**CURRICULUM VITAE**

**Prof. Jayanta Haldar**, PhD, FRSC

Nationality: Indian

Date of birth: 28th November, 1974

Email: [jayanta@jncasr.ac.in](mailto:jayanta@jncasr.ac.in), [jayanta.jnc@gmail.com](mailto:jayanta.jnc@gmail.com)

Tel: +91-80-2208-2565 (O); +919449019745 (M)

URL for web site: <https://www.jncasr.ac.in/faculty/jayanta>

Social Media: Twitter handle - [@jayanta\_jncasr](https://twitter.com/jayanta_jncasr?s=20); Linkedin-https://www.linkedin.com/in/jayanta-haldar-837826120

**Antimicrobial Research Laboratory at JNCASR**

My research integrates various interdisciplinary approaches for understanding and countering antimicrobial resistance (AMR). My group has developed various novel therapeutics and new synergistic strategies for tackling infections caused by pathogenic bacteria, fungi and viruses. We have also worked towards developing smart biomaterials which aid in preventing the spread of infectious diseases, as well as cure infections and enhance wound healing.

The specific aims are:

**Smart Biomaterials**

* Antimicrobial paints and coatings
* Antimicrobial coatings for invasive biomaterials (catheters, ventilator tubing, etc.)
* Antimicrobial sealants
* Antimicrobial and haemostatic sponges
* Shear-thinning materials for wound dressing
* Injectable antimicrobial wound healing hydrogels

**Novel Therapeutics**

* Peptidomimetic small and macromolecular antimicrobial agents
* Semisynthetic glycopeptide and β-lactam antibiotics
* β-lactamase inhibitors
* Broad-spectrum antibiotic adjuvants
* Antibiofilm and anti-persister agents

**CURRENT POSITION**

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| 2021-present | Professor, New Chemistry Unit and School of Advanced Materials, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India |

**PREVIOUS POSITIONS**

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| --- | --- |
| 2015–2021 | Associate Professor, New Chemistry Unit and School of Advanced Materials, JNCASR, Bangalore, India |
| 2009–2015 | Assistant Professor, New Chemistry Unit, JNCASR, Bangalore, India |
| 2004-2009 | Postdoctoral Associate, Massachusetts Institute of Technology (MIT), Cambridge, USA; *With Prof. Alexander M. Klibanov (Chemistry) and Prof. Jianzhu Chen (Koch Institute for Integrative Cancer Research at MIT)* |

**EDUCATION**

|  |  |
| --- | --- |
| 2005 | PhD (Bioorganic Chemistry), Indian Institute of Science, Bangalore, India  *With Prof. Santanu Bhattacharya* |
| 1999 | M.S. (Chemistry, Int. PhD), Indian Institute of Science, Bangalore, India |
| 1996 | B.Sc. (Chemistry), Presidency College, University of Calcutta, India |

**FELLOWSHIPS AND AWARDS**

|  |  |
| --- | --- |
| 2021 | Fellow, Royal Society of Chemistry |
| 2020 | Indo-U.S. Science & Technology Forum (IUSSTF) Award for COVID-19 Virtual Networks |
| 2018 | 8th National Award for Technology Innovation, Ministry of Chemicals & Fertilizers, Govt. of India |
| 2018 | Sheikh Saqr Career Award Fellowship |
| 2018 | Chemical Research Society of India (CRSI) Bronze Medal |
| 2017 | Central Drug Research Institute (CDRI) award for Excellence in Drug Research (In the Chemical Sciences category) |
| 2016 | BIRAC-SRISTI-Gandhian Young Technological Innovation (GYTI) award |
| 2016 | BIRAC-SRISTI appreciation award |
| 2015 | BIRAC-SRISTI-Gandhian Young Technological Innovation (GYTI) award |
| 2015 | BIRAC-SRISTI appreciation award |
| 2010 | Ramanujan Fellowship, Department of Science and Technology (DST), Government of India |
| 2004 | Postdoctoral Fellowship, Dept of Chemistry, Massachusetts Institute of Technology, USA |
| 1996 | Integrated PhD Fellowship, Chemical Science Division, Indian Institute of Science, India |

**PUBLICATIONS**

**Total Publications:** 93 Research Articles (75 as corresponding author) + 11 Review articles (10 as corresponding author) + 7 Book Chapters (6 as corresponding author)

