Infectious Diseases Labs

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Tuesday 21 November 2023
11:00am to 12:00nn (SGT)

Venue: Codon A & B Matrix L5

Nuclear pore complexes in viral infection and antiviral response: from HIV to paediatric genetic disorders

In eukaryotic cells, the nucleus and cytoplasm are physically separated by a double membrane that prevents their contents from mixing. Proteins and RNA molecules that need to transit between the two compartments, must do so via supramolecular structures embedded in the nuclear membrane, called nuclear pore complexes (NPCs). The NPC is composed of numerous nucleoporins (Nups) and is associated with soluble transporters, which together tightly regulate nucleocytoplasmic trafficking.

NPCs are a bottleneck of high strategic importance for viruses that replicate in the nucleus (DNA viruses, influenza virus) and are targeted by most viruses to enhance their replication. Not coincidentally, NPCs are also a hotspot for innate immune responses to viral infection: they mediate the import of key transcription factors (e.g. IRFs, NF-B), regulate the export of specific cytokine transcripts and the activity of restriction factors. Consequently, hereditary disorders linked to mutations in key Nups are characterized by defects in the innate immune response to viral infection

In my presentation I will highlight two examples of the key roles that NPCs play in viral infection and antiviral immunity: first with the development of specific inhibitors of HIV nuclear import inhibitors that target the viral capsid, and second the regulation of the inflammatory response to influenza virus infection by Nup358.

Dr Nathalie Arhel is an accomplished scientist with significant contributions to the fields of viral infections, nuclear pore biology, and innate immunity. After earning BSc and PhD degrees from the prestigious University of Bristol in the late 90s, Dr Arhel embarked on a journey as a post-doctoral researcher, enriching her expertise at renowned institutions such as the Pasteur Institute in Paris, France, and the Universitätsklinikum Ulm in Germany, leading to her recruitment as a permanent research fellow by the Centre National de Recherche Scientifique (CNRS) in 2009. Dr Arhel later endorsed the role of a group leader at the Pasteur Institute and secured an ATIP-Avenir starting grant, enabling her to establish and lead her own research laboratory at the Saint-Louis Hospital in Paris. In 2017, Dr Arhel relocated her laboratory to Montpellier, France, and was promoted to the position of Research Director in 2019.

Hosted by : Alnaji Fadi Ghassan

Webinar is open to all. No registration required

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