




Title	Dr.	First Name	Urmi	Last Name	Bajpai	Photograph
Designation	Associate Professor					
Address	DEPARTMENT OF BIOMEDICAL SCIENCE, ACHARYA NARENDRA DEV COLLEGE (University Of Delhi), GOVINDPURI, NEW DELHI-110019.					
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Residence						
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Email/ Web-Page	urmibajpai@andc.du.ac.in https://sites.google.com/site/urmibajpailab					
Educational Qualifications						
Degree	Institution			Year		
M.Sc. (Biosciences)	Jamia Millia Islamia University, Delhi.			1992		
Ph.D. (Microbiology)	University of Delhi, South Campus			1997		
Career Profile						
<ul style="list-style-type: none"> Teaching in ANDC since July 1998 Associate Professor since 2010 						
Administrative Assignments						
<ul style="list-style-type: none"> Department Teacher-in-Charge 2000-2002, 2008-2010, 2019-2021 Member Secretary, Institutional Biosafety Committee (IBSC) 2019 Coordinator, Science <i>Setu</i> (between ANDC and THSTI). 2016-till date Deputy Dean, Research in the University of Delhi. July 2017-2018 (on additional basis) Admission Committee Convener in the College 2019 and 2020 Member, Department Research Committee, Dr. B.R. Ambedkar Research Centre, University of Delhi 2008-2016; 2019-till date Member, Curriculum Revision (LCOF) for B.Sc. (H) Biomedical Science 2019 						
Areas of Interest / Specialization						
i) Exploring mycobacteriophages and their lytic enzymes (Endolysins) for their anti-mycobacterial potential						

- ii) Drug Repurposing & Discovery of new inhibitors, directed towards Multi-target therapy for Tuberculosis with Mur enzymes of the cell wall biosynthesis pathway of *Mycobacterium tuberculosis* as the target proteins.

Subjects Taught

Biochemistry, Microbiology, Medical Biotechnology, Medical Biochemistry

Research Guidance

- Ph.D. Students: 04
- Research Fellows and M.Sc. Dissertation: 20
- Undergraduate students: 150+

Publications Profile

1. Eniyan, K., Sinha A., Ahmad, S & Bajpai, U. (2020). Functional characterization of the endolysins derived from mycobacteriophage PDRPxv. *World Journal of Microbiology and Biotechnology*. **36, 83**.
2. Sinha, A., Eniyan, K., Manohar, P., Ramesh, N., & **Bajpai, U.** (2020). “Characterization and genome analysis of B1 sub-cluster mycobacteriophage PDRPxv”. *Virus Research*, 279, 197884.
3. Kandasamy Eniyan, Jyoti Rani, Srinivasan Ramachandran, Rahul Bhat, Inshad Ali Khan and **Urmi Bajpai** (2019). “Screening of Antitubercular Compound Library Identifies Inhibitors of Mur Enzymes in *Mycobacterium tuberculosis*” *SLAS Discovery*; Page no. 1-9
DOI: <https://doi.org/10.1177/2472555219881148>
4. Jyoti Rani, Yumnam Silla, Kasmika Borah, Srinivasan Ramachandran, **Urmi Bajpai** (2019). “Re-purposing of the FDA-approved drugs to target MurB and MurE enzymes in *Mycobacterium tuberculosis*”. *Journal of Biomolecular Structure and Dynamics*. PP 1-12.
5. **Urmi Bajpai**, Abhishek Kumar Mehta, Kandasamy Eniyan, Avni Sinha, Ankita Ray, Simran Virdi, Shazeb Ahmad, Aridni Shah, Deepanksha Arora, Devyani Marwaha, Gunjan Chauhan, Prarthna Saraswat, Punita Bathla, Ruchi Singh (2018) Isolation and characterization of bacteriophages from India, with lytic activity against *Mycobacterium tuberculosis*. *Can J Microbiol*. 2018:64:1-9
6. Kandasamy Eniyan, Sudhaker Dharavath, Ramachandran Vijayan, **Urmi Bajpai***, Samudrala Gourinath* (2018). Structure of UDP-N-acetylglucosamine-enolpyruvate reductase (MurB) from *Mycobacterium tuberculosis*: *Biochemica et Biophysica Acta (BBA)- Protein and Proteomics*, 1866 (3), 397-406.
7. Kandasamy Eniyan* and **Urmi Bajpai**. “Mur Ligases as Potential Drug Targets in *Mycobacterium tuberculosis*. A review” (2017). *DU Journal of Undergraduate Research and Innovation* Volume 3, Issue 1, pp 97-115 http://journals.du.ac.in/ugresearch/pdf-vol-3_June-17/7.pdf