**Citations:** 4377, **h-index:** 40, **i-10 index:** 74 (According to Google Scholar as on 21th February, 2022)

1. Bhattacharjee, B.; Jolly, L.; Mukherjee, R.; **Haldar, J.\***. An easy-to-use antimicrobial hydrogel effectively kills bacteria, fungi, and influenza virus. *Biomaterials Science* **2022**, *Just accepted*.
2. Ghosh S.; Mukherjee, S.; Patra, D.; **Haldar, J.\***. Polymeric Biomaterials for Prevention and Therapeutic Intervention of Microbial Infections, *Biomacromolecules* **2022**, DOI: 10.1021/acs.biomac.1c01528.
3. P. V. Panteleev, P. V.; Bolosov, I. A.; Khokhlova, V. A.; Dhanda, G.; Balandin, S. V.; Haldar, J.; Ovchinnikova, T. V. Analysis of Antibacterial Action of Mammalian Host-Defense Cathelicidins and Induction of Resistance to Them in MβL-Producing *Pseudomonas aeruginosa*. *Bulletin of Experimental Biology and Medicine* **2022**, *172*, 447-452.
4. Barman, S.; Dhanda, G.; Naik, P.; Mukherjee, R.; Joseph, J.; **Haldar, J.\***. Multi-Functional Small Molecules with Temporal Charge-Switchability Tackle Infection and Inflammation *Adv. Therap.* **2022**, *2100234*, 1-14.
5. Acharya, Y.; Dhanda, G.; Sarkar, P.; **Haldar, J.\***. Pursuit of Next-generation Glycopeptides: A Journey with Vancomycin. *Chem. Commun.* **2022**, *58*, 1881-1897.
6. Acharya, Y.; Bhattacharyya, S.; Dhanda, G.; **Haldar, J.\***. Emerging roles of glycopeptide antibiotics: moving beyond Gram-positive bacteria. *ACS Infect. Dis.* **2022**, *8*, 1-28.
7. Bhattacharjee, B.; Ghosh, S.; Mukherjee, R.; **Haldar, J.\***. Quaternary Lipophilic Chitosan and Gelatin Cross-Linked Antibacterial Hydrogel Effectively Kills Multidrug-Resistant Bacteria with Minimal Toxicity toward Mammalian Cells. *Biomacromolecules* **2021**, *22*, 557-571.
8. Ghosh, S.; Jolly, L.; **Haldar, J.\***. Polymeric paint coated common-touch surfaces that can kill bacteria, fungi and influenza virus. *MRS Comm.* **2021**, *11*, 610-618.
9. Dey, R.; Mukherjee S.; Barman S.; **Haldar, J.\***. Macromolecular Nanotherapeutics and Antibiotic Adjuvants to Tackle Bacterial and Fungal Infections. *Macromol Biosci.* **2021**, *e2100182*. (DOI: 10.1002/mabi.202100182).
10. Bhattacharjee, B; Ghosh, S; Patra, D; **Haldar, J.\***. Advancements in release-active antimicrobial biomaterials: A journey from release to relief. *Wiley Interdiscip Rev Nanomed Nanobiotechnol.* **2021**, *e1745*. (DOI: 10.1002/wnan.1745).
11. Sarkar, P.; Basak, D.; Mukherjee, R.; Bandow, J. E.; **Haldar, J.\***. Alkyl-Aryl-Vancomycins: Multimodal Glycopeptides with Weak Dependence on the Bacterial Metabolic State. *J. Med. Chem.* **2021**, *64*, 10185-10202.
12. Bhattacharjee, B.; Ghosh, S.; Mukherjee, R.; **Haldar, J.\***. Quaternary Lipophilic Chitosan and Gelatin Cross-Linked Antibacterial Hydrogel Effectively Kills Multidrug-Resistant Bacteria with Minimal Toxicity toward Mammalian Cells. *Biomacromolecules* **2021**, *22*, 557-571.
13. Ghosh, S.; Mukherjee, R.; Basak, D.; **Haldar, J.\***. One-Step Curable, Covalently Immobilized Coating for Clinically Relevant Surfaces That Can Kill Bacteria, Fungi, and Influenza Virus. *ACS Appl Mater Interfaces*. **2020**, *12*, 27853-27865.
14. Ghosh, C.; Abdel Khalek, A.; Mohammad H, Seleem M. N.\*; **Haldar, J.\***. Aryl-alkyl-lysines: Novel agents for treatment of *C. difficile* infection. *Sci Rep*. **2020**, *10*, 5624.
15. Mukherjee, S.; Barman, S.; Mukherjee, R.; **Haldar, J.\***. Amphiphilic Cationic Macromolecules Highly Effective Against Multi-Drug Resistant Gram-Positive Bacteria and Fungi With No Detectable Resistance. *Front Bioeng Biotechnol*. **2020**, *8*, 55, 1-19.
16. Sarkar, P.; Samaddar, S.; Ammanathan, V.; Yarlagadda, V.; Ghosh, C.; Shukla, M.; Kaul, G.; Manjithaya. R.; Chopra, S.; **Haldar, J.\*.** Vancomycin Derivative Inactivates Carbapenem-Resistant Acinetobacter baumannii and Induces Autophagy. *ACS Chem Biol,* **2020**, *15*, 884-889.
17. Konai, M. M.; Pakrudheen, I.; Barman, S.; Sharma, N.; Tabbasum, K.; Garg, P.; **Haldar, J.\***. Cyclam-based Antibacterial Molecule Eradicates Gram-negative Superbugs with Potent Efficacy against Human Corneal Infection. *Chem. Commun*. *(Camb.)* **2020**, *56*, 2147-2150.
18. Konai, M. M.; **Haldar, J.\***. Lysine-Based Small Molecule Sensitizes Rifampicin and Tetracycline against Multidrug-Resistant *Acinetobacter baumannii* and *Pseudomonas aeruginosa*. *ACS Infect. Dis*. **2020**, *6*, 91-99.
19. Ghosh, C.; Sarkar, P.; Issa, R.; **Haldar, J.\***. Alternatives to Conventional Antibiotics in the Era of Antimicrobial Resistance*. Trends. Microbio*l, **2019**, *27*, 323-338.
20. Barman, S.; Konai, M. M.; Samaddara, S.; **Haldar, J.\***. Amino-Acid Conjugated Polymers: Antibacterial Agents Effective against Drug-resistant *A. baumannii* with no Detectable Resistance. *ACS Appl. Mater. Interfaces*, **2019**, *11*, 33559−33572.
21. Barman, S.; Mukherjee, S.; Ghosh, S.; **Haldar, J.\***. Amino-Acid-Conjugated Polymer-Rifampicin Combination: Effective at Tackling Drug-Resistant Gram-Negative Clinical Isolates. *ACS Appl. Bio Mater*. **2019**, *2*, 5404-5414.
22. Hoque, J.; Ghosh, S.; Paramanandham, K.; **Haldar, J.\***. Charge-Switchable Polymeric Coating Kills Bacteria and Prevents Biofilm Formation in Vivo. *ACS Appl. Mater. Interfaces,* **2019***, 11*, 39150-39162.
23. Dey, R.; De, K.; Mukherjee, R.; Ghosh, S.; **Haldar, J.\***. Small Antibacterial Molecules Highly Active against Drug-Resistant *Staphylococcus aureus*. *Med. Chem. Commun.,* **2019***, 10,* 1907-1915.
24. Ghosh, C.; Harmouche, N.; Bechinger, B.; **Haldar, J.**\*. Aryl-Alkyl-Lysines Interact with Anionic Lipid Components of Bacterial Cell Envelope Eliciting Anti-Inflammatory and Antibiofilm Properties. *ACS Omega*, **2018**, *3,*9182-9190.
25. Hoque, J.; Yadav, V.; Prakash, R. G.; Sanyal, K.; **Haldar, J.**\*. Dual-Function Polymer−Silver Nanocomposites for Rapid Killing of Microbes and Inhibiting Biofilms. *ACS Biomater. Sci. Eng.*, **2018**, *5*, 81-91.
26. Konai, M. M.; Samaddar, S.; Bocchinfuso, G.; Santucci, V.; Stella, L.; **Haldar, J.**\*. Selectively Targeting Bacteria by Tuning the Molecular Design of Membrane-active Peptidomimetic Amphiphiles. *Chem. Commun.*, **2018**, *54*, 4943-4946
27. Yarlagadda, V.; Sarkar, P.; Samaddar, S.; Manjunath, G. B.; Mitra, S. D.; Paramanandham, K.; Shome, B. R.; **Haldar, J.**\*. Vancomycin Analogue Restores Meropenem Activity against NDM-1 Gram-Negative Pathogens. *ACS Infect. Dis.*, **2018**, *4*, 1093−1101
28. [Dhanda](https://pubs.acs.org/author/Dhanda%2C+Geetika), G.; [Sarkar](https://pubs.acs.org/author/Sarkar%2C+Paramita), P.; [Samaddar](https://pubs.acs.org/author/Samaddar%2C+Sandip), S.; **Haldar, J.**[**\***](https://pubs.acs.org/doi/abs/10.1021/acs.jmedchem.8b01093#cor1). Battle against Vancomycin-Resistant Bacteria: Recent Developments in Chemical Strategies.*J. Med. Chem.* **2018,*****62*, 3184-3205.**
29. Konai, M. M.; Bhattacharjee, B.; Ghosh, S.; **Haldar, J.\***. Recent Progress in Polymer Research to Tackle Infections and Antimicrobial Resistance. *Biomacromolecules*, **2018**, 19, 1888–1917
30. Sarkar, P.; Yarlagadda, V.; Ghosh, C.; **Haldar, J.\***. A Review on Cell Wall Synthesis Inhibitors with an Emphasis on Glycopeptide Antibiotics. *Med. Chem.Comm.* **2017**, *8,* 516-533.
31. Hoque, J.; Bhattacharjee, B.; Prakash, R. G.; Paramanandham, K.; **Haldar, J.**\*. Dual Function Injectable Hydrogel for Controlled Release of Antibiotic and Local Antibacterial Therapy. *Biomacromolecules*, **2017**, *19*, 267-278.
32. Challa, C.; Ravindran, J.; Konai, M. M.; Varughese, S.; Jacob, J.; Kumar, B. S. D.; **Haldar, J.**; J. Lankalapalli, R. S. Expedient Synthesis of Indolo[2,3‑b]quinolines, Chromeno[2,3‑b]indoles, and 3‑Alkenyl-oxindoles from 3,3′-Diindolylmethanes and Evaluation of Their Antibiotic Activity against Methicillin-Resistant *Staphylococcus aureus*. *ACS Omega*, **2017**, *2*, 5187-5195.
33. Uppu, D. S. S. M.; Konai, M. M; Sarkar, P.; Samaddar, S.; Fensterseifer, I. C. M.; Farias-Junior, C.; Paramanandam, K.; Shome, B. R.; Francob, O. L.; **Haldar, J.**\*. Membrane-Active Macromolecules Kill Antibiotic-Tolerant Bacteria and Potentiate Antibiotics Towards Gram-negative Bacteria. *PLoS One*, **2017**, *12*, e0183263. [Featured in *The Hindu* (3rd September, 2017]
34. Konai, M. M.; Adhikary, U.; **Haldar, J.**\*. Design and Solution Phase Synthesis of Membrane Targeting Lipopeptides with Selective Antibacterial Activity. *Chem. Eur. J.*, **2017**, *23*, 12853-12860.
35. Ghosh, C.; Sarkar, P.; Samaddar, S.; Uppu, D. S. S. M.; **Haldar, J.**\*. L-lysine based lipidated biphenyls as agents with anti-biofilm andanti-inflammatory properties that also inhibit intracellular bacteria. *Chem. Comm*., **2017**, *53*, 8427-8430.
36. Hoque, J.; **Haldar, J.\***. Direct Synthesis of Dextran-based Antibacterial Hydrogels for Extended Release of Biocides and Eradication of Topical Biofilms. *ACS Appl. Mater. Interfaces* **2017**, *9*, 15975-15985
37. Ghosh, C.; Yadav, V.; Younis, W.; Mohammad, H.; Hegazy, Y. A.; Seleem, M. N.; Sanyal, K.; **Haldar, J.\***. Aryl-alkyl-lysines: Membrane-active Fungicides That Act against Biofilms of *Candida albicans*. *ACS Infect. Dis.* **2017**, *3*, 293-301.
38. Konai, M. M.; **Haldar, J.\***. Fatty Acid Comprising Lysine Conjugates: Anti-MRSA Agents That Display In-vivo Efficacy by Disrupting Biofilms with No Resistance Development. *Bioconjugate Chem.* **2017**, *28*, 1194-1204. [Featured in *ACS Chemistry for Life* (15th March, 2017), *EurekAlert! The Global Source for Science News* (15th March, 2017), *NEWS MEDICAL LIFE SCIENCES* (15th March, 2017), *PHY.ORG* (15th March, 2017), *DOLPHNSIX* (15th March, 2017), *UPI* (15th March, 2017), *Medicalnewser.com* (15th March, 2017), *MNT* (15th March, 2017), *Outbreak News Today* (15th March, 2017), *Wn.COM* (15th March, 2017), *GLOBAL NEWS BLOG* (16th March, 2017), *Science Newsline Medicine* (16th March, 2017), *LABline* (16th March, 2017), *JAB NEWS* (16th March, 2017), *ALN* (17th March, 2017), *MedicalNewsToday* (17th March, 2017), *INVERSE SCIENCE* (18th March, 2017), *azcentral* (18th March, 2017), *FirstWord PHARMA* (19th March, 2017), *Standard-Times* (19th March, 2017), *HiTechDays.com* (19th March, 2017), *NORTH SHORE NOW* (19th March, 2017), *MDLinx, Top News in Dermatology* (22nd March, 2017), *MDLinx, Top News in Dermatology* (22nd March, 2017), *India Science Wire* (23rd March, 2017), *Canada Free Press* (22nd March, 2017), ]
39. Hoque, J.; Prakash, R. G.; Paramanandham, K.; Shome, B. R.; **Haldar, J.\***. A Biocompatible Injectable Hydrogel with Potent Wound Healing and Antibacterial Properties. *Mol. Pharmaceutics*, **2017**, *14*, 1218-1230.
40. Ghosh, C.; Chaubey, S.; Tatu, U.; **Haldar, J.\***. Aryl-alkyl-lysines: Small Molecular Membrane-active Antiplasmodial Agents. *Med. Chem. Comm.* **2017**, *8*, 434-439.
41. Hoque, J.; Konai, M. M.; Sequeira, S. S.; Samaddar, S.; **Haldar, J.\***. Antibacterial and Antibiofilm Activity of Cationic Small Molecules with Spatial Positioning of Hydrophobicity: An In Vitro and In Vivo Evaluation. *J. Med. Chem.* **2016**, *59*, 10750-10762.
42. Dowall, S. D.; Bewley, K.; Watson, R. J.; Vasan, S. S.; Ghosh, C.; Konai, M. M.; Gausdal, G.; Lorens, J. B.; Long, J.; Barclay, W.; Garcia-Dorival, I.; Hiscox, J.; Bosworth, A.; Taylor, I.; Easterbrook, L.; Pitman, J.; Summers, S.; Chan-Pensley, J.; Funnell, S.; Vipond, J.; Charlton, S.; **Haldar, J.**; Hewson, R.; Carroll, M. W. Antiviral Screening of Multiple Compounds against Ebola Virus. *Viruses* **2016**, *8*, 277.
43. Hoque, J.; Akkapeddi, P.; Uppu, D. S. S. M.; **Haldar, J.\***. A Biodegradable Polycationic Paint that Kills Bacteria In Vitro and In Vivo. *ACS Appl. Mater. Interfaces* **2016**, *8*, 29298–29309
44. Ghosh, C.; Konai, M. M.; Sarkar, P.; Samaddar, S.; **Haldar, J.\***. Designing Simple Lipidated Lysine: Bifurcation Imparts Selective Antibacterial Activity. *ChemMedChem*, **2016**, *11*, 2376-2371.
45. Hoque, J.; Adhikary, U.; Yadav, V.; Samaddar, S.; Konai, M. M.; Prakash, R. G.; Paramanandham, K.; Shome, B. R.; Sanyal, K.; **Haldar, J.\***. Chitosan Derivatives Active against Multi-Drug-Resistant Bacteria and Pathogenic Fungi: In Vivo Evaluation as Topical Antimicrobials. *Mol. Pharmaceutics,*  **2016,** *13*, 3578-3589
