




## CURRICULUM VITAE

<b>Name:</b>	Dr. Shashikant Ray	
<b>Designation:</b>	Assistant Professor	
<b>School:</b>	Life Sciences	
<b>Department:</b>	Biotechnology	
<b>Specialisation &amp; Research Interests:</b>	Biochemistry, Biophysics, Cell Biology and Microbiology Structure–function analysis of disease-causing mutant proteins and novel antibacterial drug development	
<b>Email IDs (Official &amp; Personal)</b>	<a href="mailto:shashikantray@mgcub.ac.in">shashikantray@mgcub.ac.in</a>	
<b>Mobile No.:</b>		
<b>Address:</b>	Department of Biotechnology, Mahatma Gandhi Central University Motihari, Bihar-845401	

### 2. ACADEMIC QUALIFICATION (in reverse Chronological order):

Degree	Year	University / Board
Ph.D.	2014	Indian Institute of Technology Bombay, Powai, Mumbai
M.Sc	2007	Allahabad Agricultural Institute Deemed University, Allahabad , UP

Degree	Year	University / Board
B.Sc.(Hons.)	2003	College of Commerce, Arts and Science, Patna, Bihar

### 3. PROFESSIONAL EXPERIENCE:

Organisation/Institute/University	Position Held	Duration
University of Colorado Anschutz Medical Campus, Aurora, Denver, USA	Visiting Research Associate (ICMR-DHR International Postdoctoral Fellow)	February 2023- February 2025
National Brain Research Centre Manesar, Gurgaon, India	Visiting Summer Research Fellow Selected by IASc-INSA-NASI	June 2019 to August 2019
A2O-Biology (Algae to oil), Reliance Industries Ltd	Research Scientist	April 2015 - October 2016
Department of Biosciences and Bioengineering, IIT Bombay	Research Associate	Sept 2014 - March 2015
Department of Biosciences and Bioengineering, IIT Bombay	Teaching Assistantship	January 2009 – Dec. 2009
School of Life sciences, JNU, New Delhi	Junior Research Fellow	May 2008 - Nov 2008

### 4. COURSES TAUGHT:

- Cell Biology
- Environmental Studies
- Genetics
- Molecular Biology
- Plant Physiology
- Bioanalytical Techniques and Biophysics Medical Microbiology

- Biochemistry and Metabolism
- Bioprocess Technology
- Industrial Fermentations
- Recombinant DNA Technology
- Enzymology
- Basics of Bioinformatics and Biostatistics
- Immunobiology

## 5. RESEARCH SUPERVISION:

### A. Ph.D.:

- i. **Awarded** : NA
- ii. **Submitted** : NA
- iii. **Ongoing** : 1

### B. M.Phil.:

- i. **Awarded** : NA
- ii. **Submitted** : NA
- iii. **Ongoing** : NA

### C. Non-Degree Oriented (Master's Level Dissertation):

- i. **Awarded** : 8
- ii. **Submitted** :
- iii. **Ongoing** :

## 6. CONTRIBUTION TO CORPORATE LIFE OF THE UNIVERSITY:

- Member of the International Yoga Day 2022 organizing committee, Mahatma Gandhi Central University, Motihari, Bihar
- Member of the Board of Studies, Department of Zoology, Mahatma Gandhi Central University, Motihari, Bihar from March 2019
- Special invitee, Board of Studies, Department of Biotech, Mahatma Gandhi Central University, Motihari, Bihar from May 2017 to till date
- Member of the admission-cum-prospectus Committee in Academic Session 2019-20
- Actively participated in Preparation of syllabus for B.Sc. (Hons.) Biotech and M.Sc. Biotechnology courses at Mahatma Gandhi Central University, Motihari, Bihar
- Crisis Management during “Run for Champaran” & Champaran Satyagarh centenary celebration (in April 2017)