8. Kandasamy Eniyan, Anuradha Kumar, Geetha Vani Rayasam, Andrej Perdih and **Urmi Bajpai** (2016). Development of a one-pot assay for screening and identification of Mur pathway inhibitors in *Mycobacterium tuberculosis*. *Scientific Reports*. 6: 35134.
9. Shahzaib Ahamad, Faez Iqbal Khan, **Urmi Bajpai**, Shahnawaz Ali, Neerja Dwivedi and Md. Imtaiyaz Hassan (2015). A comparative molecular dynamics study of MurA enzymes from *E. coli* and *M. tuberculosis*. *Innovation in Pharmaceuticals and Pharmacotherapy*. Vol 03, Issue 03, Pages:673-682.
10. Avni Sinha, Kandasamy Eniyan, Swati Sinha, Andrew M Lynn, **Urmi Bajpai** (2015). Functional analysis of TPM domain containing Rv2345 of *M.tuberculosis* identifies its phosphatase activity. *Protein Expression and Purification* Issue.111 pages 23-27.
11. Aamod Utpal, Abhinav Tyagi, Akhilesh Kumar, Amit Gaurav, Amrita Singh, Atul Kumar Tiwari, Avantika Singh, Beneeta Kalha, Bharat Bhatt, Bimlesh Yadav, Deepika Kumari, Harsha Rohira, Himanshu Bhatt, Kamlesh Kumari, Kartika Vashistha, Karuna Singh, Khairun Nisaa, Mohit Kumar, Navbhar Sharma, Preeti Yadav, Rajat Sharma, Ritu Arora, Ruchika Pokhriyal, Shahbaz Siddiqui, Sneha Mishra, Sonal Kapur, Srishti Nanda, Sumit Kingar, Sweety Raj, Vartika Channa, Vivek Bhardwaj, Kandasamy Eniyan and **Urmi Bajpai** (2015). Building a repository of potential drug targets in *Mycobacterium tuberculosis* by crowdsourcing. *DU Journal of Undergraduate Research and Innovation* Vol 1. Issue 1: 1-13. <http://journals.du.ac.in/ugresearch/pdf/J1.pdf>
12. Shilipi Singh, **Urmi Bajpai**, and Andrew Michael Lynn (2015). Structure based virtual screening to identify inhibitors against MurE Enzyme of *Mycobacterium tuberculosis* using AutoDock Vina. *Bioinformatics*. Vol 10 issue 11. Pages 697-702
13. Kandasamy Eniyan and **Urmi Bajpai** (2015). Cloning, Expression, Purification and Bioinformatic analysis of 2-Methylcitrate Synthase from *Mycobacterium tuberculosis*. *Asian Pacific Journal of Tropical Medicine*. Vol. 8 issue.1:19-23.
14. **Urmi Bajpai**, Rinu Sharma, Siddharth Dutta Gupta, Ranju Ralhan. (2008) Clinical significance of 14-3-3 zeta in human esophageal cancer. *International Journal of Biological Markers* 23(4):231-7.
15. **Bajpai, U.**, Kuhad, R. C. and Khanna, S. (1998). Mineralization of (C14) octadecane by *Acinetobacter calcoaceticus* S19. *Canadian Journal of Microbiology*. 44: 681-686.

