a Synthetic Peptide, DP1 in a *Staphylococcus aureus* Infected Murine Wound Excision Model. **Probiotics & Antimicro. Prot.** 5:22:31 Z. <https://doi.org/10.1007/s12602-023-10176-1>.
- Barman, P., Joshi, S., Sharma, S., Preet, S., Sharma, S. and **Saini, A.**, **2023**. Strategic Approaches to Improve Peptide Drugs as Next Generation Therapeutics. **International Journal of Peptide Research and Therapeutics**, 29(4), p.61. DOI: <https://doi.org/10.1007/s10989-023-10524-3>.
- Bhardwaj, A., Bhardwaj, R., **Saini, A.**, Dhawan, D. K., & Kaur, T., **2023**. Impact of calcium influx on endoplasmic reticulum in Excitotoxic neurons: role of chemical chaperone 4-PBA. **Cellular and Molecular Neurobiology**, 43(4), 1619-1635. DOI: <https://doi.org/10.1007/s10571-022-01271-y>.
- Sharma, S., Goyal, H., Joshi, S., Nehru, B., & **Saini, A.**, **2023**. Molecular interactions of resveratrol with A β 42 peptide and fibril during in-vitro A β 42 aggregation. **Advances in Redox Research**, 7, 100060, DOI: <https://doi.org/10.1016/j.arres.2023.100060>.
- Saini S, Khurana S, Saini D, Rajput S, Thakur CJ, Singh J, Jaswal A, Kapoor Y, Kumar V, **Saini A.**, **2023**. *In silico* analysis of genomic landscape of SARS-CoV-2 and its variant of concerns (Delta and Omicron) reveals changes in the coding potential of miRNAs and their target genes. **Gene**. Feb 15;853:147097. DOI: <https://doi.org/10.1016/j.gene.2022.147097>.
- Sharma, P., Sharma, S., Joshi, S., Barman P., Bhatt A., Maan M., Singla N., Rishi P., Ali Md. E., Preet S., **Saini A.**, **2022**. Design, characterization and structure–function analysis of novel antimicrobial peptides based on the N-terminal CATH-2 fragment. **Scientific Reports**, 12, 12058. DOI: <https://doi.org/10.1038/s41598-022-16303-2>.
- Joshi S, Siddiqui R, Sharma P, Kumar R, Verma G, **Saini A.**, **2022**. Green synthesis of peptide functionalized reduced graphene oxide (rGO) nano bioconjugate with enhanced antibacterial activity. **Scientific Reports**, 10:9441. DOI: <https://doi.org/10.1038/s41598-020-66230-3>.
- Sharma S., Barman P., Joshi S., Preet S., **Saini A.**, **2022**. Multidrug resistance crisis during COVID-19 pandemic: Role of anti-microbial peptides as next-generation therapeutics. **Colloids and Surfaces B: Biointerfaces**, 211:112303, DOI: <https://doi.org/10.1016/j.colsurfb.2021.112303>.
- Kumar R.J., Jaswal R.R., **Saini A.**, Dhawan D.K., Chadha V.D., **2021**. Chemoinformatic Study and *in vitro* Bioevaluation of Tc-99m-Labeled N-Acetyl Neuraminic Acid in C6 Glioma Cells: Potential Role as a Radionuclide Imaging Probe. **Indian Journal of Nuclear Medicine**,36:267-72. DOI: <https://doi.org/10.4103/ijnm.ijnm.5.21>.
- Sharma S., **Saini A.**, Nehru B., **2021**. Neuroprotective effects of carbenoxolone against amyloid-beta 1–42 oligomer-induced neuroinflammation and cognitive decline in rats. **NeuroToxicology**, 83, 89-105, ISSN 0161-813X, DOI: <https://doi.org/10.1016/j.neuro.2020.12.015>.
- Chauhan S., Dhawan D.K., **Saini A.**, **2021**. Preet S. Antimicrobial Peptides against Colorectal Cancer-a Focused Review. **Pharmacological Research**, 105529, ISSN 1043-6618. DOI: <https://doi.org/10.1016/j.phrs.2021.105529>.
- Joshi, S., Singh, H., Sharma, S., P. Barman, **A. Saini**, G. Verma., **2021** Synthesis and characterization of graphene oxide-bovine serum albumin conjugate membrane for adsorptive removal of Cobalt(II) from water. **International Journal of Environmental Science and Technology**. DOI: <https://doi.org/10.1007/s13762-020-03050-y>.
- Rani R., Sahore R., **Saini A.**, Exploraing the chemical space of Tubulin and various binding pockets: A docking and computational study. **Pb. Univ. Res. Journal (Sci)**, (2020); 71: 51-63.