- Visited HPCL Sagauli for Biotech student field visit and training (in March 2017 and 16 February 2019)
- Member of Discipline Committee during Foundation Week (in February 2017)
- Member of Debate and elocution committee during Foundation week (in February 2017)
- Member of Placement cell (in November 2016)
- Member of Seminar Committee (in November 2016-17)
- Member of Infrastructure development (in November 2016)
- Member of Medical committee (in November 2016)
- Visited IIT Bombay for establishment of Biotech lab at MGCU Motihari in October 2016

## 7. MEMBERSHIP OF SOCIETIES / PROFESSIONAL BODIES:

- Member of The National Academy of Sciences, India, Prayagraj
- Member of Governing Council, RP group of Pharmacy, Bangalore
- Member of School Board, School of Life Sciences, Mahatma Gandhi Central University, Motihari, Bihar.
- Member of Board of Study, Department of Biotechnology School of Life Sciences, Mahatma Gandhi Central University, Motihari, Bihar
- Member of the R &D cell, Bihar Pollution Control Board
- Review Editor: Frontiers in Molecular Biosciences
- Scientific Advisor: Shivoz Cosmo Innovations
- Scientific Advisor: Bioexicon Labs Private Limited

## 8. PUBLICATIONS :

### A. BOOKS/MONOGRAPHS:

#### 1. Authored:

- 1) Chatterjee A, Rajarshi K, Ghosh H, Singh MK, Roy OP and **Ray S\*** (2019) Molecular chaperones in protein folding and stress management in cyanobacteria: Advances in Cyanobacterial Biology. ISBN 9780128193112 (**ELSEVIER**).
- 2) Khan R, **Ray S\*** (2019) Bacterial Cell Division Machinery: An Insight for Development of New Antibacterial Agent. In: Kumar S., Egbuna C. (eds) Phytochemistry: An *in-silico* and *in-vitro* Update. ISBN 978-981-13-6919-3 (**Springer, Singapore**).
- 3) Khan R, Chatterjee A, Ghosh H, Kapoor S and **Ray S\*** (2019) Phytochemicals as anticancer drugs: Targeting the microtubular network of cancer cells. In: Kumar S., Egbuna C. (eds) Phytochemistry: An *in-silico* and *in-vitro* Update. ISBN 978-981-13-6919-3 (**Springer, Singapore**).

- 4) Chatterjee A, Ghosh H and **Ray S\*** (2018) Carotenoids- a dietary compound with multiple health benefits. ISBN 978-1-53613-186-4 (**Nova Science Publishers, New York, USA**).
- 5) Rai S, Shrivastava AK and **Ray S\*** (2018) Secondary metabolites from algae: benefits and future perspectives. ISBN 978-1-53613-186-4 (**Nova Science Publishers, New York, USA**).
- 6) Rai LS, Narayanan A and **Ray S\*** (2017) Gluconeogenesis regulation, measurements, and disorders. ISBN 978-1-53612-908-3 (**Nova Science Publishers, New York, USA**).
- 7) **Ray S\***, Agnihotri T \* and Rathore SS\*(2017) TCA Cycle: History, Working and Disease Implications. ISBN 978-1-53612-908-3 (**Nova Science Publishers, New York, USA**).
- 8) Narayanan A, Rai LS and **Ray S\*** (2017) Protein Regulation in Signal Transduction. ISBN 978-9384502-47-8 (**Prashant publishing house New Delhi**).