Conference/ Presentations/Workshops in the last five years

Oral Presentations (International)

- Open Source Pharma Meet, Paris, France, March, 2019. “Anti-mycobacterial drug discovery” research at ANDC, in the 3rd Global Open Source Pharma Conference *Science, License, Community*, Paris March 21-23, 2019. Organized by Centre for Research and Interdisciplinarity (CRI), an affiliate of the Paris Descartes University
- Department Biotechnology, Research Group Laboratory of Applied Biotechnology, Faculty of Bioscience Engineering, Ghent University Belgium March, 2019. “Finding Anti-mycobacterial Solutions in Repurposed Drugs, Bacteriophages and Endolysins”
- EMBO Workshop “Viruses of Microbes” 9-13 July, 2018 University of Wroclaw, Poland.
- ‘Open Source Pharma Meet, Rockefeller Foundation, Bellagio, Italy, July 2014. “Crowdsourcing in wet labs and with undergraduates”,

Invited talks

- Science Popularization Talks- “Igniting Passion for Science Early On: A narrative” organized by CSIR-NIEST, Summer Research Training Program 2020.
- “Emerging role of bacteriophages and their enzymes in managing anti-microbial resistance” Online Faculty Development Program on Research Advances in Plant and Microbial Biotechnology organized by Biotechnology Department, Jaypee Institute of Information Technology, Noida. 13 July 2020.
- “Exploring the anti-mycobacterial potential of bacteriophages and endolysins” at the Virocon 2020 (International conference by Society of Virologists of India), 19 February, Indian National Science Academy (INSA), New Delhi. 18-20 February, 2020.
- Panelist in the roundtable on “Mentoring women in science” at the Nature Mentoring Award ceremony on December 9, 2019 organized by Nature research group at the India International Centre, New Delhi.
- Keynote speaker, “A Multipronged Quest for Anti-Mycobacterial Solution: Bacteriophages, Endolysins and Chemical Libraries. International Conference on Bacteriophage Research and Antimicrobial Resistance, ICBRAMR 2019. Vellore Institute of Technology, Vellore 12-13 December, 2019.
- Co-chair: Preclinical and Clinical Bacteriophage Therapy: Our Recent Experiences. International Conference on Bacteriophage Research and Antimicrobial Resistance, ICBRAMR 2019. Vellore Institute of Technology, Vellore 12-13 December, 2019.
- National Symposium on “Antimicrobial Drug Resistance: Complex Challenges and Future Alternative Strategies”, organized by Department of Microbiology, Panjab University, Chandigarh. 26 July, 2019.

- “Potential role of phage-encoded LysinB as the emerging lytic agent against Mycobacterium spp.” at the Workshop on “Clinical and Translational Research on Bacteriophages as Promising Antimicrobial Alternatives for Therapeutics, Prophylaxis and Food Safety” is being organized at NCVTC, ICAR-National Research Centre on Equines, Hisar, Haryana from July 29-31, 2019.
- “Phage Therapy for drug-resistant infections” on the occasion of World Immunology Day at University College of Medical Sciences (UCMS), University of Delhi and GTB hospital, on May 2, 2018
- “Bacteriophages as credible alternative to antibiotics: the prospects and challenges” at Institute of Microbial Technology (IMTECH), Chandigarh on December 5, 2018
- 20th Annual fest of Department of Biosciences and Bioengineering, IIT Bombay on January 12-13, 2019
- “Antimicrobial Resistance & the Prospects and Challenges of Bacteriophage Therapy” Department of Biochemistry, South Campus, Delhi University. January 16, 2019.
- Delegate in the Women Scientists and Entrepreneurs Conclave (WSE) on October 7-8, 2018 as part of India International Science Festival (IISF) 2018 held in Lucknow.
- “Phages in medicine: Future is here”, Medizone Aesthetics Company. March 3, 2019, Hyatt Regency Mumbai.
- Armed Forces Medical College (AFMC), Pune on 9, 10 January, 2018
- Chaired a session on Phage Therapy at the International conference on Bacteriophages in River Ganga, organised by the Institute of Medical Science, BHU and ICMR at BHU, Varanasi. 22-23 August, 2017.

Organized:

- IBRC Webinar by Prof. Graham Hatfull, Eberly Family Professor of Biotechnology and HHMI Professor in the Department of Biological Sciences at the University of Pittsburgh, USA on “Mycobacteriophages: Diversity, Dynamics and Therapy”. 17 June, 2020
- IBRC Webinar by Prof. Yves Briens, Associate Professor at the Department of Biotechnology at Ghent University, Belgium on “From discovery to high-throughput engineering of phage lysins targeting Gram-negative bacteria”. 9 July 2020.
- SBRT Webinar by Dr. Tobi Nagel, Founder & President of Phages for Global Health, USA and Dr. Janet Nale, Research Associate, Department of Infection, Immunity and Inflammation, University of Leicester, UK. 14 August, 2020
- SBRT Webinar with Dr. Jessica Sacher and Mr. Jan Jhang, Co-Founders, “Phage Directory” USA. 3 September, 2020.

