Dr. Rajesh Kumar Yadav, PhD.
Associate Professor and Ramalingaswami Fellow
Specialization: Epigenetics, Chromatin, Cancer biology, Onco-histone mutation, DNA Damage Response, Host-parasite interaction, Leishmaniasis
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h-index: 10, i-index: 10, Citations: 592

Dr. Rajesh Kumar Yadav completed his doctoral work at the Indian Institute of Chemical Biology, Kolkata. He studied the structure-function and physiological role of ascorbate peroxidase from protozoan parasites, *Leishmania major* using various biochemical, molecular biology, and cell biology techniques. After that, he changed his career track to study epigenetics, focusing on chromatin biology as a postdoctoral research fellow at St. Jude Children's Research Hospital, Memphis, USA. During this period, he had extensive experience in studying chromatin, DNA damage, centromere, and telomere in the fission yeast, *Schizosaccharomyces pombe*. He took the help of fission yeast as the model system to understand the biological defect caused by histone mutations identified in pediatric glioma. Next, he had worked as an assistant professor and HOD, in the School of Life Science and Biotechnology, Adamas University, Kolkata. Also, Dr. Yadav had an enriching research and teaching experience in the Department of Biochemistry, AIIMS Patna. After that, Dr. Yadav has joined as an associate Professor and Ramalingaswami Fellow at Amity Institute of Molecular Medicine & Stem Cell Research, Amity University, NOIDA, Uttar Pradesh. Currently, he is working on the genetic and chemical screen of chromatin-modifying complexes or chromatin-binding proteins involved in the DNA Damage Response Pathway. He has a developing interest in the field of Histone point mutations in cancer and chimeric antigen receptor (CAR) T cell therapy.

Research Interest:

Recurrent somatic mutations of H3F3A in aggressive pediatric high-grade gliomas generate K27M or G34R/V mutant histone H3.3. Also, G34R/V mutants are common in tumors with mutations in p53 and ATRX, an H3.3-specific chromatin remodeler. Fission yeast model system was used to identify the biological defect caused by a histone mutation identified in pediatric glioma and showed that H3-G34 mutants show a range of DNA damage sensitivities and genomic stability (Figure 1A). New Histones mutations have been identified

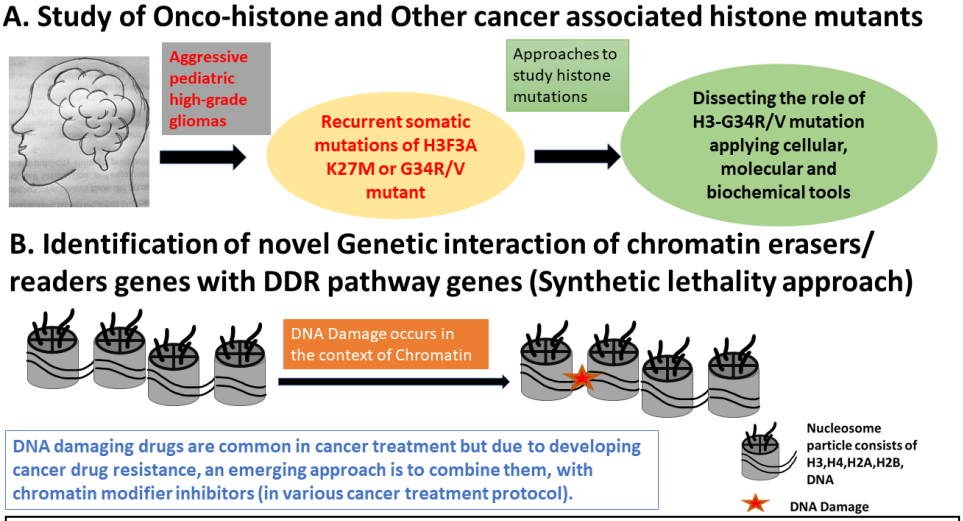

Figure 1: Graphical abstract of research area. A. Histone mutations in cancer B. Identifying role of histone demethylase (Eraser) in DDR pathway

in other various cancers such as Chondroblastomas (H3.3 K36M), Giant cell bone tumours (H3.3 G34W/L), sarcomas, acute myeloid leukemia, head and neck cancers. Their recurrence in various cancer suggests their role in promoting tumor. But the biological functions and biochemical effects of these histone-mutations are ambiguous. The combined genetic and chemical screen of chromatin-modifying complexes or chromatin-binding proteins involved in the DNA Damage Response (DDR) pathway will help in the drug design for cancer treatment (Figure 1B).

