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SEMINAR SERIES 2024

12 MARCH

Dr. Lisanne Spenkelink

Molecular Horizons
School of Chemistry and Molecular Bioscience
University of Wollongong

Lisanne Spenkelink is a NHMCR Emerging Leadership Fellow at the Molecular Horizons Institute at the University of Wollongong. She obtained her PhD (2018) from the University of Grongingen (the Netherlands) and the University of Wollongong under the supervision of Prof. Antoine van Oijen. Her research program focusses on the development and use of single-molecule visualisation technology to study complex biologcial systems. Particularly, she focusses on the visualisation of DNA replication in bacteria (E. coli) and eukaryotes (yeast and humans). More recently, she is using her expertise in single-molecule visualisation to develop novel single-molecule directed-evolution methods, and use these tools to evolve sensors for single-molecule diagnostics. She aims to bring together expertise from the fields of physics, chemistry, and biology to help solve important biological challenges facing the world today.

Revealing biological stochasticity: insights from single-molecule visualisation

The paradigm of cellular systems as deterministic machines has long guided our understanding of biology. Advancements in technology and methodology, however, have revealed a world of stochasticity, challenging the notion of determinism. Lisanne will highlight how single-molecule visualisation has helped reveal this stochasicity, using the DNA replication system as an example. She will show that this stochasitc behaviour has important consequences for downstream molecular pathways. Finally, she will show how they use this knowledge and their single-molecule methods, in the development of novel single-molecule diagnostics tools.