46. Uppu, D. S. S. M.; Samaddar, S.; Hoque, J.; Konai, M. M.; Paramanandham, K.; Shome, B. R.; **Haldar, J.\***. Side Chain Degradable Cationic-amphiphilic Polymers with Tunable Hydrophobicity Show In-vivo Activity. *Biomacromolecules*, **2016,** *17*, 3094-3102.
47. Uppu, D. S. S. M.; Konai, M. M.; Baul, U.; Singh, P.; Siersma, T. K.; Samaddar, S.; Vemparala, S.; Hamoen, L. W.; Narayana, C.; **Haldar, J.\***. Isosteric Substitution in Cationic-amphiphilic Polymers Reveals an Important Role for Hydrogen Bonding in Bacterial Membrane Interactions. *Chem. Sci.* **2016**, *7*, 4613-4623.
48. Yarlagadda, V.; Sarkar, P.; Samaddar, S.; **Haldar, J.\***. Incorporation of Pyrophosphate Binding Ability to Vancomycin: A Strategy to Combat Vancomycin-resistant Bacteria. *Angew. Chem. Int. Ed.* **2016**, *27*, 7836-7840.
49. Uppu, D. S. S. M.; Bhowmick, M.; Samaddar, S.; **Haldar, J.\***. Cyclization and Unsaturation rather than Isomerisation of Side Chains govern the Selective Antibacterial Activity of Cationic-amphiphilic polymers. *Chem. Comm.* **2016**, *52*, 4644-4647.
50. Uppu, D. S. S. M.; **Haldar, J.\***. Lipopolysaccharide Neutralization by Cationic-amphiphilic Polymers through Pseudo-aggregate Formation. *Biomacromolecules* **2016**, *17*, 862–873.
51. Yarlagadda, V.; Samaddar, S.; **Haldar, J.\***. Intracellular Activity of a Membrane-active Glycopeptide Antibiotic against Methicillin-resistant *Staphylococcus aureus* Infection. *J. Glob. Antimicrob. Resist.* **2016**, *5*, 71-74.
52. Uppu, D. S. S. M.; Samaddar, S.; Ghosh, C.; Paramanandam, K.; Shome, B. R.; **Haldar, J.\***. Amide Side Chain Amphiphilic Polymers Disrupt Surface Established Bacterial Bio-films and Protect Mice from Chronic *Acinetobacter baumannii* Infection. *Biomaterials* **2016**, *74*, 131-143.
53. Ghosh; C.; Manjunath; G. B.; Konai; M. M.; Uppu; D. S. S. M.; Hoque, J.; Krishnamoorthy P.; Shome, B. R.; **Haldar, J.\***. Aryl-Alkyl-Lysines: Agents That Kill Planktonic Cells, Persister Cells, Biofilms of MRSA and Protect Mice from Skin-infection. *PLoS One*, **2015**, *10*:e0144094.
54. Ghosh, C.; Manjunath, G. B.; Konai, M. M.; Uppu, D. S. S. M.; Krishnamoorthy, P.; Shome, B. R.; Ravikumar, R.; **Haldar, J.\***. Aryl-alkyl-lysines: Membrane-Active Small Molecules Active against Murine Model of Burn Infection. *ACS Infect. Dis.***2015***, 2*, 111–122.
55. Yarlagadda, V.; Manjunath, G. B.; Sarkar, P.; Akkapeddi, P.; Krishnamoorthy, P.; Shome, B. R.; Ravikumar, R.; **Haldar, J.\***. Glycopeptide Antibiotic to Overcome The Intrinsic Resistance of Gram-negative Bacteria. *ACS Infect. Dis.*, **2015**, *1*, 469–478.
56. Yarlagadda, V.; Sarkar, P.; Manjunath, G. B.; **Haldar, J.\***. Lipophilic Vancomycin Aglycon Dimer with High Activity against Vancomycin-resistant Bacteria. *Bioorg. Med. Chem. Lett.* **2015**, *25*, 5477-5480. [Featured in *nature INDIA* (17th November, 2015]
57. Konai, M. M.; Adhikary, U.; Samaddar, S.; Ghosh, C.; **Haldar, J.\***. Structure-activity Relationship of Amino acid Tunable Lipidated Norspermidine Conjugates: Disrupting Biofilms with Potent Activity against Bacterial Persisters. *Bioconjugate Chem.,* **2015***, 26,* 2442-2453.
58. Yarlagadda, V.; Samaddar, S.; Paramanandam, K.; Shome, B. R.; **Haldar, J.\***. Membrane Disruption and Enhanced Inhibition of Cell wall Biosynthesis: A Synergistic Approach to Tackle Vancomycin-resistant Bacteria. *Angew. Chem., Int. Ed.,* **2015***, 54,* 13644-13649.
59. Konai, M. M.; **Haldar, J.\***. Lysine-based Small Molecules That Disrupt Biofilms and Kill Both Actively Growing Planktonic and Non-dividing Stationary Phase Bacteria. *ACS Infect. Dis.* **2015**, *1*, 469-478.
60. Hoque, J.; Konai, M. M.; Samaddar, S.; Gonuguntla, S.; Manjunath, G. B.; Ghosh, C.; **Haldar, J.\***. Selective and Broad Spectrum Amphiphilic Small Molecules to Combat Bacterial Resistance and Eradicate Biofilm. *Chem. Commun.* **2015**, *51*, 13670-13673.
61. Hoque, J.; Konai, M. M.; Gonuguntla, S.; Manjunath, G. B.; Samaddar, S.; Yarlagadda, V.; **Haldar, J.\***. Membrane Active Small Molecules Show Selective Broad Spectrum Antibacterial Activity with No Detectable Resistance and Eradicate Biofilms. *J. Med. Chem.* **2015**, *58*, 5486-5500.
62. Yarlagadda, V.; Konai, M. M.; Paramanandam, K.; Nimita, V. C.; Shome, B. R.; **Haldar, J. \***. In-vivo Efficacy and Pharmacological Properties of A Novel Glycopeptide (YV4465) against Vancomycin-Intermediate Staphylococcus aureus (VISA). *Int. J. Antimicrob. Agents* **2015**, *46*, 446-450.
63. Yarlagadda, V.; Konai, M. M.; Manjunath, G. B.; Prakash, R. G.; Mani, B.; Paramanandham, K.; Ranjan, S. B.; Ravikumar, R.; Chakraborty, S. P.; Roy, S.; **Haldar, J.\***. In-vivo Antibacterial Activity and Pharmacological Properties of Membrane Active Glycopeptide Antibiotic (YV11455). *Int. J. Antimicrob. Agents* **2015**, *45*, 627-634.
64. Uppu, D. S. S. M.; Manjunath, G. B.; Yarlagadda, V.; Kaviyil, J. E. Ravikumar, R.; Paramanandham, K.; Shome, B. R.; **Haldar, J.\***. Membrane-active Macromolecules Resensitize NDM-1 Gram-negative Clinical Isolates to Tetracycline Antibiotics. *PLoS One* **2015**, *10*, e0119422.
65. Ghosh, C.; **Haldar, J.\***. Membrane Active Small Molecules: Designs Inspired from Antimicrobial Peptides. *ChemMedChem* **2015**, *10*, 1606-1624.
66. Uppu, D. S. S. M.; Ghosh, C.; **Haldar, J.\***. Surviving Sepsis in The Era of Antibiotic Resistance: Are There Any Alternative Approaches to Antibiotic Therapy? *Microb. Pathog.* **2015**, *80*, 7-13.
67. Hoque, J.; Akkapeddi, P.; Yadav, V.; Manjunath, G. B.; Uppu, D. S. S. M.; Konai, M. M.; Yarlagadda, V.; Sanyal, K.; **Haldar, J.\***. Broad Spectrum Antibacterial and Antifungal Polymeric Paint Materials: Synthesis, Structure-activity Relationship and Membrane-active Mode of Action. *ACS Appl. Mater. Interfaces* **2015**, 7, 1804-1815.
68. Yarlagadda, V.; Konai, M. M.; Manjunath, G. B.; Ghosh, C.; **Haldar, J.\***. Tackling Vancomycin-resistant Bacteria with Lipophilic-vancomycin-carbohydrate Conjugates. *J. Antibiot.* **2015**, *68*, 302-312.
69. Konai, M. M.; Ghosh, C.; Yarlagadda, V.; Samaddar, S.; **Haldar, J.\***. Membrane Active Phenylalanine Conjugated Lipophilic Norspermidine Derivatives with Selective Antibacterial Activity. *J. Med. Chem.* **2014**, *57*, 9409-9423.
70. Yarlagadda, V.; Akkapeddi, P.; Manjunath, G. B.; **Haldar, J.\***. Membrane Active Vancomycin Analogues: A Strategy to Combat Bacterial Resistance. *J. Med. Chem*. **2014**, *57*, 4558-4568. [Featured in *The Times of India News* (10th July, 2014), *World of Chemicals* (10th July, 2014), *Pakistan Defence* (12th July, 2014), *The New Indian Express* (13th July 2014), Health City (13th July 2014), Scroll.in (18th July 2014), Rajya Sabha TV, Science monitor and Gyan Vigyan programme (2nd August 2014), DD India TV, Science this week programme (3rd August 2014)]
71. Hoque, J.; Gonuguntla, S.; Yarlagadda, V.; Aswal, V. K.; **Haldar, J.\***. Effect of Amide Bonds on the Self-assembly of Gemini Surfactants. *Phys. Chem. Chem. Phys.* **2014**, *16*, 11279-11288.
72. Ghosh, C.; Manjunath, G. B.; Akkapeddi, P.; Yarlagadda, V.; Hoque, J.; Uppu, D. S. S. M.; Konai, M. M.; **Haldar, J.\***. Small Molecular Antibacterial Peptoid Mimics: The Simpler The Better! *J. Med. Chem*. **2014**, *57*, 1428-1436. [Most cited paper in the year 2014 of the journal *J. Med. Chem.*]
73. Uppu, D. S. S. M.; Akkapeddi, P.; Manjunath, G. B.; Yarlagadda, V.; Hoque, J.; **Haldar, J.\***. Polymers with Tunable Side-chain Amphiphilicity as Non-hemolytic Antibacterial Agents. *Chem. Commun.* **2013**, *49*, 9389-9391.
74. Hoque, J.; Akkapeddi, P.; Yarlagadda, V.; Uppu, D. S. S. M.; Kumar, P.; **Haldar, J.\***. Cleavable Cationic Antibacterial Amphiphiles: Synthesis, Mechanism of Action, and Cytotoxicities. *Langmuir* **2012**, *28*, 12225-122234.
75. Hoque, J.; Kumar, P.; Aswal, V. K.; **Haldar, J.\***. Aggregation Properties of Amide Bearing Cleavable Gemini Surfactants by Small Angle Neutron Scattering and Conductivity Studies. *J. Phys. Chem. B* **2012**, *116*, 9718-9726.
76. **Lee, C. M.; Weight, A. K.; Haldar, J., Wang, L.; Klibanov, A. M.\* and Chen, J.\*. Polymer-attached zanamivir inhibits synergistically both early and late stages of inﬂuenza virus infection,** Proc. Natl. Acad. Sci. USA **2012**, 20385-20390.
77. **Weight, A. K.; Haldar, J.; De Cienfuegos, L. A.; Gubareva, L. V.; Tumpey, T. M.; Chen, J.\* and Klibanov, A. M.\*. Attaching zanamivir to a polymer markedly enhances its activity against drug-resistant strains of influenza A virus,**J. Pharm. Sci. **2011**, 100, 831-835.
78. **Larson, A. M; Hsu, B.; Rautaray, D.; Haldar, J; Chen, J.\* and Klibanov, A. M.\*. Hydrophobic polycationic coatings disinfect poliovirus and rotavirus solutions,** Biotechnol. Bioeng. **2011**, 108, 720-723.
79. **Haldar, J**, **De Cienfuegos, A. A.; Tumpey, T. M.; Gubareva, L. V.; Chen, J.; Klibanov, A. M.**Bifunctional polymeric inhibitors of influenza A viruses *Pharm. Res.* **2010**, *27*, 259-263.
80. **Haldar, J**; Chen, J.; **Tumpey, T. M.; Gubareva, L. V.; Klibanov, A. M.** Hydrophobic polycationic coatings inactivate wild-type and zanamivir- and/or oselatamivir-resistant human and avian influenza viruses *Biotech. Lett.,* **2008**, *30*, 475-479.
81. **Haldar, J**.; Weight, A. K.; Klibanov, A. M. Preparation, application and testing of permanently antibacterial and antiviral coatings, *Nature Protocols,* **2007**, *2*, 2412-2417.
82. **Haldar, J.;** Deqiang An, Luis Alvarez De Cienfuegos, Jianzhu Chen, and Alexander M. Klibanov, “Polymer coatings that inactivate both influenza virus and pathogenic bacteria”, *Proc. Natl. Acad. Sci. USA* **2006**, *103*, 17667-17671. [Featured in *Scientific American* (13th Nov, 2006), *Chemical Engineering News, American Chemical Society* (20th Nov, 2006, Vol. 84, 17), *MIT TechTalk* (6th Dec, 2006), *BBC News* (29th Dec 2006)]
83. **Haldar, J.**; Aswal, V. K.;Goyal, P. S.; Bhattacharya, S. Unusual micellar properties of multi-headed cationic surfactants in presence of strong charge neutralizing salts. *J. Colloid Int. Sci.* **2005**, *282*, 156-161.
84. **Haldar, J.;** Kondiah, P.; Bhattacharya, S. Synthesis and antibacterial properties of novel hydrolyzable cationic amphiphiles. Incorporation of multiple headgroups leads to impressive antibacterial activity.*J. Med. Chem.* **2005**, *48*, 3823-3831.
85. Bhattacharya, S.; **Haldar, J.** “Microcalorimetric and conductivity studies with micelles prepared from multi-headed pyridinium surfactants”, *Langmuir,* **2005**, *22*, 5747-5751.
86. **Haldar, J.**; Aswal, V. K.;Goyal, P. S.; Bhattacharya, S. Aggregation properties of novel cationic surfactants with multiple pyridinium headgroups. Small-angle neutron scattering and conductivity studies. *J. Phys. Chem. B,* **2004**, *108*, 11406-11411.
87. Bhattacharya, S.; **Haldar, J.** Thermodynamics of micellization of multiheaded single-chain cationic surfactants. *Langmuir,* **2004**, *20*, 7940-7947.
88. **Haldar, J.**; Aswal, V. K.;Goyal, P. S.; Bhattacharya, S. Small-angle neutron scattering study of aggregate structures of multi-headed pyridinium surfactants in aqueous solution. *Pramana,* **2004**, *63*, 303-307.
89. Aswal, V. K.; **Haldar, J.**; De, S.;Goyal, P. S.; Bhattacharya, S. Characterization of vesicles from ion-paired gemini surfactants by small angle neutron scattering. *Phys.Chem. Chem, Phys.,* **2003**, *5*, 907-910.
90. Bhattacharya, S.; **Haldar, J.** “Molecular design of surfactants to tailor its aggregation properties”, *Colloids Surf. A: Physiochem. Eng. Aspects*, **2002**, *205*, 119-126.
91. Bhattacharya, S; **Haldar, J.**. “Molecular design of surfactants to tailor its aggregation properties”, *Colloids Surf. A: Physiochem. Eng. Aspects*, **2002**, 205, 119-126.
92. Aswal, V. K.;**Haldar, J.**;Goyal, P. S.; Bhattacharya, S. SANS study of micellar aggregation of multi-headed surfactants. *Appl. Phys A: Mater. Sci. Proc.,* **2002**, *74*, S352-S354.
93. **Haldar, J.**; Aswal, V. K.;Goyal, P. S.; Bhattacharya, S. Role of incorporation of multiple headgroups in cationic surfactants on micellar properties. Small angle neutron scattering and fluorescence studies. *J. Phys. Chem. B,* **2001**, *105*, 12803-12808.
94. **Haldar, J.**; Aswal, V. K.;Goyal, P. S.; Bhattacharya, S. Molecular modulation of surfactant aggregation in water. Effect of incorporation of multiple headgroups on micellar properties. *Angew. Chem. Int. Ed.* **2001**, *40*, 1228-1232.

