Computational and Quantitative Biology Lecture Series

Wednesday
March 4, 2022
15.00 (GMT+1)

Serena Nik-Zainal
University of Cambridge

The seminar will be held on line. Please register at https://bit.ly/36wiYKF
You will receive an invite with the link to the seminar.
Visit https://cqb.dieti.unina.it/index.php/events for the event series.

Bench to Bytes to Bedside: Converting genomic data into healthcare tools

Mutational signatures are the imprints of DNA damage and DNA repair processes that have been operative during tumorigenesis. They are biologically informative, reporting on the processes that have contributed to the developmental history of each patient's cancer. In this lecture, on behalf of my team and my collaborators, I shall provide an update on the field, focusing on validation of these abstract mathematical concepts, untangling the mechanisms underpinning mutation patterns in human somatic cells, and describing the new insights that we have gained through combinations of computational analysis and experiments in cell-based systems. We showcase how mutational-signature-based clinical algorithms have been developed, describe the path taken in translating these towards medical utility and for balance, highlight some of the hurdles that need to be navigated in this type of translational research.

Serena Nik-Zainal is Professor of Genomic Medicine and Bioinformatics and an NIHR Research Professor at University of Cambridge. She has been an Honorary Consultant in Clinical Genetics at Cambridge University Hospitals NHS Foundation Trust since February 2013 and recruited patients with DNA repair defects as part of the Insignia project until December 2018.
Serena undertook a PhD at Wellcome Sanger Institute (WSI) exploring cancer using next-generation sequencing (NGS) technology in 2009. Serena is now lead of the Genomic Medicine theme at the NIHR Cambridge Biomedical Research Campus. Her team continues to advance the whole cancer genomics field through a combination of computational and experimental approaches, to ultimately create clinical applications. With six patent filings made in the last 36 months, they are unravelling mutational mechanisms, developing machine-learning based clinical algorithms, and actively connecting with clinical trials to validate their algorithmic tools. Serena has recently been awarded an NIHR Research Professorship to commence end of 2021/early 2022. Through this professorship, her team shall accelerate the implementation of their innovative computational tools into the national genomics endeavour, for equitable UK NHS access to their holistic cancer genome interpretation tools.

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