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## Evaluating RNA exosome function in non-coding RNA metabolism at 3D nuclear space

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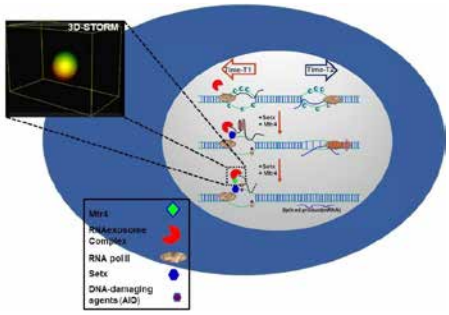
Strand specific DNA mutations determine whether programmed DNA rearrangements diversify antigen receptor loci genes. However, patients with various malignancies demonstrate DNA mutagenesis skewed toward the sense strand genome wide. Using single-molecule super-resolution microscopy, we have identified sub nuclear compartments in B cells where biologically programmed strand-specific DNA mutagenesis are engineered at focal DNA/RNA hybrid structures. The strand specific distribution of DNA mutations is determined by the coupled activities of two RNA helicases, Mtr4 and Senataxin, along with the noncoding RNA processing function of RNA exosome. Our study envisions that the regulatory mechanism of strand specific DNA mutagenesis in sub nuclear compartments during programmed and aberrant DNA mutagenesis events will play a major role in other undiscovered aspects of organismic development.




### Biography

Pankaj Kumar Giri is a Research Scientist at Columbia University, New York. His work is on exploration of live cell super resolution imaging, design and development of effective tools for genome editing based on CRISPER-Cas9 and mouse model based studies in the field of "non-coding RNA metabolism" for antibodies diversification. Within his exploration of identity, he is devolving new methods to study chromosome and protein dynamics in 3D nuclear space at sub-nanometer resolution with the help of super resolution imaging techniques. He holds an MTech in Biomedical Engineering from the Indian Institute of Technology, Bombay and a PhD in Molecular Biophysics from the National University of Singapore, Singapore.

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