Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Webinar

DNA-based fluorescent probes for imaging and modulation of the brain

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Brain is the most complex organ in the body that is responsible for our thought, action, feelings, memory etc. There is a substantial need of new chemical tools for real-time visualization and modulation of the brain. In the first part of my talk, I will describe the design and development of a DNA-based fluorescent probe and its applications in bio-imaging and biomodulation of the brain (1-4). Using a chemical biology approach and larval zebrafish as model system, I will present a study describing the application of DNA-technologies for high-resolution imaging of immune cells in live brains. In the second part of my talk, I will briefly describe the application of DNA-based imaging probes for sub-cellular imaging and quantification of enzyme activity in cancer cells.

References:

1. DNA-based fluorescent probes of NOS2 activity in live brains. A. T. Veetil., Henderson. K., Zou, J., Minter, M.R., Sisodia, S. S., Hale. M., Krishnan, Y. Proc. Natl. Acad. Sci. USA., 2020, 117 (26) 14694-14702

2. A DNA-based fluorescent probe maps NOS3 activity with subcellular spatial resolution. Jani, M. S., A.T. Veetil*, Zou. J*, Krishnan, Y. Nat. Chem. Biol., 2020, 16, 660–666. (*equal contribution)

3. Cell-targetable DNA nanocapsules for spatiotemporal release of caged bioactive small molecules. A.T. Veetil., Chakraborty, K., Xiao, K., Minter, M. R., Sisodia, S. S., Krishnan, Y. Nat. Nanotechnol., 2017, 12 (12), 1183-1189.

4. DNA nanodevices map enzymatic activity in organelles. Dan, K., A.T. Veetil., Chakraborty, K., Krishnan, Y. Nat. Nanotechnol., 2019, 14, 252-259.

Wednesday, Sep 2nd 2020

5:00 PM