- Saini S, **Saini A**, Thakur CJ, Kumar V, Gupta RD, Sharma J. Genome-wide computational prediction of miRNAs in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) revealed target genes involved in pulmonary vasculature and antiviral innate immunity. **Molecular Biology Research Communications** **2020**; 9(2):83-91. DOI: [10.22099/MBRC.2020.36507.1487](https://doi.org/10.22099/MBRC.2020.36507.1487).
- Sharma S, Saini R, Sharma P, **Saini A**, Nehru B. Maintenance of Amyloid-beta Homeostasis by Carbenoxolone Post A β -42 Oligomer Injection in Rat Brain. **Neuroscience**. (2020);431:86-102. DOI: [10.1016/j.neuroscience.2020.02.004](https://doi.org/10.1016/j.neuroscience.2020.02.004).
- Joshi S, Sharma P, Siddiqui R, Kaushal K, Sharma S, Verma G, **Saini A**. A review on peptide functionalized graphene derivatives as nanotools for biosensing. **Microchimica Acta**. (2020);187(1):27. DOI: [10.1007/s00604-019-3989-1](https://doi.org/10.1007/s00604-019-3989-1).
- Parmar A, Barman P, Kaur G, **Saini A**, Sharma S. Biogenic Synthesis of Carbon-Based Micro Composites from Mushroom (Asparagus Disporus). **Material Today: Proceedings**. (2020);21:1862-7. DOI: [10.1016/j.matpr.2020.01.242](https://doi.org/10.1016/j.matpr.2020.01.242).
- Sharma S, Sharma N, **Saini A**, Nehru B, Carbenoxolone Reverses the Amyloid Beta 1-42 Oligomer-Induced Oxidative Damage and Anxiety-Related Behavior in Rats. **Neurotoxicity Research**. (2019);35(3):654-667. DOI: [10.1007/s12640-018-9975-2](https://doi.org/10.1007/s12640-018-9975-2).
- Goyal D, **Saini A**, Saini GSS, Kumar R. Green synthesis of anisotropic gold nanoparticles using cinnamon with superior antibacterial activity. **Materials Research Express**. (2019);6(7):075043. DOI: [10.1088/2053-1591/ab15a6](https://doi.org/10.1088/2053-1591/ab15a6).
- Preet S, Pandey SK, Kaur K, Chauhan S, **Saini A**. Gold nanoparticles assisted co-delivery of nisin and doxorubicin against murine skin cancer. **Journal of Drug Delivery Science and Technology**. (2019); 53:101147. DOI: [10.1016/j.jddst.2019.101147](https://doi.org/10.1016/j.jddst.2019.101147).
- Sharma S, Nehru B, **Avneet Saini**. Inhibition of Alzheimer's amyloid-beta aggregation *in-vitro* by carbenoxolone: Insights into mechanism of action. **Neurochemistry International**. (2017);108:481-493. DOI: [10.1016/j.neuint.2017.06.011](https://doi.org/10.1016/j.neuint.2017.06.011).
- Sharma S, Verma S, Kapoor M, **Saini A**, Nehru B. Alzheimer's disease like pathology induced six weeks after aggregated amyloid-beta injection in rats: increased oxidative stress and impaired long-term memory with anxiety-like behavior. **Neurological Research**. (2016);38 (9): 838-850. DOI: [10.1080/01616412.2016.120933](https://doi.org/10.1080/01616412.2016.120933)
- **Saini A**. Structural Modeling and Conformational Analysis of Aromatic Polypeptoid Models confined to different environmental conditions. **International Journal of Computer Applications**. (2016);143(7):46-56. DOI:[10.5120/ijca2016910265](https://doi.org/10.5120/ijca2016910265)
- **Saini A**, Sharma S, Jaswal RR. Non-covalent interactions guide the structural plasticity of Desmin Tubulin binding peptides: A Molecular Mechanics and Molecular Dynamics Study. **International Journal of Peptide Research and Therapeutics**. (2015);21(4):459-478. DOI: [10.1007/s10989-015-9474-8](https://doi.org/10.1007/s10989-015-9474-8).
- Nandel FS, Jaswal RR, **Saini A**, Nandel V, Shafique M. Construction and conformational behavior of peptoids with *cis*-amide bond geometry: design of a peptoid with alternate ϕ , ψ values of *inverse* PP-II/PP-II and PP-I structures. **Journal of Molecular Modeling**. (2014);20:2429. DOI: [10.1007/s00894-014-2429-8](https://doi.org/10.1007/s00894-014-2429-8).
- **Saini A**, Jaswal RR, Negi R, Nandel FS. Insights on the structural characteristics of Vim-TBS (58-81) peptide for future applications as a cell penetrating peptide. **BioScience Trends**. (2013);7:209-220. DOI: [10.5582/bst.2013.v7.5.209](https://doi.org/10.5582/bst.2013.v7.5.209).

