Faculty Details

Name: Prof. Mrinal Kanti Bhattacharyya

Mail: mkbsl@uohyd.ac.in

Contact: 91-4023134528

Area Of Research: Molecular Parasitology: Understanding biology of the malarial parasites and developing new anti-malarial drugs

Faculty Details

Prof. Bhattacharyya completed his B. Sc. (Chemistry) in 1990 from Ramakrishna Mission Vivekananda Centenary Collage (University of Calcutta) and M. Sc. (Biochemistry) in 1992 from University of Calcutta. He performed his Ph. D. work (Molecular Biology: 1993-1998) at Tata Institute of Fundamental Research (Mumbai), where he investigated molecular aspects of naturally acquired immunity to human malarial parasite Plasmodium falciparum.

Prof. Bhattacharyya worked as a Post Doctoral Research Fellow at Johns Hopkins University, USA (1999-2004), where he initiated the study on homologous recombination (HR) in P. falciparum; and begin to understand how HR could be involved in the generation of genomic diversities in this parasite.

He started his career as a Research Scientist in Tulane University School of Medicine, USA (2004-2007), where he worked on DNA repair and telomere maintenance of yeast chromosomes and found intriguing relationship between Mre11 (a protein involved in DNA repair) mediated DNA damage response (DDR) and telomere maintenance. He also worked as a Visiting Research Scientist in Northwestern University, USA (October 2005-January 2006). He is a recipient of prestigious INDO-US Professorship in microbiology from the American Society for Microbiology (2009).

Dr. Bhattacharyya joined University of Hyderabad in March 2007 as a Reader of Biochemistry. Currently (since April 2015) he is a Professor of Biochemistry. He has served as the Head of the Department of Biochemistry from 1st February 2017 to 31st January 2020. His teaching activities include Molecular Biology; Gene Regulation and Recombinant DNA Technology. He has received the Chancellor's Award in 2014 from the Chancellor of University of Hyderabad for his outstanding contributions to teaching and research. Prof. Bhattacharyya's laboratory at the University of Hyderabad has made seminal contributions in the field of DNA double strand break repair in the apicomplexan parasites.

Notice Board

No Records Available

Students And Project Trainees

Students/Projects Trainees

Name	Joined As	Mail	Contact
Abhilasha Gahlawat	PhD Student	---	---
Tanishka	Integrated MSc-PhD student	---	---
Pooja Kumari Kushwaha	PhD Student	---	---
Jyoti Pawar	PhD Student	---	---
Deepak Rout	Integrated MSc PhD Student	---	---
Maria Mukherjee	Integrated MSc PhD Student	---	---
Tiyas Sengupta	Project Student	---	---
Pallavi M	MSc Student	---	---

Former Students/Projects Trainees

Name	Joined As	Working
Dr. M. Purna Chandra	PDF	
Dr. S. Niranjan (PhD in 2020)	PhD Student	University of Central Florida, Orlando, USA. Currently at Aurobindo Pharma, Hyderabad.
Dr. Wahida Tabassum (PhD in 2022)	PhD Student	Weill Cornell Medicine, Cornell University, New York, USA
Dr. Payal Jha (PhD in 2022)	PhD Student	Eli Lilly and Company, Bangalore
Dr. G. Sita Swati (PhD in 2013)	PhD Student	
Dr. Nabamita Roy (PhD in 2014)	PhD Student	
Dr. Sugith Babu (PhD in 2015)	PhD Student	Indian Institute of Science, Bangalore, India

Dr. M. V. Shalu (PhD in 2015) PhD Student

Dr. Pratap Vydyam (PhD in 2019) PhD Student Yale University, New Haven, USA

Dr. S. Abdul Nabi PDF

Publications

38 Singh P, Tabassum W, Fangaria N, Dey S, Padhi S, Bhattacharyya MK, Arun Kumar K, Roy A, Bhattacharyya S (2023) , Plasmodium Topoisomerase VIB and Spo11 Constitute Functional Type IIB Topoisomerase in Malaria Parasite: Its Possible Role in Mitochondrial DNA Segregation , Microbiology Spectrum, ASM,doi: 10.1128/spectrum.04980-22,,.

37 Pratap Vydyam, Nabamita Roy, Mrinal Kanti Bhattacharyya (2023) , Uncovering the role of Rad51 in homologous recombination mediated antigenic diversification in the human malaria parasite Plasmodium falciparum , Frontiers in Molecular Biosciences, ,10,10.3389/fmolb.2023.1223682,.

