Invited Talk Title

Quantitative imaging of nuclear architecture and DNA target search in a living cell

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Abstract (50 words max):

Nuclear architecture has emerged as a key player in DNA target search and maintenance of genome integrity. In recent work we have developed a series of fluorescence microscopy methods to track the movement of molecules around the complex DNA networks within the nuclei of live cells. Based on fluorescence fluctuation spectroscopy, this technology has the spatiotemporal resolution to map the impact genome organisation has on nuclear traffic and multi-protein complex formation. From using these methods, we have discovered that DNA networks rearrange to create a chromatin network that facilitates repair and transcription factor recruitment to target DNA sites. Collectively this body of work suggests genome organisation to serve as 'road map' for DNA-binding proteins to navigate the nucleus and maintain genome function.

Biography (100 words max):

Dr. Elizabeth Hinde is currently an ARC Future Fellow in the School of Physics, University of Melbourne, who is expert in the development of imaging methods based on fluorescence lifetime imaging microscopy (FLIM) and fluorescence fluctuation spectroscopy (FCS) to quantity intracellular protein trafficking with single molecule resolution. She is currently using this technology to uncover the role live cell nucleus architecture plays in regulation of genome function and dynamics.

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