**REVIEW ARTICLES**

1. Ghosh S.; Mukherjee, S.; Patra, D.; **Haldar, J.\***. Polymeric Biomaterials for Prevention and Therapeutic Intervention of Microbial Infections, *Biomacromolecules* **2022**, DOI: 10.1021/acs.biomac.1c01528.
2. Acharya, Y.; Dhanda, G.; Sarkar, P.; **Haldar, J.\***. Pursuit of Next-generation Glycopeptides: A Journey with Vancomycin. *Chem. Commun.* **2022**, *58*, 1881-1897.
3. Acharya, Y.; Bhattacharyya, S.; Dhanda, G.; **Haldar, J.\***. Emerging roles of glycopeptide antibiotics: moving beyond Gram-positive bacteria. *ACS Infect. Dis.* **2022**, *8*, 1-28.
4. Dey, R.; Mukherjee S.; Barman S.; **Haldar, J.\***. Macromolecular Nanotherapeutics and Antibiotic Adjuvants to Tackle Bacterial and Fungal Infections. *Macromol Biosci.* **2021**, *e2100182*. (DOI: 10.1002/mabi.202100182).
5. Bhattacharjee, B; Ghosh, S; Patra, D; **Haldar, J.\***. Advancements in release-active antimicrobial biomaterials: A journey from release to relief. *Wiley Interdiscip Rev Nanomed Nanobiotechnol.* **2021**, *e1745*. (DOI: 10.1002/wnan.1745).
6. Ghosh, C.; Sarkar, P.; Issa, R.; **Haldar, J.\***. Alternatives to Conventional Antibiotics in the Era of Antimicrobial Resistance*. Trends. Microbio*l, **2019**, *27*, 323-338.
7. [Dhanda](https://pubs.acs.org/author/Dhanda%2C+Geetika), G.; [Sarkar](https://pubs.acs.org/author/Sarkar%2C+Paramita), P.; [Samaddar](https://pubs.acs.org/author/Samaddar%2C+Sandip), S.; **Haldar, J.**[**\***](https://pubs.acs.org/doi/abs/10.1021/acs.jmedchem.8b01093#cor1). Battle against Vancomycin-Resistant Bacteria: Recent Developments in Chemical Strategies.*J. Med. Chem.* **2018,*****62*, 3184-3205.**
8. Konai, M. M.; Bhattacharjee, B.; Ghosh, S.; **Haldar, J.\***. Recent Progress in Polymer Research to Tackle Infections and Antimicrobial Resistance. *Biomacromolecules*, **2018**, 19, 1888–1917
9. Sarkar, P.; Yarlagadda, V.; Ghosh, C.; **Haldar, J.\***. A Review on Cell Wall Synthesis Inhibitors with an Emphasis on Glycopeptide Antibiotics. *Med. Chem.Comm.* **2017**, *8,* 516-533.
10. Ghosh, C.; **Haldar, J.\***. Membrane Active Small Molecules: Designs Inspired from Antimicrobial Peptides. *ChemMedChem* **2015**, *10*, 1606-1624.
11. Uppu, D. S. S. M.; Ghosh, C.; **Haldar, J.\***. Surviving Sepsis in The Era of Antibiotic Resistance: Are There Any Alternative Approaches to Antibiotic Therapy? *Microb. Pathog.* **2015**, *80*, 7-13.
12. Bhattacharya, S; **Haldar, J**. “Molecular design of surfactants to tailor its aggregation properties”, *Colloids Surf. A: Physiochem. Eng. Aspects*, **2002**, 205, 119-126.

**BOOK CHAPTERS**

1. Acharya, Y.; **Haldar, J.\*.** Upgrading the antibiotic arsenal against Gram-positive bacteria: Chemical modifications of vancomycin. *In Press*.
2. Konai, M. M.; Barman, S.; Acharya, Y.; De, K.; **Haldar, J.\***. Recent development of antibacterial agents to combat drug-resistant Gram-positive bacteria. Drug Discovery Targeting Drug-Resistant Bacteria, Elsevier, pp 71-104.
3. Ghosh, S.; **Haldar, J.\***. Cationic Polymer Based Antimicrobial Smart Coatings. A chapter in a book entitled "Advances in Smart Coatings and Thin Films for Future Industrial and Biomedical Engineering Applications", Elsevier, pp 557-582.
4. Sarkar, P.; **Haldar, J.\***.Glycopeptide Antibiotics: Mechanism of Action and Recent Developments. A Chapter in a book entitled "Antibiotic Drug Resistance", John Wiley & Sons, Inc., 2019, pp 73-95.
5. Konai, M. M.; Dhanda, G.; **Haldar, J.\***.Talking Through Chemical Languages: Quorum Sensing and Bacterial Communication. A Chapter in a book entitled "Quorum Sensing and its Biotechnological Applications", Springer, 2018, pp 17-42.
6. Uppu, D. S. S. M.; Ghosh, C.; **Haldar, J.\***. Alternative Strategies to Target Quorum Sensing (QS): Combination of QS Inhibitors with Antibiotics and Nanotechnological Approaches. A Chapter in a book entitled "Quorum Sensing vs Quorum Quenching: A battle with no end in sight", Springer, 2015, pp 335-342.
7. Uppu, D. S. S. M.; Hoque, J.; **Haldar, J.\***. Engineered Polymers and Organic-inorganic Hybrids as Antimicrobial Materials for Water Disinfection. A Chapter in a book entitled "Aquananotechnology: Global Prospects", CRC Press-Taylor and Francis Group, 2014, Chapter 12, pp 218-238.
8. **Haldar, J.** and Bhattacharya, S. “The molecular design of surfactant based Materials”, a Chapter in a book entitled ‘Materials research: current research future projections’, Eds. R. Chidambaram and S. Banerjee, Allied publishers-New Delhi, **2003**, p. 78.

