

21 Feb
2024

Wednesday
LECTURE*

MEET & EAT
Light lunch provided

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11 am - 12 noon

12.00 - 1.45 pm



Proteomics and functional investigation of Small Ubiquitin-like Modifier signaling networks

ABSTRACT

SUMOylation is an essential post-translational modification that is catalysed by a small number of modifying enzymes but regulates thousands of target proteins in a dynamic manner. Small ubiquitin-like modifiers (SUMOs) can be attached to target proteins as one or more monomers or in the form of polymers of different types. Non-covalent readers recognize SUMO-modified proteins via SUMO interaction motifs. Recent progress has increased our understanding of the cellular and pathophysiological roles of SUMO modifications, extending their functions to the regulation of immunity, pluripotency and nuclear body assembly in response to oxidative stress, which partly occurs through the recently characterized mechanism of liquid-liquid phase separation. Such progress in understanding the roles and regulation of sumoylation opens new avenues for the targeting of SUMO to treat disease, and indeed the first drug blocking sumoylation is currently under investigation in clinical trials as a possible anticancer agent.

We have uncovered dynamic SUMO signaling networks in a cell-wide manner using proteomics technology. Denaturing buffer conditions are critical to inactivate SUMO proteases. We have developed site-specific methodology to identify SUMO acceptor lysines and found that SUMO targets over 40,000 lysines in nearly 7,000 target proteins, highlighting the broad impact of this post-translational modifier. SUMOylation plays dynamic roles during cell cycle progression, the DNA damage response and upon proteotoxic stress and proteomic approaches enable uncovering SUMOylation dynamics during these processes. SUMO simultaneously modifies groups of functionally related proteins to regulate these processes. I will highlight our contributions to uncovering these dynamic SUMOylation networks.



SPEAKER

Prof Dr Afredus Vertegaal

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HOSTS:

Department of Infection and Immunity (LIH)
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For any questions regarding the Lecture Series please email:
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* Please note that registration is mandatory by sending an email to
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Locations:

Lecture:

Maison du Savoir, Uni LU
Room: MSA 3.100
2, Av. de l'Université,
Belval Esch-sur-Alzette

Meet & eat:

KKT
BT2, 1st floor
Registration mandatory

To join the Webinar:

JOIN

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