- **Saini A**, Bansal R. Insights on the Structural Characteristics of NDM I: The Journey so far. **Advances in Biological Chemistry**. **2012**;3:323-334. DOI: [10.4236/abc.2012.24040](https://doi.org/10.4236/abc.2012.24040).
- Nandel FS and **Saini A**. Peptoids with aliphatic sidechains as helical structures without hydrogen bonds and collagen/ *inverse*-collagen type structures. **Journal of Biophysical Chemistry**. **2011**;2:37-48. DOI:10.4236/jbpc.2011.21006.
- Nandel FS and **Saini A**. Conformational Study of Short peptoid models for future applications as potent antimicrobial compounds. **Macromolecular Theory and Simulations**. **2007**;16:295-303. DOI: [10.1002/mats.200600080](https://doi.org/10.1002/mats.200600080).
- Nandel FS and **Saini A**. Construction and Design of Single Strand Collagen like Structure. **Indian Journal of Biochemistry and Biophysics**. **2007**;44:106-113.

EDITED BOOKS

- Photophysics and Nanophysics in Therapeutics. (2022) Edited by Nilesh M. Mahajan, **Avneet Saini**, Nishikant A. Raut, Sanjay J. Dhoble. Published by Elsevier Inc. ISBN: 978-0-323-89839-3. (29 April 2022).