**PATENTS**

1. Dhanda, G.; **Haldar, J.**. “Small-molecular adjuvants to repurpose existing antibiotics against multidrug-resistant bacterial infections”. PCT/IN2020/050358.
2. Hoque, J, Manjunath, G. B.; Akkapeddi, P.; **Haldar, J.\***. Chitin Derivatives, Method for Production and Uses Thereof, - US20180201694A1, IN2013CH05893A.
3. Yarlagadda, V.; Akkapeddi, P.; **Haldar, J.\***. Cationic Antibacterial Composition. WO2013072838 A1, US10081655 B2, KR101816228 B1, CA2855753 C, EP2780359 B1, US20140308347 A1, AU2012338461 C1.
4. Ghosh, C.; Manjunath, G. B.; Akkapeddi, P.; **Haldar, J.\***. Antimicrobial Compounds, Their Synthesis and Applications Thereof. WO2014097178 A1, US9783490 B2, CA2894202 A1, JP6533466 B2, CN104981249 B, AU2013365769 B2, BR112015014391 A2, HK1210437 A1.
5. Yarlagadda, V.; **Haldar, J.\***. Glycopeptide and Uses Thereof. WO2016103284A1 CA2972276 A1, EP3240574 A1, US20170342110 A1.
6. Konai, M. M.; Carroll, M.; **Haldar, J.\***. Antimicrobial Conjugates, Method for Production and Uses Thereof. JP2017514887 A, WO2015136311 A1 EP3116597 A1, CA2941933 A1, US20170144969 A1
7. Hoque, J.; **Haldar, J.\***. A Polymer Network Method for Production, and Uses Thereof. US20200030368 A1, WO2018020516 A2, CA3032292A1.
8. Uppu, D. S. S. M.; Akkapeddi, P.; Manjunath, G. B.; **Haldar, J.\***. Nanoparticle Compositions of Antimicrobial Polymers and Their Uses Thereof. WO2014006601A2, US9636356 B2, EP2870186 A2, (KR20150038026A).
9. Yarlagadda, V.; Konai, M. M.; Manjunath, G. B.; **Haldar, J.\***. Vancomycin- Sugar Conjugates and Uses Thereof. IN2013CH04314A, CA2925005 A1, WO2015040467A1, US20160303184A1, AU2014322817A1, EP3049115A1.
10. Yarlagadda, V.; **Haldar, J.\***. Glycopeptide Antibiotic Derivatives. Indian Patent 605/CHE/2015, Indian Patent 6565/CHE/2014.
11. **Haldar, J.**; De Cienfuegos, L. A.; Chen, J.; Klibanov, A. M. Bi-functional Polymer-attached Inhibitors of Influenza Virus. WO2009032605A2, US20090081249A1, EP2192923A2, CA2698108A1, JP2010537997A*.*
12. **Haldar, J.**; An, D.; De Cienfuegos, L. A.; Chen, J.; Klibanov, A. M. Polymeric Coatings that Inactivate Viruses and Bacteria. WO2008127416A2, MX2009004918A, JP2010509467A, MA30971B1, ZA200903951B, EP2084234A2, US20100136072A1, CN101627092A, BRPI0718860A2*.*

**SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

|  |  |
| --- | --- |
| 2009-present | 8 Postdocs /15 PhD /4 Project Assistant/ 9 Master/ 1 PG-DMS/25 SRFP |

*PhD Theses:*

|  |  |  |
| --- | --- | --- |
| **Student** | **Year** | **Title of thesis** |
| Yarlagadda Venkateswaralu | 2015 | Semi-synthetic Glycopeptide Antibiotics: Strategies to Combat Acquired and Intrinsic Bacterial Resistance |
| Divakara SS Murthy Uppu | 2016 | Bacterial Membrane-targeting Cationic-amphiphilic Polymers that Combat Antibiotic Resistance and Neutralize Endotoxins |
| Chandradhish Ghosh | 2017 | Development of L-Lysine-based Small Molecules as Broad-spectrum Antimicrobial Agents |
| Jiaul Hoque | 2017 | Charged Polymers and Hydrogels as Antimicrobial Materials for Prevention of Infections |
| Mohini Mohan Konai | 2019 | Amino Acid-Based Molecules to Combat Bacterial Infections and Resistance |
| Swagatam Barman | 2021 | Amino Acid Conjugated Small Molecular and Polymeric Antimicrobial Agents to Combat Infection and Inflammation |
| Paramita Sarkar | 2021 | Next-generation Glycopeptide Antibiotics: Designs to Overcome Inherited and Non-inherited Resistance and Insights into their Mechanisms of Action |

*Master Theses:*

|  |  |  |
| --- | --- | --- |
| **Student** | **Year** | **Title of thesis** |
| Mohini Mohan Konai | 2014 | Development of Nonspermidine-based Lipopeptide Mimics to Tackle Bacterial Infection |
| Paramita Sarkar | 2016 | Development of Cationic Lipophilic Vancomycin Analogues against Bacterial Biofilms and Intracellular Pathogens |
| Sreyan Ghosh | 2018 | Development of Antibacterial Biomaterials to Tackle Surface-Associated Infections |
| Geetika Dhanda | 2019 | Small Molecular Adjuvants to Repurpose and Rehabilitate Obsolete Antibiotics against Multidrug-Resistant Bacteria |
| Sudip Mukherjee | 2020 | Development of Cationic Macromolecules to tackle Drug-resistant Bacteria and Fungi |
| Yash Acharya | 2020 | Development of Cationic Cyclam Derivatives to Combat Drug Resistant Bacteria |

**MEMBERSHIPS/FELLOWSHIPS OF SCIENTIFIC SOCIETIES**

2021 Fellow, Royal Society of Chemistry

2019 Member, The Society for Polymer Science, India

2018 Member, Chemical Research Society of India

2018 Member, American Chemical Society

**COMMISSIONS OF TRUST/MEMBERSHIPS OF EVALUATION BOARD**

*Editorial Responsibilities:*

|  |  |
| --- | --- |
|  | Member of search committee for Editor-in-chief for ACS journal |
|  | Guest editor of the journal “Microbial Pathogenesis” of Elsevier |
|  | Editorial board member of the journal “RSC Medicinal Chemistry” |
|  | Editorial advisory board member of the journal “Biomacromolecules” of ACS |
|  | Editorial advisory board member of the journal “ACS Infectious Diseases” of ACS |
|  | Editorial board member of the journal “Microbial Pathogenesis” of ELSEVIER |

*Research Grant Reviewing Committee:*

|  |  |
| --- | --- |
|  | Referee for DAE Grants |
|  | Expert Panel Member for evaluation, monitoring and review of COVID-19 related international research Projects of DST-SERB |
|  | Referee for Agence Nationale de la Recherche funded projects from France |
|  | Referee for FONDECYT Program-Chile´s Research Council- ANID |
|  | Reviewer for Core Research Grants from DST-SERB, India |
|  | Reviewer for research projects funded by DBT India |
|  | Referee for International Project evaluation NSF-USA and USA-Austria bilateral project |
|  | Reviewer for Start-up Company Evaluation, Biotechnology Ignition Grant (BIG) Scheme, DBT India |
|  | Reviewer for GYTI and BIRAC-SRISHTI projects from Govt. of India |

*Peer Review Contributions:*

Contributed as reviewer for international journals such as PNAS USA, Nature Chemistry, Advanced Material, ACS Applied Materials & Interfaces, MedChemComm, Nanoscale, Journal of Medicinal Chemistry, Chemical Sciences, ACS Infectious Diseases, Journal of Polymers and Environment, Comments on Inorganic Chemistry, Polymer, ACS Bio and Med Chem Au, Frontiers in Medical Technology, RSC Advances, Food and function, Biomaterial Science, Materials Chemistry Frontiers, Journal of Biomaterial Sciences, ACS Applied Biomaterials, Chemical Engineering Journal, Organic and Biomolecular Chemistry, European Journal of Medicinal chemistry, ChemBioChem, Journal of Food Sciences, Advanced Functional Materials, ACS Med Chem Letters, ACS Biomaterial Science and Engineering, Emerging Microbes and Infections, British Journal of Pharmacology, Small, Bioorganic Chemistry, Journal of American Ceramic Society, Scientific Reports, Biochemistry, Biochimica et Biophysica Acta, Journal of American Chemical Society, Angewantde Chemie, Bioconjugate Chemistry, Biomacromolecules, ACS Omega, Nature Communications, Biomaterials, Chemical Communication, Journal of Chemical Sciences, Langmuir, RSC Medicinal Chemistry, Pharmaceutical Research, Molecular Pharmaceuticals, Journal of Biological Engineering, International Journal of Antimicrobial Agents, ACS Applied Materials and Interfaces, Journal of Cellular and Molecular Medicine, PLoS One, Frontiers in Microbiology, Letters in Applied Microbiology, Microbial pathogenesis, etc.

*Research Thesis Review for Post-graduate and PhD Students:*

Contributed as reviewer for PhD and Masters Theses for students from various institutes such as IIT Roorkee, IISER Kolkata, IISER Pune, NCL Pune, CSIR-CSMPRI, IIT Bombay, IISER Bhopal, IICT Hyderabad, IIT Kanpur, IISc Bengaluru, BITS Pilani, IIT Madras, SASTRA University, NCBS Bengaluru.

**ORGANISATION OF SCIENTIFIC MEETINGS**

|  |  |
| --- | --- |
| 2018 | Bangalore Healthcare Summit, Bangalore, India, Advisory board member |
| 2017 | Newton Bhabha Workshop in collaboration with Public Health of England, Bangalore |
| 2010 | Coordinator of In-house Symposium, JNCASR |

**TEACHING ACTIVITIES**

|  |  |
| --- | --- |
| 2010-Present | Bioorganic and Medicinal Chemistry (for Masters, Int. PhD and PhD students, JNCASR) |
| 2010-Present | Organic Chemistry Practical (for Masters and Int. PhD students, JNCASR) |
| 2010-Present | Molecules in Life (for Undergraduate POCE Students, JNCASR) |

**INSTITUTIONAL RESPONSIBILITIES**

*Scientific Responsibilities:*

|  |  |
| --- | --- |
| 2021-Present | Special Invitee, Academic Council, JNCASR |
| 2019-2020 | Selection committee for Best Thesis in Biological Sciences, JNCASR |
| 2018-Present | Masters Student selection committee, New Chemistry Unit, JNCASR |
| 2014-Present | Masters Student selection committee, New Chemistry Unit, JNCASR |
| 2010-Present | Summer research fellowship (SRFP) program selection committee, JNCASR |
| 2009-Present | PhD Student selection committee, New Chemistry Unit, JNCASR |
| 2009-Present | Internal comprehensive examiner of many PhD, Int. PhD, MS students |

*Administrative Responsibilities:*

|  |  |
| --- | --- |
| 2021  2019-Present | Chairperson, Technical Sub-committee for procurement items for Hostel, JNCASR  Warden, JNCASR |
| 2018-Present | M.Sc. Coordinator, New Chemistry Unit, JNCASR |
| 2017 | Member of Electrical Committee, JNCASR |
| 2015-2017 | Chairman of the Dining Hall Committee, JNCASR |
| 2014-2015 | New Chemistry Unit seminar Coordinator, JNCASR |
| 2013-2015 | Member of the Dining Hall Committee, JNCASR |

**PROJECTS UNDERTAKEN AS PRINCIPAL INVESTIGATOR**

Indo-U.S. (IUSSTF for COVID-19), JNCASR-RAK-CAM, DST-SERB Fast Track, Indo-French (CEFIPRA), DBT, India-China-Russia-Brazil (BRICS), DAE-BRNS, Indo-Portugal (DST), Indo-German (DST-DAAD), DST-BIRC, BIRAC-SRISTI-PMU, TRC-JNCASR

*Ongoing:*

*A. National Projects*

1. JNCASR and RAK-CAM: Antimicrobial hydrophobic coatings for tiles

2. DST-SERB CRG Project: Development of adjuvants for potentiating and repurposing obsolete antibiotics against multidrug resistant Gram-negative pathogens

3. DST-SERB CRG Project on CoVID-19: Development of antiviral surface coatings to prevent the spread of infections caused by influenza virus

4. DBT project: Small Molecular Mimics of Antimicrobial Peptide to Tackle Eye Infections

*B. International Collaborative Projects*

1. IUSSTF Award for COVID-19 Indo-U.S. Virtual Networks Project: Development of Antiviral Coatings to Prevent the Transmission of SARS-CoV-2 Viruses

2. Indo-French (CEFIPRA) Joint project: Development and Biophysical Investigations of Small Antimicrobial Peptide Mimetics