#### **B. PAPERS IN REFEREED/PEER REVIEWED JOURNALS:**

- 1) **Ray S**, Jacques S, Ettah U, Dai S, Gaikwad HK, Scheinman RI, Mallela KMG, Simberg D (2025) Magnetic Nanoworm-Based Screening of Yeast Library for Anti-PEG Nanobodies. *Mol Pharm.* doi:10.1021/acs.molpharmaceut.5c00540.
- 2) Kumar P, Kumari I, Prasad R, **Ray S**, Banerjee A, and Prakash A (2025) Elucidating the binding specificity of interactive compounds targeting ATP binding cassette subfamily G member 2 (ABCG2). *Mol Divers.* doi: 10.1007/s11030-024-11078-2.
- 3) Kumar P, Khan R, Singh BN, Kumari A, Rai A, Singh AK, Prakash A and **Ray S** (2024) Hydroxyethylamine-based analog targets microtubule assembly: An in silico study for anti-cancerous drug development. *Scientific Reports.* doi: 10.1038/s41598-024-82823-8
- 4) Upadhyay V, **Ray S**, Panja S, Saviola AJ, Maluf NK, Mallela KMG (2024) Biophysical characterization of the dystrophin C-terminal domain: Dystrophin interacts differentially with dystrobrevin isoforms. *J. Biol.Chem.* doi: 10.1016/j.jbc.2024.108002.
- 5) Chatterjee A, Khan R, Mukherjee T, Sahoo PP, Tiwari LN, Singh BN, Kumari R, Kumari A, Rai A, **Ray S** (2024) Harnessing bacterial metabolites for enhanced cancer chemotherapy: unveiling unique therapeutic potentials. *Arch Microbiol.* doi: 10.1007/s00203-024-04179-x.
- 6) Das S, Khan R, Banerjee S, **Ray S**, Ray S (2024) Alterations in Circadian Rhythms, Sleep, and Physical Activity in COVID-19: Mechanisms,

- Interventions, and Lessons for the Future. *Mol Neurobiol*. doi: 10.1007/s12035-024-04178-5.
- 7) Singh R, Kumar A, Rane, JS, Khan, R, Tripathi G, Ajay AK, Prakash A & **Ray S (2022)**. Arylcoumarin perturbs SARS-CoV-2 pathogenesis by targeting the S-protein/ACE2 interaction. *Scientific Reports*, 12, 17038. <https://doi.org/10.1038/s41598-022-20759-7>.
  - 8) Khater S, Kumar P, Dasgupta N, Das G, **Ray S**, Prakash A (2021) Combining SARS-CoV-2 Proofreading Exonuclease and RNA-Dependent RNA Polymerase Inhibitors as a Strategy to Combat COVID-19: A High-Throughput in silico Screening. *Front Microbiol*. 2021; 12: 647693. doi:10.3389/fmicb.2021.647693.
  - 9) Rajarshi K, Chatterjee A, **Ray S (2020)** Combating COVID-19 with Mesenchymal Stem Cell therapy. *Biotechnol Rep (Amst)*.26:e00467. doi:10.1016/j.btre.2020.e00467.
  - 10) Rajarshi K, Chatterjee A, **Ray S (2020)** BCG vaccination strategy implemented to reduce the impact of COVID-19: Hype or Hope? *Med Drug Discov*.100049. doi:10.1016/j.medidd.2020.100049.
  - 11) Pandey P, Rane JS, Chatterjee A, Kumar A, Khan R, Prakash A and **Ray S (2020)** Targeting SARS-CoV-2 spike protein of COVID-19 with naturally occurring phytochemicals: an in silico study for drug development. *J Biomol Struct Dyn*. 1-11. doi:10.1080/07391102.2020.179681.
  - 12) Rane JS, Pandey P, Chatterjee A, Khan R, Kumar A, Prakash A and **Ray S (2020)** Targeting virus-host interaction by novel pyrimidine derivative: an in silico approach towards discovery of potential drug against COVID-19. *J Biomol Struct Dyn*. 1-11. doi:10.1080/07391102.2020.1794969.
  - 13) Piyush R, Rajarshi K, Chatterjee A, Khan R and **Ray S (2020)** Nucleic acid-based therapy for coronavirus disease 2019. *Heliyon*. 6(9):e05007. doi:10.1016/j.heliyon.2020.e05007.
  - 14) Chatterjee A, Ghosh H, Khan R, Kapoor S and **Ray S (2020)** An intimate alliance of DNA-damage response network with cell-cycle checkpoints amid events of uncontrolled cellular proliferation- a mini review. *Endocr Metab Immune Disord Drug Targets*. doi: 10.2174/1871530320999200918143856.
  - 15) Piyush R, Rajarshi K, Khan R and **Ray S (2020)** Convalescent plasma therapy: a promising coronavirus disease 2019 treatment strategy. *Open Biol*. 200174. doi:10.1098/rsob.200174.