36 Tabassum W, Bhattacharya M, Bakshi S, Bhattacharyya MK (2022) , Heat Shock Protein 90 Regulates the Activity of Histone Deacetylase Sir2 in Plasmodium falciparum , mSphere, ASM,7,5,1-11.

35 Mannuthodikayil J, Sinha S, Singh S, Biswas A, Ali I, Mashurabad PC, Tabassum W, Vydyam P, Bhattacharyya MK, Mandal K (2022) , A Chimeric Peptide Inhibits Red Blood Cell Invasion by Plasmodium falciparum with Hundredfold Increased Efficacy , ChemBioChem, European Chemical Societies,24,7,.

34 Wahida Tabassum , Sunanda Bhattacharyya , Shalu M Varunan, Mrinal Kanti BhattacharyyaBhattacharyya MK. (2021) , Febrile temperature causes transcriptional down-regulation of Plasmodium falciparum Sirtuins through Hsp90 dependent epigenetic modification , Molecular Microbiology, ,,doi: 10.1111/mmi.14692. ,.

33 Savitha Chellappan, Subarna Roy, Jyoti M Nagmoti, Wahida Tabassum, Raja Vukanti, SL Hoti, Mrinal Kanti Bhattacharyya, Praveen Balabaskaran Nina (2021) , Functional studies of Plasmodium falciparum putative SURF1 in Saccharomyces cerevisiae , Journal of Vector Borne Diseases, ,10.4103/0972-9062.311773,,.

32 Wahida Tabassum, Priyanka Singh, Niranjan Suthram, Sunanda Bhattacharyya, Mrinal Kanti Bhattacharyya (2021) , Elevated DNA damage sensitivity in malaria parasite induced by the synergistic action between PfHsp90 inhibitor and PfRad51 inhibitor , Antimicrob Agents Chemother, ,65 (9),,DOI: 10.1128/AAC.00457-21.

31 Payal Jha , Abhilasha Gahlawat , Sunanda Bhattacharyya , Sandeep Dey , Kota Arun Kumar, Mrinal Kanti Bhattacharyya* (2021) , Bloom Helicase Along with Recombinase Rad51 Repairs the Mitochondrial Genome of the Malaria Parasite. , mSphere, ASM,6 (6),,doi: 10.1128/mSphere.

30 Niranjan Suthram, Siladitya Padhi, Payal Jha, Sunanda Bhattacharyya, Gopalakrishnan Bulusu, Arijit Roy, Mrinal Kanti Bhattacharyya (2020) , Elucidation of DNA Repair Function of PfBlm and Potentiation of Artemisinin Action by a Small-Molecule Inhibitor of RecQ Helicase , mSphere, ,,,.

29 P. Vydyam, D. Dutta, N. Sutram, S. Bhattacharyya and M. K. Bhattacharyya* (2019) , A Small molecule inhibitor of DNA recombinase Rad51 from Plasmodium falciparum synergizes with the anti-malarial drugs artemisinin and chloroquine. , Journal of Biological Chemistry, ,294(20):8171-8183,,.

28 J. Mannuthodikayil, S. Singh, A. Biswas, A. Kar, W. Tabassum, P. Vydyam, M. K. Bhattacharyya and K. Mandal (2019) , Benzimidazolinone-Free Peptide o-Aminoanilides for Chemical Protein Synthesis. , Organic letter, ,21, 22, 9040-9044,,.

27 T. Suhane, V. Prasad, N. Fangaria, A. S. Nair, W. Tabassum, P. Muley, M. K. Bhattacharyya and S. Bhattacharyya (2019) , Glu-108 in ScRad51 is critical for DNA damage induced nuclear function. , mSphere, ,DOI: 10.1128/mSphere.00082-19,,.

26 N. Khurana, S. Bakshi, W. Tabassum, M. K. Bhattacharyya and S. Bhattacharyya (2018) , Hsp90 is essential for Chl1-mediated chromosome segregation and sister chromatid cohesion. , mSphere, ,DOI: 10.1128/mSphere.00225-18,,.

25 H. Medhi, S. Maity, N. Suthram, S. K. Chalapareddy, M. K. Bhattacharyya and P. Paik (2018) , Hollow mesoporous polymer capsules with Dihydroartemisinin and Chloroquine diphosphate for knocking down Plasmodium falciparum infection , Biomedical Physics , ,DOI: 10.1088/2057-1976/aaaddb,,.

24 P. Nina, S. Chellappan, S. Roy, W.Tabassum, M. Bhattacharyya (2018) , Investigating the function of putative mitochondrial proteins of Plasmodium falciparum in Saccharomyces cerevisiae , American Journal of Tropical Medicine and Hygiene, ,99 (4): 117,,.