3. BRICS Research project: MBLI development of new approaches to overcome MBL-related resistance in bacteria

4. Indo-German Joint (DST) Project: Investigating Mechanism of Action of Membrane Targeting Antibacterial Agents

*Completed:*

*A. National Projects*

1. BRNS project: Development of Cationic Cleavable Amphiphiles and Study Aggregation and Antibacterial Properties

2. SERB-EMR (DST) project: Acyclic and Cyclic Lipopeptides to Combat Bacterial Resistance and Eradicate Biofilms

3. TRS-JNCASR Project: Injectable sealant: new technology to prevent surgical site infections

4. BIRAC-SRISTI-PMU Project: Development of a Powerful New Antibiotic that Kills All Drug Resistant Bacteria

5. BIRAC-SRISTI-PMU Project: Develop a novel compound restores obsolete antibiotics to NDM superbugs

6. DST-BIRC CRS Project: Development of new class of glycopeptide antibiotics for tackling drug resistance bacterial infections

7. SERC Fast Track Proposals for Young Scientists: Development of Novel Biodegradable Surface Coatings for Biomedical Application

*B. International Collaborative Projects*

1. Indo-Portugal (DST) Joint project: Development of novel organic-inorganic antimicrobial composites for bone infections: using Lanthanides doped novel glassy materials associated

with hydroxyapatite and antimicrobial polymer

**MAJOR COLLABORATIONS**

*International Collaborations:*

* Prof. Shiv Pillai, Medicine and Health Sciences & Technology (HST), Ragon Institute of MGH, MIT and Harvard, Cambridge, MA, USA – Development of Antiviral Coatings to Prevent the Transmission of SARS-CoV-2.
* Prof. L. W. Hamoen, University of Amsterdam, Netherlands - Cell division protein inhibition.
* Prof. Cristiano Marcelo Espinola Carvalho, Dom Bosco Catholic University, Brazil - Development of semisynthetic glycopeptide and betalactam derivatives.
* Prof. Tatiana V. Ovchinnikova, Institute of Bioorganic Chemistry Russian Academy Sciences (RAS), Russia - Development of semisynthetic glycopeptide and betalactam derivatives.
* Prof. Hixen Xie, East University Science Technology, China - Development of semisynthetic glycopeptide and betalactam derivatives.
* Prof. Julia Bandow, Rhur-Univ. of Bochum, Germany - Development of semisynthetic glycopeptide and betalactam derivatives.
* Prof. Octa´vio L. Franco, Universidade Catolica Dom Bosco, Campo Grande, Brazil - In vivo infection study.
* Prof. Lorenzo Stella, University of Rome, Italy – Investigation of antibacterial mechanism of actions.
* Prof. Peter Monk, Department of Infection, University of Sheffield, UK - Ex-vivo infection study.
* Prof. M. N. Seleem, Department of Comparative Pathobiology, Purdue University, USA - Antifungal studies.
* Prof. Bechinger Burkhard, Chemistry Institute, University of Strasbourg, France - Biophysical investigations of small antimicrobial peptide mimetics.
* Dr. Mark Sutton, Public Health of England (PHE), UK - Anti-Ebola activity.
* Dr. Nandyala Sooraj Hussain, University of Porto - Antimicrobial composites for bone infections.

*National Collaborations:*

* Prof. B. R. Shome & Dr. P. Krishanmoorthy, ICAR-NIVEDI, Bengaluru, India - In vivo infection study.
* Dr. Prashant Garg, LV Prasad Eye Institute, Hyderabad, India - Ex-vivo eye infection study.
* Dr. V. K. Aswal, BARC, Mumbai, India - SANS studies for aggregation behavior of gemini surfactants.
* Dr. Utpal Tatu, Biochemistry, Indian Institute of Science, Bangalore, India - Antimalarial study.
* Dr. Shridhar Narayanan, FNDR, Bangalore, India - Activity against Mycobacterium tuberculosis.
* Dr. Suresh Kumar Jewrajka, CSIR-CSMCRI, India - Development of antibacterial filtration membrane.
* Dr. Colin Jamora, In-Stem Joint Laboratory, NCBS, India - In vivo study on wound healing by hydrogel.
* Prof. Satyavani Vemparala, Institute of Mathematical Sciences, Chennai, India - Theoretical study (MD Simulation) for Membrane
* Dr. Chandra, Vipragen Biosciences, India – Outlicenced our inventions
* Prof. Siddharth Chopra, CSIR-CDRI, Lucknow, India - Antibacterial studies.
* Prof. Nisanth N Nair, IIT-Kanpur, India - Theoretical study (MD Simulation) for betalactamase.
* Dr. R Ravikumar, NIMHANS, Bangalore, India - Development of novel antimicrobial agents to overcome microbial resistance against clinical isolates.
* Prof. Somenath Roy, Vidyasagar University, Midnapore - Studies against clinical isolates of Vancomycin resistant bacteria.
* Dr. Ganesh, Anthem biosciences, Bangalore, India - Antibacterial activity against vancomycin resistant bacteria.
* Prof. C. Narayana, JNCASR, Bangalore, India - Mechanism of action through Raman spectroscopic studies.
* Dr. Meher K Prakash, JNCASR, Bangalore, India - Theoretical study (MD Simulation)- for Membrane
* Dr. Ravi Manjithaya, MBGU, JNCASR, Bangalore, India – Autophagy studies.
* Prof. Kaustav Sanyal, MBGU, JNCASR, Bangalore, India - Antifungal studies.

**INVITED TALKS, LECTURES AT CONFERENCES AND ELSEWHERE**

I have delivered the following lectures at various venues:

*National Conferences:*

1. An invited talk in the departmental symposium at Department of Materials Engineering, IISc, Bangalore on 21st January 2010.
2. An invited talk in a symposium on Recent Trends in Chemistry, at The American College, Madhurai, Tamil Nadu on 16th February 2010.
3. An invited talk at One day National workshop on “Advances in Chemical and Biochemical Sciences” at Sheshadripuram College, Yelahanka New town, Bangalore, 13th March 2010.
4. An invited talk in a symposium at Raja Lakhamagouda Science Institute, Belgaum, 26-27th November 2010.
5. An invited talk in a symposium for celebrating the International Year of Chemistry-2011, at JNCASR on 10th January 2011.
6. An invited talk in a symposium on “Nanotechnology for Enhancing Food Security”, on 7-8th April 2011
7. A talk in an In-house symposium, at JNCASR on 14-15th November 2011.
8. An invited talk at the International Conference on “Water” at IIT Madras, on 14-16th September 2012.
9. An invited talk at Eighth JNC Research Conference on “Chemistry of Materials”, on 30th September- 2nd October 2012.
10. An invited talk at Research Conference in Christ University, Bangalore, on 13th February 2013.
11. Talk at DST-Fast Track project review meeting, at Delhi University, on 29th June 2013.
12. A talk in an In-house symposium, at JNCASR on 18-20th November 2013.
13. Invited lecture in Indo-UK Conference, at The Institute of Mathematical Sciences, Chennai, on 24th-26th February 2014.
14. An invited talk at FAO-ICAR/NIVEDI meeting on Laboratory based surveillance of AMR in health and veterinary sectors, 18-19th January, 2017.
15. An invited talk at JNC-Amrita Institute Meeting, JNCASR 25th March, 2017.
16. An invited talk at the conference on Chemical Frontiers, Goa, 17-20th August 2017.
17. A project talk at TRC-JNC meeting on 22 August, 2017.
18. An award talk at CSIR 75th Foundation Day Celebrations & CDRI Award Orations, 22nd September 2017.
19. An invited lecture at Biotech Innovation Ignition School (BIIS), BIRAC-SRISTI, Ahmedabad, 28th December 2017.
20. An CRSI Bronze Award talk at 23rd CRSI National Symposium in Chemistry, IISER Bhopal, 13-15th July 2018.
21. An invited talk at the Bangalore Healthcare Summit, 25-26th September 2018.
22. An invited talk at the conference on Frontiers in Chemical Sciences, Department of Chemistry, Indian Institute of Technology Guwahati, 6-8th December, 2018.
23. An invited talk at the conference, 15th International Conference on Polymer Science and Technology, SPSI-MACRO, IISER Pune, 19-22nd December 2018.
24. An invited talk at the conference on Application of Supramolecular Chemistry in Water Treatment, Tata Steel Limited, Dimna, Jamshedpur, Feb 4-5, 2019.
25. An invited talk at the 22nd ADNAT Convention: International Symposium on Antibiotic Resistance–One Health Perspective March 5–8, 2019, IIT Roorkee.
26. A talk at PESCP 6th International Conference on “Strategies to Tackle Antimicrobial Resistance” PES University, Bangalore, 18th-19th October-2019.
27. A talk at INYAS-2nd National Frontiers of Science Meeting, Jaipur, 6-8 November, 2019.
28. A talk at JNCASR-Shiv Nadar University Symposium, JNCASR, Bangalore, India, 8-9th November 2019.
29. A talk at Annual Faculty Meeting & Inhouse Symposium, JNCASR, 13-14th November 2019.
30. A talk at Second SAMat Annual Retreat- 17th to 19th November, 2019.
31. A talk at International Winter School on Frontiers in Materials Science –JNCASR, 2nd-6th December, 2019.
32. A talk at Winter School on Advanced Techniques in Nao Science and Technology, INST, Mohali, 2nd-7th December, 2019.
33. A talk at a conference on Water Challenges during and post Covid-19, International Centre for Clean Water (ICCW) webinar series, IIT-Madras, 7th May, 2020.
34. An invited talk at World Antimicrobial Awareness Week, NSS, IIT Roorkee, 21st November 2020.
35. A talk at SERB Webinar Series on COVID-19 Emerging Research (SERB-COVER), 17th December 2020.
36. An invited talk at BIRAC SITARE BIIS Webinar, 8th February 2021.
37. An invited talk at AMRITA BIOCREST 2021-Indian Innovation Pavilion, International Symposium on “Man vs Microbe: AMR—The Race of the Century” 25th February 2021.