- A session on bacteriophage therapy at the Virocon 2020 (International conference by Society of Virologists of India) on 19 February at the Indian National Science Academy (INSA), New Delhi. 18-20 February, 2020
- Organized and conducted a workshop (Gene Editing and Phage Therapy) on Phage Discovery at the Department of Biochemistry, IARI on 22 February, 2019.
- OHSL-IBRC colloquium, a public lecture delivered by Prof. Steffanie Strathdee, Associate Dean of Global Health Sciences and Harold Simon Professor of Medicine at the University of California San Diego at the India International Centre, New Delhi, India. 19 November, 2019.
- Moderated the Panel Discussion 'Charting a Path Towards Bacteriophage Therapy'. Details of the events can be found in the link Bajpai, U. (2019). A new phage consortium hosts its first public lecture. *Capsid & Tail*, (55). Retrieved from <https://phage.directory/capsid/first-ibrc-lecture>

Posters

International

- Synthèse d' inhibiteurs de Mur-Ligases à visée anti-bactérienne. V. Hervin, C. Hoarau, D. Warsycki, A. Bojarski, **U. Bajpai**, V. Roy, L. Agrofoglio. French symposium (Biotechnocentre, 11 and 12 October 2018, Seillac France).
- Eniyan K, P Manohar1, **U Bajpai** and N Ramesh (2019) Transcriptional Analysis of dcw Operon Genes of *Mycobacterium smegmatis*. Presented at ASM Microbe 2019, at San Francisco, USA.
- **Eniyan K**, Kumar A, Rayasam G V, Perdih A and Bajpai U (2016). Development of a one-pot assay for screening novel inhibitors targeting Mur enzymes of peptidoglycan biosynthesis. Presented at the 7thEMBO meeting 2016, at Mannheim, Germany.

National

Oral

- Integrating Research in Undergraduate education" at the BIOSPARKS 17, School of Lifesciences, Jawaharlal Nehru University, New Delhi (30 March 2017).
- Facilitator/Resource person for the sessions on the 'Undergraduate Science teachers' workshop' held at Ramjas College on January 31, 2017, organized by IndiaBioScience and Ramjas College, University of Delhi

- Learning Science through research and new teaching methodologies at a 2-days meet on Teaching of the sciences in higher education: Issues and Challenges in Pedagogy and Research (2016, 27 –28 May, Bangalore University).
- Ritam Das¹ and Urmi Bajpai*. Functional characterization of a DNA-dependent AAA ATPase from a F cluster mycobacteriophage. International e-Conference on Health and Research in Current Scenario: with Special Emphasis on COVID-19 ‘Virus Genomics and Pathogenicity’ by Venkateswara College, University of Delhi and PhiXgen Pvt. Ltd., India. 17 July 2020. **Best Poster Award**.
- Jyoti Rani, Srinivasan Ramachandran, and Urmi Bajpai* Repurposing existing drugs for treating drug resistant tuberculosis with Mtb MurB & MurE as the target enzymes”, Pre-Conference Workshop & International Conference on Multi-scale Simulation & Mathematical Modelling of Biological Complex Systems. 28 January - 01 February 2019, Jawaharlal Nehru University.
- Jyoti Rani, Kandasamy Eniyan, Srinivasan Ramachandran, Urmi Bajpai*. Identification of inhibitors of Mycobacterium tuberculosis MurE enzyme by screening of a library of anti-tubercular compounds at the Second International Conference on Antimicrobial Resistance, Novel Drug Discovery and Development: Challenges and Opportunities, organized by SRM University Delhi-NCR, Sonapat, Haryana in association with Royal Society of Tropical Medicine and Hygiene. March 17 - 19, 2019 at IIT Delhi Campus, RGEC, Sonapat, Haryana
- Ritam Das¹, Ritu Arora² and Urmi Bajpai*. Bacteriophages to the rescue! A renewed hope for anti-micro resistance (AMR). DBT- Biotechnology Popularization Programme, Miranda House, University of Delhi August 2019. **First Prize**
- Ritam Das¹, Ritu Arora² and Urmi Bajpai*. Isolation and characterization of Bacteriophages and encoded endolysins as promising alternatives to antibiotics. New Frontiers in science, under the aegis of DBT Star College Scheme, Acharya Narendra Dev College, University of Delhi, New Delhi, India. 22 October 2019. **Consolation Prize**
- Garima¹, Saroj and Urmi Bajpai*. Isolation and Characterization of Novel Mycobacteriophages from the collected soil samples. New Frontiers in science, under the aegis of DBT Star College Scheme, Acharya Narendra Dev College, University of Delhi, New Delhi, India. 22 October 2019. **Consolation Prize**
- Ritam Das¹ and Urmi Bajpai*. Isolation and characterization of Bacteriophages and encoded endolysins promising alternatives to antibiotics. Assessment of best practices in higher education institution under NAAC framework, Maitryei College, University of Delhi, New Delhi, India. 6 November 2019.