Awards & Recognitions

- Ramalingaswami Re-entry Fellowship, Department of Biotechnology, Government of India (2017-2018)
- Awarded Senior Research Fellowship by Council of Scientific and Industrial Research (CSIR), Government of India (2008 – 2011)
- Awarded Junior Research Fellowship by Council of Scientific and Industrial Research (CSIR), Government of India (2006 – 2008)
- Qualified National Eligibility Test (NET) under Council of Scientific and Industrial Research (CSIR), Government of India 2004
- Qualified graduate aptitude test in engineering (GATE), Percentile-88.98 Department of Education, Government of India 2005

Ongoing projects

- Research project funded by DBT-Ramalingaswami fellowship entitled "*The Genetic Screen of Chromatin "Readers" and "Erasers" proteins in DNA Damage Response pathway".*

Top Best Publications (with Impact Factor)

1. **Yadav RK*,** Matsuda A*, Lowe BR, Hiraoka Y, Partridge JF. Subtelomeric Chromatin in the Fission Yeast S. pombe. **Microorganisms. 2021**; 9(9):1977. *Authors contributed equally to this work **(IF-4.1)**
2. Lowe BR, **Yadav RK,** Henry RA, Schreiner P, Matsuda A, Fernandez AG, Finkelstein D, Campbell M, Kallappagoudar S, Jablonowski CM, Andrews AJ, Hiraoka Y, Partridge JF. Surprising phenotypic diversity of cancer-associated mutations of Gly 34 in the histone H3 tail. **eLife. 2021** Feb 1; 10: e65369, PMID: 33522486 **(IF-8.1)**
3. **Yadav RK**, Ali A, Kumar S, Sharma A, Baghchi B, Singh P, Das S, Singh C, Sharma S. CAR T cell therapy: newer approaches to counter resistance and cost. **Heliyon**. **2020** Apr 16; 6(4): e03779. PMID: 32322738 **(IF-2.85)**
4. **Yadav RK**, Jablonowski CM, Fernandez AG, Lowe BR, Henry RA, Finkelstein D, Barnum KJ, Pidoux AL, Kuo YM, Huang J, O'Connell MJ, Andrews AJ, Onar-Thomas A, Allshire RC, Partridge JF. Histone H3G34R mutation causes replication stress, homologous recombination defects and genomic instability in *S. pombe*. **eLife. 2017** Jul 18; 6: e27406. PMID: 28718400 **(IF-8.1)**
5. Kallappagoudar S*, **Yadav RK***, Lowe BR*, Partridge JF Histone H3 mutations-a special role for H3.3 in tumorigenesis? **Chromosoma. 2015** Jun;124(2):177-89 PMID:25773741*Authors contributed equally to this work **(IF-4.32)**
6. Alper BJ, Job G, **Yadav RK**, Shanker S, Lowe BR, Partridge JF. Sir2 is required for Clr4 to initiate centromeric heterochromatin assembly in fission yeast. **EMBO J. 2013** Aug 28;32(17):2321-35 PMID:23771057 **(IF-11.6)**

7. **Yadav RK**, Pal S, Dolai S, Adak S. Role of proximal methionine residues in *Leishmania major* peroxidase. **Arch Biochem Biophys. 2011** Nov;515 (1-2) (Cover article) PMID:21893024 **(IF-4.0)**
8. Dolai S, Pal S, **Yadav RK**, Adak S. Endoplasmic reticulum stress-induced apoptosis in *Leishmania* through Ca2+-dependent and caspase-independent mechanism. **J Biol Chem. 2011** Apr 15; 286 (15):13638-46. PMID:21330370 **(IF-5.15)**
9. Pal S, Dolai S, **Yadav RK**, Adak S Ascorbate peroxidase from *Leishmania major* controls the virulence of infective stage of promastigotes by regulating oxidative stress. **PLoS One. 2010** Jun 23; 5(6): e11271. PMID:20585663 **(IF-3.2)**
10. **Yadav RK**, Dolai S, Pal S, Adak S Role of tryptophan-208 residue in cytochrome c oxidation by ascorbate peroxidase from *Leishmania major*-kinetic studies on Trp208Phe mutant and wild type enzyme. **Biochimica et Biophysica Acta - Proteins and Proteomics 2008** May; 1784(5): 863-71. PMID:18342641 **(IF-3.04)**