23 P. Jha, S. Laskar, S. Dubey, M. K. Bhattacharyya*, and S. Bhattacharyya* (2017) , Plasmodium Hsp40 and human Hsp70: A potential cochaperone-chaperone complex , Molecular and Biochemical Parasitology, ,214: 10-13,,.

22 N. Khurana, S. Laskar, M. K. Bhattacharyya, and S. Bhattacharyya (2016) , Hsp90 induces increased genomic instability toward DNA-damaging agents by tuning down RAD53 transcription , Molecular Biology of the Cell, ,27(15): 2463-2478,,.

21 S. Chalapareddy, S. Chakrabarty, M. K. Bhattacharyya and S. Bhattacharyya (2016) , Radicicol-mediated inhibition of Topoisomerase VIB-VIA activity of the human malaria parasite Plasmodium falciparum. , mSphere, ,DOI: 10.1128/mSphere.00025-15.,,.

20 S. B. Badugu, S. A. Nabi, P. Vaidyam, S. Laskar, S. Bhattacharyya and M. K. Bhattacharyya* (2015) , Identification of Plasmodium falciparum DNA Repair Protein Mre11 with an Evolutionarily Conserved Nuclease Function. , PLoSONE, ,DOI: 10.1371/ journal,,.

19 S. Laskar, K. Sheeba, M. K. Bhattacharyya, A. S. Nair, P. Dhar, S. Bhattacharyya (2014) , Heat stress induced Cup9 dependent transcriptional regulation of Sir2. , Molecular and Cellular Biology, ,DOI:10.1128/MCB.01046-14,,.

18 T. Suhane, S. Laskar, S. Advani,N. Roy, S. M. Varunan, D. Bhattacharyya, S. Bhattacharyya*, M. K. Bhattacharyya* (2014) , Both charged linker region and ATPase domain of Hsp90 are essential for Rad51 dependent DNA repair. , Eukaryotic Cell, ,doi:10.1128/EC.00159-14,,.

17 N. Roy, S. Bhattacharyya, S. Chakrabarty, S. Laskar, S. M. Babu and M. K. Bhattacharyya*. (2014) , Dominant negative mutant of Plasmodium Rad51 causes reduced parasite burden in host by abrogating DNA double strand break repair. , Molecular Microbiology, ,94: 2, (353–366),,.

16 S. Chalapareddy, M. K. Bhattacharyya, S. Mishra, S. Bhattacharyya (2014) , Radicicol confers mid schizont arrest by inhibiting mitochondrial replication in Plasmodium falciparum. , Antimicrobial Agents and Chemotherapy, ,58(8): 4341-4352,,.

15 A. Dalal, A. Vishwakarma, N. K. Singh, T. Gudla, M. K. Bhattacharyya, K. Padmasree, A. Viehhauser, K. Dietz, P. B. Kirti (2014) , Attenuation of hydrogen peroxide-mediated oxidative stress by Brassica juncea annexin-3. , FEBS Letter, ,588(4):584-93,,.

14 S. M. Varunan, J. Tripathi, S. Bhattacharyya, T. Suhane and M. K. Bhattacharyya* (2013) , Plasmodium falciparum origin recognition complex subunit 1 (PfOrc1) functionally complements sir3 mutant of Saccharomyces cerevisiae , Molecular and Biochemical Parasitology, ,191, 28-35,,.

13 S. S. Achanta, S. M. Varunan, S. Bhattacharyyaand M. K. Bhattacharyya* (2012) , Characterization of Rad51 from apicomplexan parasite Toxoplasma gondii: an implication for inefficient gene targeting. , PLoSONE, ,7 (7) e41925, 1-11,,.

12 S. Laskar, M. K. Bhattacharyya, R. Shankar and S. Bhattacharyya (2011) , Hsp90 controls Sir2 mediated gene silencing. , PLoSONE., ,6 (8) e23406, 1-10.,,.

11 I. S. Joseph, A. Kumari, M. K. Bhattacharyya, H. Gao, B. Li and A.J. Lustig (2010) , I. S. Joseph, A. Kumari, M. K. Bhattacharyya, H. Gao, B. Li and A.J. Lustig , Genetics, ,185, 761-770.,,.

10 M. K. Bhattacharyya, , K. M. Matthews and Lustig A. J (2008) , Mre11 nuclease and C-terminal tail-mediated DDR functions are required for initiating yeast telomere healing. , Chromosoma, ,117(4):357-66,,.