- 16) Rajarshi K, Khan R, Singh MK, Ranjan T, Ray S, **Ray S (2020)** Essential functional molecules associated with SARS-CoV-2 infection: Potential therapeutic targets for COVID-19. *Gene.*;768:145313. doi: 10.1016/j.gene.2020.145313.
- 17) Dhaked HPS, **Ray S**, Battaje RR, Banerjee A and Panda D (2019) Regulation of *Streptococcus pneumoniae* FtsZ assembly by divalent cations: Paradoxical effects of Ca<sup>2+</sup> on the nucleation and bundling of FtsZ polymers. *FEBS J.* 286(18) 3629-3646.
- 18) **Ray S**, Jindal B, Kunal K Surolia A and Panda D (2015). BT-Benzo-29 inhibits bacterial cell proliferation by perturbing FtsZ assembly. *FEBS J.* 280 (20) 4015-4033.
- 19) Bhattacharya A, **Ray S**, Singh D and Panda D (2015) ZapC promotes assembly and stability of FtsZ filaments by binding at a different site on FtsZ than ZipA. *Int.J Biol Macromol.* 81;435-442.
- 20) **Ray S**, Dhaked HP and Panda D (2014) Antimicrobial peptide CRAMP (16-33) stalls bacterial cytokinesis by inhibiting FtsZ assembly. *Biochemistry.* 21; 53(41): 6426-6429.
- 21) **Ray S**, Kumar A and Panda D (2013) GTP Regulates the Interaction between MciZ and FtsZ: A Possible Role of MciZ in Bacterial Cell Division. *Biochemistry.* 15; 52 (2):392-401

## 9. INVITED TALKS:

- Delivered an invited guest lecture on 'Every Drop Counts: Sustainable Solutions for Water Conservation' at Dr. Krishna Singh Mahila College, Motihari—a constituent unit of BRA Bihar University, Muzaffarpur—on the occasion of World Water Day, 21<sup>st</sup> March, 2025
- Delivered an invited guest lecture on “Bacterial Cell Division Mechanisms: Unveiling Insights for the Advancement of Novel Antibacterial Agents” in international conference on “Emerging Environmental Stress and Global Challenges in Current Perspective (ICESGCCP-2025)” organized by Tilak Dhari PG College, Jaunpur, Uttar Pradesh, India from 4<sup>th</sup> - 5<sup>th</sup> March 2025.
- Invited Guest Lecture on “Basics of Microbial Growth and Its Kinetics” organized by Gorakshpeethadhishwar Mahant Awedhnath Mahavidyalaya, Chowk Bazar, Maharajganj, Uttar Pradesh - 273303, on 27<sup>th</sup> July, 2024.
- Invited Guest Lecture on “Bacterial Cell Division Mechanisms: Unveiling Insights for the Advancement of Novel Antibacterial Agents” in international conference on “Biological alterations and applications for next generation living world” organized by Department of Biotechnology, Govt.

V.Y.T. PG. Autonomous College, Durg, Chhattisgarh, India, Society for Science and Environment, Jalgaon, India from 1-2 March 2024.

- Online Invited Guest Lecture on “Overview of Enzymology” at Department of Biotechnology, Guru Ghasi Das Central University, Bilaspur on 15<sup>th</sup> February 2022.
- Invited Guest Lecture on “GTP regulates the interaction between MciZ and FtsZ: A possible role of MciZ in bacterial cell division” at Munsu Singh Motihari—a constituent unit of BRA Bihar University, Muzaffarpur on 12<sup>th</sup> November 2019.
- Invited Guest Lecture on “Awareness about environmental issues” at Langat Singh College Muzaffarpur (BRABU University Muzaffarpur, Bihar) on 28<sup>th</sup> May 2019.
- Invited Guest Lecture at TNB College Bhagalpur (TM Bhagalpur University) at Department of Biotechnology on 22<sup>th</sup> February 2019.
- Invited Guest Lecture on “Bacterial Cell Division Machinery: An Insight for Development of New Antibacterial Agent” at Langat Singh College Muzaffarpur (BRABU University Muzaffarpur, Bihar) on 12<sup>th</sup> February 2019.
- Invited Guest Lecture on “BT-Benzo-29 inhibits bacterial cell proliferation by perturbing FtsZ assembly” at Department of Chemistry, University of Rajasthan, Jaipur on 2<sup>nd</sup> August 2017.