- Ritu Arora, Saroj and Urmi Bajpai*. Morphological and genomic characterization of mycobacteriophages isolated from Delhi-NCR. 60th Annual Conference of The Association of Microbiologists of India (AMI-2019), Central University of Haryana, Mahendragarh, Haryana, India. 15-18 November 2019.
- Saroj, Ritu Arora and Urmi Bajpai*. Isolation & characterization of mycobacteriophages and assessment of their potential to inhibit/disrupt biofilm. International Conference on Bacteriophage Research and Antimicrobial Resistance Vellore Institute of Technology, Vellore, Tamil Nadu, India. 12-13 December 2019.
- Ritam Das¹ and Urmi Bajpai*. Experimental validation of a putative AAA⁺ ATPase encoded by a Mycobacteriophage belonging to F cluster. International Conference on Bacteriophage Research and Antimicrobial Resistance, Vellore Institute of Technology, Vellore, Tamil Nadu, India. 12-13 December 2019. **Second Prize**
- Eniyan K, S Dharavath, J Rani, S Ramachandran, S Gourinath and **U Bajpai** (2017) Crystal structure of MurB enzyme (UDP-N-acetylenolpyruvylglucosamine reductase) from *Mycobacterium tuberculosis*. Presented at Jawaharlal Nehru University, New Delhi.
- Ritu Arora, Eniyan Kandasamy and **Urmi Bajpai (2018)**. LysinB endolysin from mycobacteriophages as novel antimycobacterial agent” International Symposium on Infectious diseases, 12-14 November, 2018 at Regional Centre for Biotechnology and Jamia Hamdard (Delhi-NCR).
- Kandasamy, E; Rani, J; Ramachandran, S; Khan, I. A; and **Bajpai, U.** (2018) Screening of anti-tubercular compound library identifies Mur enzyme inhibitors of *Mycobacterium tuberculosis*. 59th Association of Microbiologists of India (AMI) conference, at University of Hyderabad.
- F Ahmad, Eniyan K, A Sinha and **U Bajpai** (2017) Purification and structural characterization of Lysin A from EniyanLRS mycobacteriophage isolated from New Delhi. Presented at Jamia Millia Islamia University, New Delhi, India.
- Eniyan K and **Bajpai U** (2014). Mur enzymes of *Mycobacterium tuberculosis* as potential drug targets. Presented at 10th Annual symposium on Frontiers in Biomedical Research. Dr. Ambedkar center for Biomedical Research, University of Delhi North campus, New Delhi, India.
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- Shah A, Arora D, Marwaha D, Chauhan G, Singh H, Bhaskar M, Singh M, Saraswat P, Bathla P, Singh R, Ray A, Eniyan K, Mehta A K and **Bajpai U** (2014). Crowd sourcing undergraduates in investigating the diversity of Mycobacteriophages in India and exploring their potential as source for anti-mycobacterial active biomolecules. Presented in National conference on understanding the mechanism and challenges of complex diseases (UMCCD-2014) at Shaheed Rajguru College of Applied Sciences for Women, New Delhi, India.
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- Eniyan K and **Bajpai U** (2014). Molecular Biology techniques used in cloning, expression and purification of recombinant proteins. Presented at National tuberculosis day, JNU Convention Centre, Jawaharlal Nehru University, New Delhi, India