9 M. A. Okulate, D. E. Kalume , R. Reddy, Kristiansen T, M. Bhattacharyya , R. Chaerkady, Pandey A, Kumar N (2007) , Identification and molecular characterization of a novel protein Saglin as a target of monoclonal antibodies affecting salivary gland infectivity of Plasmodium sporozoites. , Insect Mol Biol, ,16.711-22,,.

8 M. K. Bhattacharyya and A. J. Lustig (2006) , Telomere Dynamics in Genome Stability , Trends in Biochemical Sciences., ,31. 114-122. ,,.

7 Williams, M. K. Bhattacharyya and A. J. Lustig (2005) , Mre11p nuclease activity is dispensable for telomeric rapid deletion. , DNA Repair, ,4. 995-1005,,.

6 M. K. Bhattacharyya ,*, S. Bhattacharyya nee Deb , B. Jayabalasingham and N. Kumar (2005) , Characterization of kinetics of DNA strand exchange and ATP hydrolysis properties of PfRad51. , Molecular and Biochemical Parasitology, ,139. 33-39,,.

5 N. Kumar, G. Cha, F. Pineda, J. Maciel, D. Haddad, M. Bhattacharyya and E Nagayasu (2004) , Molecular complexity of sexual development and gene regulation in Plasmodium falciparum , International Journal for Parasitology, ,34. 1451-1458,,.

4 M. K. Bhattacharyya, D. E. Norris and N. Kumar (2004) , Molecular players of homologous recombination in protozoan parasites: implications for generating antigenic variations , Infection, Generics and Evolution, ,4. 91-98,,.

3 M. K. Bhattacharyya and N. Kumar (2003) , Molecular characterization of DNA damage induced expression of Plasmodium falciparum recombination protein PfRad51 , International Journal for Parasitology, ,33. 1385-1392,,.

2 M. K. Bhattacharyya, Z. Hong, D. Kongkasuriyachai and N. Kumar (2002) , Plasmodium falciparum Protein Phosphatase Type 1 Functionally complements a glc7 Mutant in Saccharomyces cerevisiae. , International Journal for Parasitology, ,32. 739-747,,.

1 M. K. Bhattacharyya* and N. Kumar (2001) , Effects of Xanthurenic acid on infectivity of Plasmodium falciparum to Anophiles stephensi. , International Journal for Parasitology, ,31. 1129-1133,,.

Patents

Patent No/Application No Patent Title AuthorsApplied Year Granting Year

192707 A process for the preparation of antisera of protein named PV2 for detection of malaria. S. Sharma and M. K. Bhattacharyya 1997 1998

Projects

Title Year Duration Amount(In Lakhs) PI/I

Understanding the epigenetic regulation od Plasmodium Sirtuins under condition of febrile remperature 2023 Three 2216000000 Prof. Mrinal Kanti Bhattacharyya

Understanding the role of homologous recombination in replication and repair of the mitochondrial genome of human malaria parasite Plasmodium falciparum 2021 Three 5942000000 Prof. Mrinal Kanti Bhattacharyya

Development of a stable and inducible CRISPR-Cas9 system for high-throughput site-specific genome editing in Plasmodium falciparum 2018 Three 5855000000 Prof. Mrinal Kanti Bhattacharyya

Funding

SERB: 2021-2023 (Rs. 59.42 lakhs)

DBT: 2018-2021 (Rs. 58.55 lakhs)

Research

Our longtime research interest is to unravel how nuclear and chromosomal context influence the seeming inaccuracy in DNA repair that provide a pathogen with the necessary means to manipulate the "host-pathogen interaction". Thus research activities in our laboratory mainly revolve around two interlinked questions: 1) What are the mechanisms of DNA repair in Plasmodium; and 2) How do they contribute to genetic diversities that result in antigenic variation, the most potent means of immune evasion. Our laboratory is currently working on four interrelated directions:

Project 1: Development of an in vivo method, which will allow us to uncover (as well as differentiate between) various competing DNA repair mechanisms, operational in the parasite. This project will also identify the factors associate with these repair pathways.

Project 2: Characterization of the roles of individual factors in homologous recombination (HR) pathway in the parasite; and appreciate their contributions in accumulation of genetic diversities.

Project 3: Unraveling the roles of HR in Plasmodium biology, particularly during the repair and replication of the organellar genomes.

Project 4: Study of functional biology of Plasmodium telomeres in order to get insights into how telomere dynamics regulates structure and functions of virulence genes.

Understanding such processes, in comparison to those involved in human, would not only have the potential for generating novel therapeutic interventions, but would also contribute to our fundamental knowledge of genetic and epigenetic control of eukaryotic DNA repair.

The Group

Image attached