*International Conferences:*

1. Invited participant at Gordon Research Conference on “New Antibacterial Discovery and Development” in Ventura, California, on 16th -21st March 2014.
2. An invited talk at City College of New York, Department of Chemistry, 24th March 2014.
3. An invited talk at Medical School at University of Rutgers, New Jersey, 27th March 2014.
4. Talk at the conference on Chemical Frontiers, Goa, 16th-19th August 2014.
5. An invited talk at International Symposium on Recent Advances in Medicinal Chemistry (ISRAM-2014), NIPER, Chandigarh, on 8-10th September, 2014.
6. An invited talk at the meeting on UK-India Partnerships in mitigating antimicrobial resistance and controlling Infectious Diseases, Bangalore, on 11-12th September, 2014.
7. A Project Proposal Talk at UGC-DAE, BARC, Mumbai on 14th October 2014.
8. An Invited participant at “Review on Antimicrobial Resistance: India’s Role in tackling the global Crisis” by Public Health Foundation of India (PHFI), New Delhi, 5th March 2015.
9. Talk at New Chemistry Unit Day, JNCASR, on 6th March 2015.
10. Delivered a talk at Ramanujan Fellowship Meeting, IIT-Bombay, 16th March 2015.
11. An Invited talk at University of Granada-Spain on 20th April 2015.
12. An Invited talk at University of Porto, Portugal on 23rd April 2015.
13. A talk at Project meeting at BIRAC on 22nd June 2015.
14. An Invited talk at CRSI Meeting- NIT Trichy, 23-25th July 2015.
15. An invited talk at the conference of ‘World Congress and Exhibition on Antibiotics’, Las Vegas, USA during 14th-16th September 2015
16. An invited talk at Department of Chemistry & Chemical Biology, Rutgers University, September 18, 2015.
17. An invited talk at New York Medical College, Valhalla, USA on 21st September 2015.
18. An invited lecture at AMR & Longitude Prize Meeting, Bangalore, October 14, 2015
19. A lecture at Annual Faculty Meeting-JNCASR, November 13, 2015.
20. An invited talk at the conference MICROCON-JIPMER, November 27-29, 2015.
21. An invited talk at International Conference on Biomolecular Engineering, Singapore during 5-7th January 2016.
22. An invited talk at Singapore-MIT Alliance for Research and Technology (SMART), Singapore 6th January 2016.
23. An invited talk at School of Chemical & Biomedical Engineering, NTU, Singapore, on 8th January 2016.
24. An invited talk at JNCASR and Mechanobiology Institute-NUS Joint Discussion Meeting, February 5, 2016.
25. An invited talk at JNC-Industry Meet, JNCASR, March 8, 2016.
26. An invited talk at University of Padova, Italy on 21st March 2016.
27. An invited talk at University of Parma, Italy on 23rd March 2016.
28. An invited talk at University of Rome, Tor Vergata, Italy 25th March 2016.
29. An invited talk at XI Joint Annual Conference of Indian Society of Malaria and Other Communicable Diseases and Indian Association of Epidemiologists’, Bangalore, June 10-12, 2016.
30. An invited talk at Institute for Drug Delivery and Biomedical Research (IDBR), Bangalore, July 16, 2016.
31. An invited talk at the conference on Drug Discovery India (DDI), Bangalore, 29-30th September, 2016.
32. An invited talk at the Indo-German Meeting on Supramolecular & Bioactive Compounds: Theory, Design and Regulation, Khajuraho, November 10-13, 2016.
33. An invited talk at the International Conference on Polymer Science and Technology, Macro-2017, 8-11th January, Thiruvananthapuram, Kerala.
34. An invited talk at The UK-India Newton-Bhabha Fund Researcher Links Workshop (RGICD) on Antimicrobial Resistance, Bangalore, 14-18th December 2017.
35. An invited talk at an invited meeting on AMR at University of Sheffield, UK during 19-20 March 2018.
36. Invited talk at 16th Naples Workshop on Bioactive Peptides, Naples, Italy during 7-9th June 2018.
37. A talk at ACS Spring National Meeting in Orlando, FL, March 31-April 4, 2019.
38. A talk at UK-India Meet on Emerging Innovations in AMR, 7th June 2019.
39. A talk at L V Prasad Eye Institute-Hyderabad & University of Sheffield-UK, 18th January, 2020.
40. An invited lecture at the Virtual MRS Spring Meeting of the Materials Research Society, USA, April 19, 2021.

*National Institutes/Universities:*

1. An invited talk at Department of Mechanical Engineering, M S Ramaiah Institute of Technology, Bangalore, on 18th March 2010.
2. An invited talk at the Department of Chemistry, IIT Madras, on 7th October 2011.
3. An invited talk at Unilever, Bangalore on 19th June 2013.
4. An invited talk at MitraBiotech, Bangalore on 22nd October 2013.
5. An invited talk at Scyton Diagnostic Pvt. Ltd., Bangalore, on 26th June 2014.
6. An invited talk at IIT Ropar on 9th September, 2014.
7. An invited talk at Bugworks Research Inc, Centre for Cellular and Molecular Platforms, NCBS, Bangalore, on 17th September 2014.
8. An Invited talk at Anthem Biosciences, Bangalore, on 17th November 2014.
9. An invited talk at Jawaharlal Institute of Postgraduate and Medical Education and Research (JIPMER), Pondicherry, on 28th November 2014.
10. An invited talk at CMR College, Bangalore, March 5, 2016.
11. An invited talk at CDRI, Lucknow, 8th November, 2016.
12. An invited talk at IICT-Hyderabad, 26th May, 2017.
13. An invited talk at Department of Chemistry, IIT-Bombay, 27th July, 2017.
14. An invited talk at TIFR Bombay 28th July, 2017.
15. An invited talk at CSIR-CSMCRI, Bhavnagar, 26th December 2017.
16. An invited talk at IACS, Kolkata, 18th April 2018.
17. An invited talk at IISER Kolkata,19th April 2018.
18. An invited talk at IIT (ISM) Dhanbad, 6th Feb 2019.
19. An invited talk at Garden City University, Bangalore 26th March 2019.
20. A talk at NCL, Pune, 16th July 2019.
21. A talk at IISER, Pune, 17th July 2019.
22. A talk at IIT-M, Chennai, 4th September 2019.
23. A talk at Ramaiah College of Arts, Science & Commerce, 19th September 2019
24. A talk at Adamas University, Kolkata, 14th January, 2020.
25. A talk at Indian Academy Degree College, Bangalore, 10th February 2020.
26. An invited talk at The Society of Polymer Science India-Mumbai Chapter, April 10, 2021.
27. An Invited talk at 1st Annual Meeting of Chemical Biology, Institute of Nano Science and Technology, 24-25th September 2021.

*International Institutes/Universities:*

1. An invited talk at East China University of Science and Technology (ECUST), Shanghai, China on 3rd July 2017.
2. An invited talk at Donghua University, Shanghai, China 4th July 2017.
3. An invited talk at Tongji University, Shanghai, China 5th July 2017.
4. An invited talk at Public Health of England, Porton Down, UK on 26th March 2018.
5. An invited talk at King’s College London, UK on 22nd March 2018.
6. An invited talk at University of Granada, Spain 12th June 2018.
7. A talk at University of South Florida, 3rd April 2019.
8. A talk at The City College of New York, 9th April 2019.
9. A talk at Colgate New Jersey, 10th April 2019.
10. A talk at Rutgers University, New Jersey, 10th April 2019.
11. A talk at Ruhr University, Bochum, 18th June 2019.
12. A talk at Technische Universität, Dortmund, 19th June 2019.
13. A talk at Max Planck Institute of Colloids and Interfaces, Potsdam, 20th June 2019.
14. A talk at Université de Strasbourg, France, 25th June 2019.
15. An invited RSC Medicinal Chemistry lecture, November 2, 2020.

*Science Promotion:*

1. A talk on the occasion of National Science Day, at JNCASR, 25th February 2010.
2. An invited talk at Science Voyage, at JNCASR, on 25th May 2010.
3. An invited talk at JNCASR-Foundation for Capacity Building in Science (FCBS) Workshop for College Chemistry Students and Teachers 15-17th November 2013.
4. An invited talk at JNCASR-Foundation for Capacity Building in science (FCBS) workshop for College Chemistry students and Teachers, Trivandrum, Kerala on 31st Oct-2nd Nov, 2014.
5. An invited talk for School Children at Prof. CNR Rao Hall of Science, JNCASR, Bangalore on 12th November 2014.
6. A popular lecture at INSPIRE Science Camp, Indian Academy Degree College, Bangalore, 10th January 2019.
7. An invited talk at JNCASR-FCBS workshop for college chemistry students and teachers, IISER & CSIR-NIIST, Thiruvananthapuram, 15th December 2020.
8. An invited talk at BIRAC SITARE BIIS Webinar, 8th February 2021.

**OUTLICENCED INVENTIONS**

Our inventions on small molecular antimicrobial agents, glycopeptide derivatives and antimicrobial coatings have been outlicensed to biotech companies.

**MEDIA COVERAGE OF RESESRCH WORK**

1. *A. Antimicrobial Research*

The contribution of Dr. Haldar Lab on antimicrobial research been recognized and displayed at the National Science Museums, touring in various cities in India as part of an exhibition "Superbugs – The end of Antibiotics?" The exhibition was organised in collaboration with National Council of Science Museums-NCSM & Science Museum London (<https://www.superbugs.in/index.php>).