BOOK CHAPTERS

- Ankush Parmar, Bharti Jain, Rajeev Jain, Shilpee Sachar, **Avneet Saini**, Shweta Sharma. Green miniaturized technologies based sample preparation techniques. In Comprehensive Analytical Chemistry, Elsevier, Volume 109 (2025), Pages 1-37, ISSN 0166-526X, ISBN 9780443239809, <https://doi.org/10.1016/bs.coac.2023.08.004>.
- Joshi S., Sharma S., Verma G., **Saini A**. Peptide functionalized nanomaterials as microbial sensors. In Photophysics and Nanophysics in Therapeutics (2022) by Elsevier Inc. ISBN: 978-0-323-89839-3.
- Barman P., Sharma S., **Saini A**. Improving the functionality of a nanomaterial by biological probes. In Photophysics and Nanophysics in Therapeutics (2022) by Elsevier Inc. ISBN: 978-0-323-89839-3.
- Sharma S, Joshi S, Sharma P, Barman P, Jyoti, **Saini A**. As a wonderful sensing material, Isothiocyanate based detection of chemical agents. In Spectrum of Isothiocyanate Chemistry & its Applications (2021) by Nova Science Publishers ISBN: 978-1-536-19005-2.s
- Jaswal RR, Kaushal K, Joshi S, Sharma P, Sharma S, Preet S, **Saini A**. Exploring the Potential of peptides and peptidomimetics in Biosensing. In Strategies to Overcome Superbug Invasions: Emerging Research and Opportunities. IGI Global (2021). ISBN10:1799803074, ISBN13:9781799803072
- Tripathi R, Sharma P, **Saini A**, Verma G. Self-healed Materials from Elastomeric Composites: Concepts, Strategies and Developments. In Smart Polymer Nanocomposites (2017) Pg 219-242. Springer International Publishing. Print ISBN: 978-3-319-50423-0, Electronic ISBN: 978-3-319-50424-7.
- **Saini A** and Verma G. "Peptoids: Tomorrow's Therapeutics". In Nanostructures for Novel Therapy: Synthesis, Characterization and Applications. (2017). Chapter 10, Pg 251-280. Elsevier Publications. ISBN: 978-0-323-46142-9.

PATENTS

- **Patent Granted:** Novel Biodegradable material, method of preparation and uses thereof. **Avneet Saini**, Shubhi Joshi, Panchali Barman, Mayank Maan. Indian Patent Office, Application No. 202411073596A, 3rd January **2025. Patent No. 574873.**
- **Patent Granted:** Peptide and Device for the detection of Prostate Specific Antigen. **Avneet Saini**, Panchali Barman, Sheetal Sharma, Shweta Sharma. Indian Patent Office, Application No.202211061821,31st Oct **2022. Patent No. 534172.**
- **Patent Granted:** Process and development of nano-bio composite anti-bacterial additive for commercial paint production. Gaurav Verma, **Avneet Saini**, Shubhi Joshi, Deeksha Sharma. Indian Patent Office, Application No. 202211011934 A, 4 March **2022. Patent No. 577176.**
- Biologically Stable, Synthetic Antimicrobial Peptide And Its Uses Thereof. **Avneet Saini**, Mayank Maan, Shubhi Joshi, Indian Patent Office, Application No. 202511050884, 27 May **2025.**
- A Synthetic Peptide Possessing Antimicrobial and Anticancer Properties. **Avneet Saini**, Pratibha Sharma, Simran Preet, Neha Singla, Praveen Rishi. Indian Patent Office, Application No. 202011015631, 9 April **2020.**

Ph.D. GUIDANCE

Ph.D. Students

- Pankaj, 2026
- Kunal Verma, 2026
- Abhishek, 2025
- Umang Mudgil, 2025
- Ikshika Sharley, 2023
- Mayank Maan, 2021
- Satvika Sharma, (2021-2026)
Studies on the therapeutic Role of Ostarine on Lipid Metabolism in Rat Brain Glioma.
- Sandeep Saini, 2018
- Panchali Barman, (2019-2025)
Design and Validation of a Novel Peptide for detection of Prostate Specific Antigen in Biological Fluids.
- Shubhi Joshi, (2018-2023)
Synthesis and Characterization of Peptide-Functionalized Nano Bioconjugate for Biomedical Applications.
- Sheetal Sharma, (2012-2017)
Studies on the Modulation of Amyloid-Beta Aggregation in the Pathophysiology of Alzheimer's Disease
- Pratibha Sharma, (2016-2020)