#### **10. PARTICIPATION & PRESENTATIONS IN SEMINARS/SYMPOSIA/WORKSHOPS/CONFERENCES:**

- Presented a poster (7th August 2024) on “Unraveling the impact of disease-causing mutations on the structure and function of the CT domain of dystrophin” at the 2024 Colorado Protein Stability Conference, Beaver Run Resort, Breckenridge, Colorado, USA, 5<sup>th</sup> to 8<sup>th</sup> August 2024.
- Presented a poster on “Probing the Structural and Functional Impact of Mutations in the C-Terminal Domain of Dystrophin” (1st August 2024) at the Annual Research Retreat August 1-2, 2024 Keystone, CO USA, Organized by Skaggs School of Pharmacy and Pharmaceutical Sciences, University of Colorado Anschutz Medical campus, USA
- Presented a poster on “Elucidating the effect of disease-causing mutations on the structure-function of the CT domain of dystrophin”(15<sup>th</sup> October 2023) at the 37<sup>th</sup> Gibbs Conference on Biothermodynamics, Touch of Nature Outdoor Education Center, Carbondale, IL, USA, 14<sup>th</sup> to 17<sup>th</sup> October 2023.
- Attended 88th Annual meeting of Indian Academy of Sciences (IAS) which was held at SRM University Amravati (A.P.) from 4<sup>th</sup> November 2022 to 6<sup>th</sup> November 2022.

- Resource Person at Department of Biotechnology (Central University of South Bihar) DST-STUTI Sponsored Hands “Advanced Immunological Tools and Techniques” from 19-25<sup>th</sup> September 2022.
- Oral presentation in International Seminar on “Recent Advances in Biotechnology and its implications in modern medicine” at Laxmi Narayan Dubey College, Motihari, Bihar (BRABU University Muzaffarpur, Bihar) on 28<sup>th</sup> July 2022.
- Online oral presentation in the National Conference on the occasion of “International Microorganism Day” at Department of Microbiology, Govt. VYT PG Autonomous College, Durg, Chhattisgarh on 17<sup>th</sup> September 2021.
- Online oral presentation in the National Webinar on “Recent Pandemic and Environmental Alterations” at Department of Zoology of Government College, Kotri, Chhattisgarh on 27<sup>th</sup> March 2021, in the collaboration of Zoological Society of Chhattisgarh, India.
- Online oral presentation in the National webinar on “Loss of Biodiversity” at Dept. of Zoology & Botany with IQAC cell of Govt. Shivnath Science College, Rajnandgaon (C.G.) on 18<sup>th</sup> June 2021.
- Online oral presentation in the National webinar at the Department of Botany, TPS College, Patna on 01<sup>st</sup> August 2020.
- Online oral presentation in the National webinar on “Health and Environmental Protection during Pandemic Outbreak of COVID -19” at the Department of Chemistry, Sam Higginbottom University of Agriculture, Technology & Sciences (U.P.) ALLAHABAD - 211007, U.P., INDIA on 25<sup>th</sup> June 2020.
- Online oral presentation in the international Webinar on “Recent Problem and Prospects of COVID-19” held at the Department Of Biotechnology, Govt. V.Y.T. PG. Autonomous College, Durg, Chhattisgarh, India on 31<sup>st</sup> May 2020.
- ORAL presentation at 2019 Academic Conference of Henan International Joint Laboratory for Development and Application of Veterinary Products, on “Emerging Trends, Technologies and Applications” organized by CHINA College of biology and food engineering, Anyang Institute of Technology from 24<sup>th</sup> -25<sup>th</sup> October 2019.
- Presented a poster on “Bacterial Cell Division Machinery: A Search for the New Avenues for the Development of Novel Antibacterial Agents ”at Young Scientist Conference organized by India International Science Festival held at Kolkata from 5<sup>th</sup> -8<sup>th</sup> November 2019.
- ORAL presentation at National Symposium on “Antimicrobial peptide CRAMP (16-33) stalls bacterial cytokinesis by inhibiting FtsZ assembly” in a national conference “Recent Trends in Chemical Sciences (RTCS-2019)” organized by Department of Chemistry, Mahatma Gandhi Central University, Motihari on 1<sup>st</sup> March 2019.