1. *B. Small molecular antimicrobial peptide mimicking drug-candidates*
2. ACS Chemistry for Life, American Chemical Society, “Fighting MRSA with new membrane-busting compound”, (15th March, 2017) <https://www.acs.org/content/acs/en/pressroom/presspacs/2017/acs-presspac-march-15-2017/fighting-mrsa-with-new-membrane-busting-compound.html>
3. EurekAlert! The Global Source for Science News, “Fighting MRSA with new membrane-busting compounds” (15th March, 2017) <https://www.eurekalert.org/pub_releases/2017-03/acs-fmw031517.php>
4. NEWS MEDICAL LIFE SCIENCES, “New class of membrane-busting compounds can combat MRSA skin infections in mice”, (15th March, 2017) <http://www.news-medical.net/news/20170315/New-class-of-membrane-busting-compoundsc2a0can-combat-MRSA-skin-infections-in-mice.aspx>
5. PHY.ORG, “Fighting MRSA with new membrane-busting compounds” (15th March, 2017) <https://phys.org/news/2017-03-mrsa-membrane-busting-compounds.html>
6. DOLPHNSIX, “Fighting MRSA with new membrane-busting compounds”, (15th March, 2017) <http://www.dolphnsix.com/news/3144095/fighting-mrsa-with-membrane-busting-compounds>
7. UPI, “New membrane-busting compounds effective at fighting MRSA”, (15th March, 2017) <http://www.upi.com/Health_News/2017/03/15/New-membrane-busting-compounds-effective-at-fighting-MRSA/1931489603050/>
8. Medicalnewser.com, “New elegance of membrane-busting compounds can fight MRSA pores and skin infections in mice”, (15th March, 2017) <https://www.medicalnewser.com/2017/03/15/new-class-of-membrane-busting-compounds-can-combat-mrsa-skin-infections-in-mice.html>
9. MNT, “Fighting MRSA with new membrane-busting compound”, (15th March, 2017) <http://www.medicalnewstoday.com/releases/316435.php?nfid=96103>
10. Outbreak News Today “Fighting MRSA with new membrane-busting compounds”, (15th March, 2017) <http://outbreaknewstoday.com/fighting-mrsa-new-membrane-busting-compounds-19658/>
11. Wn.COM, “Fighting MRSA with new membrane-busting compounds”, (15th March, 2017) <https://article.wn.com/view/2017/03/15/Fighting_MRSA_with_new_membranebusting_compounds/>
12. GLOBAL NEWS BLOG, “NEW MEMBRANE-BUSTING COMPOUNDS EFFECTIVE DURING FIGHTING MRSA” (16th March, 2017) <http://orangeryknoxville.pw/blog/2017/03/16/new-membrane-busting-compounds-effective-at-fighting-mrsa/>
13. Science Newsline Medicine, “Fighting MRSA with New Membrane-busting Compounds” (16th March, 2017) <http://www.sciencenewsline.com/news/2017031613060004.html>
14. LABline, “Fighting MRSA with new membrane-busting compounds”, (16th March, 2017) <https://www.mlo-online.com/Labline/201703/16/toc.htm#Two2>
15. JAB NEWS, “New membrane-busting compounds efficient at preventing MRSA” (16th March, 2017) <http://jabnews.com/new-membrane-busting-compounds-efficient-at-preventing-mrsa/>
16. ALN, “Fighting MRSA with New Membrane-Busting Compounds”, (17th March, 2017) [https://www.alnmag.com/news/2017/03/fighting-mrsa-new-membrane-busting-compounds?et\_cid=%%jobid%%&et\_rid=%%subscriberid%%&location=top](https://www.alnmag.com/news/2017/03/fighting-mrsa-new-membrane-busting-compounds?et_cid=%25%25jobid%25%25&et_rid=%25%25subscriberid%25%25&location=top)
17. MedicalNewsToday, “Fighting MRSA with new membrane-busting compound”, (17th March, 2017) <http://www.medicalnewstoday.com/releases/316435.php>
18. INVERSE SCIENCE, “New Drug Could Treat Superbugs Without Fostering Resistance” (18th March, 2017) <https://www.inverse.com/article/29238-mrsa-mice-hospital-superbug-resistance>
19. azcentral, “Fighting MRSA with new membrane-busting compound” (18th March, 2017) <http://www.azcentral.com/story/news/2017/03/19/discoveries-making-vanilla-flavoring-less-pollution/99302050/>
20. FirstWord PHARMA, “Fighting MRSA with new membrane-busting compounds”, (19th March, 2017) <https://www.firstwordpharma.com/node/1457267>
21. Standard-Times, “Fighting MRSA with new membrane-busting compound”, (19th March, 2017) <http://www.gosanangelo.com/story/news/2017/03/19/discoveries-making-vanilla-flavoring-less-pollution/99302050/>
22. HiTechDays.com, “FIGHTING MRSA WITH NEW MEMBRANE-BUSTING COMPOUNDS” (19th March, 2017) <http://www.hitechdays.com/news/191658/fighting-mrsa-with-new-membrane-busting-compounds/>
23. NORTH SHORE NOW, “Fighting MRSA with new membrane-busting compound” (19th March, 2017) <http://www.mynorthshorenow.com/story/news/2017/03/19/discoveries-making-vanilla-flavoring-less-pollution/99302050/>
24. MDLinx, Top News in Dermatology, “Fighting MRSA with new membrane-busting compound” (22nd March, 2017) <https://www.mdlinx.com/dermatology/top-medical-news/article/2017/03/22/7096416>
25. India Science Wire “New weapon to fight drug resistant superbugs found”, (23rd March, 2017) <http://www.vigyanprasar.gov.in/whats_new/isn/New-weapon-to-fight-drug-resistant-superbugs-found.pdf>
26. Canada Free Press, “ Fighting MRSA with new membrane-busting compound”, (25th March, 2017) <http://canadafreepress.com/article/fighting-mrsa-with-new-membrane-busting-compound>
27. The Hindu (3th September, 2017), “Novel compounds destroy biofilm-forming bacteria” <http://www.thehindu.com/sci-tech/science/novel-compounds-destroy-biofilm-forming-bacteria/article19610343.ece>
28. *C. Antibiotic adjuvants*
29. The Hindu (3rd September, 2017) - <https://www.thehindu.com/sci-tech/science/novel-compounds-destroy-biofilm-forming-bacteria/article19610343.ece>
30. Atlas of Science (6th February, 2020) “The difference of an amide to ester in polymers does the magic” - <https://atlasofscience.org/the-difference-of-an-amide-to-ester-in-polymers-does-the-magic/>
31. *D. Anti-Ebola small-molecular peptidomimetic agents*
32. The Telegraph, “Ebola drug hope in Bengali Chemist lab” (Dec 21, 2014) <http://www.telegraphindia.com/1141222/jsp/nation/story_4699.jsp#.VJgIgl4ABl>
33. The Times of India, “Drugs for Ebola likely to have an Indian connection” (Dec 20, 2014) <http://timesofindia.indiatimes.com/india/Drugs-for-Ebola-likely-to-have-an-Indian-connection/articleshow/45580346.cms>
34. The Hindu, “City-based scientists develop compounds that may make Ebola curable” (Dec 20, 2014) <http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/citybased-scientists-develop-compounds-that-may-make-ebola-curable/article6710106.ece>
35. The New Indian Express, “UK Ebola Project Picks up Two Drugs Developed in City” (Dec 20, 2014) <http://www.newindianexpress.com/states/karnataka/UK-Ebola-Project-Picks-up-Two-Drugs-Developed-in-City/2014/12/20/article2580329.ece>
36. The Asian Age, Potential Ebola drugs under test (Dec 20, 2014) <http://www.asianage.com/india/potential-ebola-drugs-under-test-594>
37. The Economic Times, “Drugs for Ebola likely to have an Indian connection” (Dec 20, 2014) <http://health.economictimes.indiatimes.com/news/pharma/drugs-for-ebola-likely-to-have-an-indian-connection/45585995>
38. *E. Novel class of Glycopeptide antibiotics*
39. The Economic Times News (4th April, 2015), “Three weapons to slow down bacteria spread in hospitals” <http://economictimes.indiatimes.com/news/science/three-weapons-to-slow-down-bacteria-spread-in-hospitals/articleshow/46801855.cms>
40. The Times of India News (10th July, 2014), “Bangalore scientists break bacteria's resistance to antibiotics” <http://timesofindia.indiatimes.com/home/science/Bangalore-scientists-break-bacterias-resistance-to-antibiotics/articleshow/38102494.cms>
41. World of Chemicals (10th July, 2014), “New method to kill antibiotic resistant bacteria” <http://www.worldofchemicals.com/media/academy/new-method-to-kill-antibiotic-resistant-bacteria/7343.html>
42. Pakistan Defence (12th July, 2014), “Bangalore scientists break bacteria's resistance to antibiotics” <http://defence.pk/threads/bangalore-scientists-break-bacterias-resistance-to-antibiotics.323631/>
43. The New Indian Express (13th July 2014), “City Scientists Develop Drug to Kill Resistant Bacteria” <http://www.newindianexpress.com/cities/bangalore/City-Scientists-Develop-Drug-to-Kill-Resistant-Bacteria/2014/07/13/article2328104.ece>
44. Health City (13th July 2014), “City Scientists Develop Drug to Kill Resistant Bacteria” <http://health-city.com/city-scientists-develop-drug-to-kill-resistant-bacteria/>
45. Scroll.in (18th July 2014), “How a discovery by a team of Bangalore scientists could solve India's antibiotics crisis” <http://scroll.in/article/670608/How-a-discovery-by-a-team-of-Bangalore-scientists-could-solve-India's-antibiotics-crisis>
46. Rajya Sabha TV, Science monitor and Gyan Vigyan programme (2nd August 2014)
47. DD India TV, Science this week programme (3rd August 2014)
48. Nature India, (November 17, 2015), <http://www.natureasia.com/en/nindia/article/10.1038/nindia.2015.151>
49. *E. Anti-A. baumanni macromolecular agents*
50. Featured in The Hindu (14th December, 2019), [https://www.thehindu.com/sci-tech/science/tackling-drug-resistant-a baumannii/article30306773.ece](https://www.thehindu.com/sci-tech/science/tackling-drug-resistant-a%20baumannii/article30306773.ece)
51. *F. Antibacterial, antifungal, antiviral coating*
52. Ministry of science and technology website, 2020 “Coating developed by JNCASR may prevent transmission of infection” <https://dst.gov.in/coating-developed-jncasr-may-prevent-transmission-infection>
53. Vigyanprasar website, 06th April, 2020 “JNCASR develops versatile coating to stop spread of viruses like influenza and COVID 19” <https://vigyanprasar.gov.in/wp-content/uploads/Coating-developed-by-JNCASR-may-prevent-transmission-of-infection-apr2020.pdf>
54. Democratic accent, 01st April, 2020, “COVID-19: JNCASR develops coating to prevent transmission of infection” <https://www.democraticaccent.com/covid-19-jncasr-develops-coating-to-prevent-transmission-of-infection/>
55. Press information bureau, 01st April, 2020, “Coating developed by JNCASR may prevent transmission of infection” <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1609970>
56. The Tribune, 25th August, 2020, “Indian researchers develop coating that kills Covid” <https://www.tribuneindia.com/news/nation/indian-researchers-develop-coating-that-kills-covid-64274>
57. The Daily Star, 02nd April, 2020, “India claims to have developed anti-microbial coating that could kill Covid-19” <https://www.thedailystar.net/india-claims-have-developed-anti-microbial-coating-could-kill-covid-19-1888786>
58. Egov website, 01st April, 2020, “JNCASR develops antimicrobial coat against COVID-19 to prevent transmission” <https://egov.eletsonline.com/2020/04/jncasr-develops-antimicrobial-coat-against-covid-19-to-prevent-transmission/>
59. The Times of India, 29th March, 2020, “Covid-19: Scientists offer special ‘coating’ to contain virus” <https://timesofindia.indiatimes.com/india/covid-19-scientists-offer-special-coating-to-contain-virus/articleshow/74875492.cms>
60. Indian Chemical News, 02nd April, 2020, “JNCASR coating may prevent COVID-19 transmission” <http://www.indianchemicalnews.com/petro-chemical/jncasr-coating-may-prevent-covid-19-transmission-4744>
61. Freshers Live, 07th April, 2020, “JNCASR develops a coating that may prevent transmission of infection” <https://www.fresherslive.com/current-affairs/articles/jncasr-develops-a-coating-that-may-prevent-transmission-of-infection-25221>
62. Navodaya Times, 03rd April, 2020, “JNCASR ने बनाई एंटी-कोरोना कोटिंग, कपड़ों और प्लास्टिक पर लगाने से मरेंगे कोरोना वायरस!” <https://www.navodayatimes.in/news/khabre/jncasr-created-anti-corona-coating-applying-on-clothes-and-plastic-prsgnt/141477/>
63. SSBPrep website, 01st April, 2020, “Coating developed by JNCASR may prevent transmission of infection” <https://ssbprep.com/coating-developed-by-jncasr-may-prevent-transmission-of-infection/>
64. NDTV, 06th April, 2020, “JNCASR Develops Versatile Coating To Stop Spread Of Viruses” <https://www.ndtv.com/education/covid-19-jncasr-develops-versatile-coating-to-stop-spread-of-viruses-2207185>
65. *G. Antibacterial and antiviral paints*
66. Scientific American - <http://www.scientificamerican.com/article/paint-on-polymer-kills-fl/> (13th November, 2006)
67. Chemical Engineering News, ACS - <http://pubs.acs.org/cen/news/84/i47/8447notw1.html> (20th November, 2006, Vol. 84, 17)
68. MIT TechTalk - <http://chemistry.mit.edu/mits-anti-microbial-paint-kills-flu-bacteria> (6th December, 2006)
69. BBC News (29th December 2006)