M.Sc. Students

- Kunal Verma, 2024-2025. Peptide-based functionalization of Titanium and Glass Ionomer Cement to Prevent Dental Implant-Associated Infections and Secondary Caries.
- Astha, 2023 -2024. Development of a Biodegradable, Zero-Waste Film and Coating for Preservation of Food Quality.
- Mahima, 2022-2023. Evaluating the Biodistribution of free fluorescent DP1 and COU6-PLGA encapsulated DP1 peptide in murine model.
- Prachi Rai, 2022-2023. Protective effects of DP1 against LPS induced Systemic inflammation & Neuroinflammation.
- Hemant Goyal, 2021-2022. Studies to evaluate the therapeutic potential of the synthetic peptide DP1.
- Chakshu Sharma, 2020-2021. Evaluation of Antimicrobial Efficacy of a Novel peptide in Murine Excision Model.
- Piyush, 2019-2020. *In-silico* evaluation of the neuroprotective potential of a novel peptide.
- Ruby Siddiqui, 2018-2019. Synthesis and Characterization of Reduced Graphene Oxide and its Peptide Conjugate: A Versatile Tool with Improved Antibacterial Efficacy.
- Puneet Kaur, 2017-2018. Comparative Pharmacophore Modeling of Tubulin Binding Drugs: A Study Based on Virtual Screening, Molecular Docking and MD Simulations.
- Aindrilla Chatterjee, 2016-2017. Solvent Effects on the Secondary Structure of Antimicrobial Peptide Derived from Chicken Cathelicidin-2: Structural Insights from *In-silico* Studies.
- Aakarshan Datta, 2016-2017. Molecular Simulations to study the Effect of Temperature on the Conformation and Interactions of Chicken Cathelicidin-2 Derived Peptide.
- Reetika Sahore, 2015-2016. Identification of Novel Tubulin Inhibitors: A Virtual Screening, Molecular Docking and Molecular Dynamics Study.
- Sukriti Sharma, 2012-2013. Conformational Studies of Tubulin Binding peptides derived From the Intermediate Filament Protein Desmin.
- Riteshwari Negi, 2011-2012. Conformational Analysis of Vimentin-Tubulin Binding Site Peptide for Its Putative Cell Penetrating Properties.
- Rohit Bansal, 2011-2012. *In-silico* Analysis of the Active Site Loop Regions of New Delhi Metallo- β -Lactamase.
- Tapish Malik, 2011-2012. Structural Characteristics of Tubulin Binding Site Peptides: A Computational Study.

FACULTY DEVELOPMENT COURSES

- 7-Days online Faculty development Programme on “Information Resources and Services for Teaching, Learning and Research” from 01.02.2022 to 07.02.2022 organized by A.C. Joshi Library, Panjab University, Chandigarh.
- 7-Days online Faculty development Programme on “Search, Research and Publication Ethics” from 06.07.2021 to 12.07.2021 conducted by Post Graduate Government College for Girls, Sector-42,

Chandigarh in collaboration with Human Resource Development Centre, Panjab University, Chandigarh under RUSA 2.0 grant.

- 7-days online Faculty development Programme on “Effective Online Teaching and Learning” organized by Dr. SSBUI CET, Panjab University from 14 Sep 2020 to 19 Sep 2020.
- Short-Term Course on Environmental Awareness at UGC-Human Resource Development Centre, Panjab University, Chandigarh. 18 Jan 19 to 24 Jan 2019.
- Short-Term Course in Research Methodology at UGC-Human Resource Development Centre, Panjab University, Chandigarh. 25 Sep 2018 to 1 Oct 2018.
- Refresher Course in Research Methodology (Interdisciplinary) Panjab University, Chandigarh. 1 Sep 2015 to 21 Sep 2015.
- Refresher Course on ‘Research Methodology in Science’ organized by the Department of Biochemistry and Academic Staff College, Panjab University Chandigarh. 23 Nov-13 Dec 2012.
- 93rd Orientation Course organized by ASC, Panjab University from 22 Feb 2012 to 20 March 2012.