- Participated in the 2015 Nextgen Genomics, Biology, Bioinformatics and Technologies (NGBT) Conference Organized by SciGenom Research Foundation, CCMB and IOB at Hyderabad ICC, Hyderabad, India from 1<sup>st</sup> -3<sup>rd</sup> October, 2015.
- Presented a poster on “Guanosine-5'-triphosphate regulates the interaction between MciZ and FtsZ ”at Experimental Biology-2013 (23th April 2013), Boston MA, USA, 19th -24<sup>th</sup> April 2013.
- ORAL presentation at 8th National Research Scholars Meet in Life Sciences 2012 organized by ACTREC Mumbai on 22nd December 2012.
- Presented a poster on “GTP influences the inhibitory effect of MciZ on FtsZ assembly” at 25th Anniversary symposium of the Protein society, Boston Marriott Copley Place (24th July 2011), Boston, MA, USA, 23<sup>rd</sup> -27<sup>th</sup> July 2011.
- Participated in the International conference on Nano sciences and technology, ICONSAT 2010.
- Attended the International symposia on emerging areas in Biotechnology & Bioengineering IIT Bombay, Mumbai in 26<sup>th</sup> -28<sup>th</sup> February-2009

## 11. AWARDS, FELLOWSHIPS & OTHER DISTINCTIONS:

### AWARDS

- Long Term ICMR-DHR International Fellowships for Young Indian Biomedical Scientist 2022-2023.
- Young Visiting Researcher Award by School of Biological and Food Engineering, Anyang Institute of Technology, China
- Long Term ICMR-DHR International Fellowships for Young Indian Biomedical Scientist 2019-2020.
- Selected for Science Academies' Summer Research Fellowship Programme for Students and Teachers 2019 by Indian Academy of Sciences for National Brain research Centre Manesar Gurgaon at Prof. Neeraj Jain Lab.
- Got award from Reliance Industry Ltd. for the significant and valuable contribution to the A2O Biology vertical R&D year 2015-16.
- Got award from Reliance Industry Ltd. for excellence and valuable contribution to the A2O Biology vertical R&D year 2015-16.
- Travel grant from Department of Biotechnology India to attend Experimental Biology-2013, Boston MA, USA.
- Travel grant from Council of Scientific and Industrial Research, Govt. of India to attend Experimental Biology-2013, Boston MA, USA.

- Travel grant from Indian Council for medical Research, Govt. of India to attend Experimental Biology-2013, Boston MA, USA.
- Travel grant from Indian Institute of Technology Bombay for participation in at 25<sup>th</sup> Anniversary symposium of the Protein society, Boston Marriott Copley Place, Boston, MA, USA, 23rd -27th July 2011.
- Senior Research Fellow, Indian Council for medical Research, Govt. of India, 2011–2014.
- Junior Research Fellow, Indian Council for medical Research, Govt. of India, 2009–11.
- Junior Research Fellow, Council of Scientific and Industrial Research, Govt. of India, May 2008 to November 2008.

### **Academic Achievements:**

- Qualified ICMR-JRF
- Qualified CSIR
- Qualified GATE
- Secured 1<sup>st</sup> Rank in Orientation Programme conducted by HRDC-University of Allahabad April 2018
- Qualified All India entrance for Postgraduate programs conducted by Allahabad Agriculture Institute Allahabad (2005).
- Qualified Combined Entrance examination of Biotechnology (CEEB) conducted by JNU New Delhi for M.Sc. Biotechnology (2004)

### **12. ANY OTHER SIGNIFICANT INFORMATION:**

Dr Shashikant Ray

*(Name of Faculty)*