Research Projects (Major Grants/Research Collaboration)

S.No	Title	Funding agency	Amount sanctioned in Rs. (Lakhs)	Period
1	A Multi-Institution Project: An investigational study on Mycobacteriophages and their enzymes as new drug (IND) for treating tuberculosis	ICMR	22,16,000	2019-2022
2.	Recombinant endolysins from mycobacteriophages: exploring their anti-Mycobacterial potential	DST-SERB	46,70,200	2018-2021
3.	Development of alternative anti-bacterials through Bacteriophage-derived proteins, isolated from India (For the undergraduates)	DST-IEDC	01	2015-2016
	TATA CSIR OSDD FELLOWSHIP (TCOF) Projects:			
	TCOF 13 Virtual Screening and in-vitro assays for inhibitors of Mur Enzymes.	TATA CSIR-OSDD Fellowships - 6	5.22 (Total Fellowship amount)	2014 – 2016
	TCOWF Investigating the diversity of Mycobacteriophages in India- A Pilot study.			
	TCOF 21 Computational identification, purification and functional analysis of proteins from Mycobacteriophages and to explore their antimycobacterial potential.			

4	Mtb Mur pathway enzymes: Potential targets for Multi-targeted therapy” (Screening of chemical libraries using one-pot assay developed for Mur enzymes of <i>Mycobacterium tuberculosis</i>)	CSIR-OSDD	7.184	October 2015-March 2016
5	Mtb Mur pathway enzymes: Potential targets for Multi-targeted therapy	CSIR-OSDD	30.38	2013-2015
6	Mobile healthcare: The future of health management in India- A Feasibility Study (For the undergraduates)	DU – innovation project	5	2013-2014
7	Cloning and Expression of <i>Mycobacterium tuberculosis</i> genes (For the undergraduates)	CSIR-OSDD	16.85	2010-2012
8	A Virtual Centre of Excellence in coordinated research on tuberculosis: Development of alternate strategies (For the undergraduates)	DBT	24.85	2006 -2009

Awards and Distinctions

- Indian National Science Academy (INSA)Teacher Award 2018.
- ‘Excellence Award for Teacher in Service in College’, for rendering exemplary service to the University of Delhi (2017).
- Meritorious Teacher Award given by Govt. of NCT of Delhi in 2014.

Other Activities

Coordinator/Member

- Science Setu: “Shadow a scientist” program at THSTI for a period of 10-14 days during December 2019. Talks by THSTI Scientists on 25 February, 2019.
- Member secretary, IBSC since October 2019. Meeting held on 22 October, 2019.
- Project Advisor, Open Source Pharma Foundation (OSPF) 2018-

- Member, Department Research Committee, Dr. B.R. Ambedkar Research Centre, University of Delhi. (2008-2016), (2019-)
- Member, Curriculum Revision (LCOF) for B.Sc. (H) Biomedical Science
- Member, BoS, DDUKK, Central University of Haryana. 2016-
- Observer, IQAC, Central University of Haryana. August, 2020
- **Member**, Course committee (2006-2008)
- Member, Curriculum Revision Committee on periodic basic

Online Articles

- <https://longitudeprize.org/blog-post/when-drugs-dont-work-could-bacteriophages> January, 2018
- Documentary-Drama film <https://youtu.be/lhPPJJZ6SUg> made on “Bacteriophages as a credible option in treating drug-resistant infections” to create awareness on antimicrobial resistance (AMR) and Phage Therapy. May 2018
- <https://indiabioscience.org/columns/education/teachers-weigh-in-1>. 2017
- <https://indiabioscience.org/columns/education/bacteriophages-beacon-of-hope-amidst-the-sea-of-superbugs> 2017
- <https://indiabioscience.org/columns/education/a-practical-record-book-by-the-undergraduate-science-students> 2013.
- <https://indiabioscience.org/columns/education/research-experiences-for-college-students>. 2010