INVITED LECTURES/ RESOURCE PERSON

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- Resource Person “Antibacterial Peptides: From Fundamentals to Biomedical Applications”, at the **7-day Faculty Development Programme (FDP)** titled “*Advancing Eco-Friendly Materials: Integrated Spectroscopic, Electrochemical, Computational, and Biological Perspectives*”, **22 April 2026**.
- Resource Person “Peptides: From Design to Structural Characterization”, Resource Person at the **7-day Faculty Development Programme (FDP)** titled “*Advancing Eco-Friendly Materials: Integrated Spectroscopic, Electrochemical, Computational, and Biological Perspectives*”, **17 April 2026**.
- Resource Person “Antimicrobial Resistance: The Road Ahead”, at the Online National Seminar on Antimicrobial Resistance: A Silent Global Pandemic organized by Indian Pharmacy Graduate’s Association-Women Forum at Amar Shaheed Baba Ajit Singh Jujhar Singh Memorial College of Pharmacy, Bela (Ropar), Punjab on **16 March 2026**.
- Invited Lecture “Antimicrobial Resistance: An Invisible Epidemic”, **DBT-Supported Popular Lecture Series** at Amar Shaheed Baba Ajit Singh Jujhar Singh Memorial College of Pharmacy, Bela (Ropar), Punjab, **9-10 Oct 2025**.
- Invited Lecture “A Novel Approach Of Reduced Graphene Oxide Functionalized With Artificial Peptides For Wound Care Regimes”, **4th International Conference on Nanomaterial in Biology** organized by the University of Rajasthan, Jaipur **3-6 Feb 2025**.
- Invited Lecture “Artificially Designed Peptides as Functional Molecules with Diverse Biomedical Applications”, **National Workshop on “First Principle Designing of Functional Molecules and Materials”** Organized by the Institute of Nano Science and Technology, Sahibzada Ajit Singh Nagar, Punjab **3-4 Nov, 2022..**
- Resource Person “Odyssey of Computational Biology: Intersection of biology and information technology”, in the Hands-On Training Program “Advanced Trends in Biomedical Sciences: Research and Skill Development” organized on **1-7 Aug 2022**, under the aegis of **DST-STUTI** Scheme.
- Resource Person “Science for the people and people for the Science”, at the **National Science Day Seminar**; **28.02.2019** at Amar Shaheed Baba Ajit Singh Jujhar Singh Memorial College, Bela, Ropar, Punjab.

- Invited Lecture “Bioinformatics, Molecular Modelling and Drug Designing”, **D.A.V. College Jalandhar** on **15.02.2010**.

CONFERENCES AND WORKSHOPS

- Presented the work “Peptide conjugated reduced graphene oxide as antibacterial nanocomposite” at the 36th EPS, European peptide Symposium and 12th International Peptide Symposium held in Barcelona, Spain on Aug 28-Sep2, **2022** (Online).
- Presented the work “Design of Novel Antimicrobial Peptides and Their Bioconjugation with Graphene-based Nanomaterials” at the 44th Indian Biophysical Society Meeting on “Conceptual advances in biophysics and its applications” held on 30th March 2022- 1st April **2022**.
- **Presented** the work “Novel Antimicrobial Peptides: Designing to Expansion as Bioconjugates with Graphene-based Nanomaterials” at ICONICA 2020 A Global Summit on Next-Gen Paradigms in Health Care held at Panjab University, Chandigarh. 12-14 February, **2020** (*Oral Presentation*).
- Attended International Workshop Scheme for Promotion of Academic and Research Collaboration (SPARC) at Panjab University, Chandigarh. 31 October **2019**.
- Participated in Microcon Punjab Startup Fest 2019 and International conference on Microbial Biotechnology held at Panjab University, Chandigarh. March 6-8, **2019**.
- Presented the Work “*In silico* designing and *In vitro* Biovalidation of Novel Peptide Analog fom Chicken Cathelicidin-2” at the Faculty for the Future Fellows and Alumnae Forum, **Abu Dhabi**, UAE 18 -21 Nov, **2018**.
- Participated in the Global Initiative for Academic Networks Workshop Course on Genome Informatics held at UIET, Panjab University, Chandigarh. October 3-8, **2018**.
- Presented the work “Identification of Novel Tubulin Inhibitors: A Virtual Screening, Molecular Docking and Molecular Dynamics Study” in the Annual Symposium of the Indian Biophysical Society (IBS **2017**) held at IISER Mohali, India during March 23-25, **2017**.
- Symposium **Invited Speaker** at the XXXIII Annual Conference of the Indian Academy of Neuroscience. “Neuroscience Research from Mechanisms to Applications” 2015, 31Oct-2 Nov, **2015**.
- National Biophysics Symposium on ‘Recent Perspectives in Biophysics’ Organized by the Department of Biophysics, PGIMER, Chandigarh. May 11, **2013**.
- National Symposium on “Recent Trends in Cancer Research” organized by the Department of Biophysics, Panjab University Chandigarh. March **2013**.
- Participated in the Workshop on ‘Hands on training in Patent Searching’, organized by CIPP, Panjab University Chandigarh. 23rd Feb **2013**.
- Poster Presentation: Conformational Characterization of Peptoids using QM and MD Approaches, Avneet Saini, F.S. Nandel; 2011 RSC Macrocyclic and Supramolecular Chemistry Meeting (MASC11), organized by the Department of Chemistry at the University of Bath, Bath- **United Kingdom** from December 19th – 20th Dec’ **2011**
- Attended the National Workshop on “*In silico* Approaches for Designing Bioactive Peptides” organized by Bioinformatics Centre at IMTECH, Chandigarh from 18th – 21st Oct’**2011**.

- Participated in the National Seminar on Recent Advances in Oral Controlled Drug Delivery System, organized by Amar Shaheed Baba Ajit Singh Jujhar Singh Memorial College of Pharmacy, Bela (Ropar) Punjab on 1st Oct' **2011**.
- Attended the 13th Punjab Science Congress: Climate Changes, Concerns and Solutions, **2010**; Chandigarh, India
- 'Conformational Preferences of Peptoids', 6th Asian Biophysics Association Symposium, **Hong Kong**, January **2009**, (*Poster presentation*).
- 'Conformational Preferences of Water Solvated Antimicrobial Peptoid Designs: Molecular Dynamics Simulations', National Symposium on Biophysics 'Biophysics in Medicine and Biology, **2007**, Chandigarh (*Oral presentation*).
- Attended the National Workshop on "Computational Approaches for Predicting Molecular Interactions" organized by Bioinformatics Centre at IMTECH, Chandigarh from 9th – 12th Oct'2007.
- 'Peptoids as Antimicrobial Mimetics – A Computational Study', Saini A., Nandel F. S.; National Symposium on Biophysics: Trends in Biomedical Research 2007; New Delhi; India. (*Poster Presentation*)
- 'Construction and Conformational Study of Antimicrobial Peptoid Mimics', Saini A., Nandel F. S.; Indian Biophysical Society Meet 2006, Kolkata; India. (*Poster Presentation*)
- 'Designing and Conformational Study of Magainin Mimics- Peptoids', Saini A., Nandel F. S.; National Conference on Thermodynamics of Chemical and Biological Systems 2005, Amritsar; India. (*Oral Presentation*)
- 'Construction of Biomimetic peptides containing unusual amino acid t-Leu' Nandel F. S., Saini A.; National Conference on Thermodynamics of Chemical and Biological Systems 2005, Amritsar; India. (*Poster Presentation*)
- Participated in The 91st Session of Indian Science Congress Association (2004), Chandigarh; India.
- Participated in the National Symposium on Oxidative Stress (2003), Chandigarh; India.

MEMBERSHIPS

- Life Member of 'Indian Biophysics Association'.
- Life Member of 'Indian Association of Biomedical Scientists'.