Colloquium

Cell and protein age mosaicism as a fundamental organization principle of adult tissue homeostasis

Martin Hetzer
Salk Institute for Biological Studies

Host: Michael Sixt

Most neurons remain in a non-diving state over an animal's lifetime. A subset of neuronal proteins persist throughout adulthood exhibiting age-dependent decline. It is unclear if extreme longevity of cells and proteins affects aging of other organs. We discovered cells and proteins with exceptional lifespans in rodent brain, liver and pancreas. Besides neurons, major cell types such as endothelial cells, hepatocytes and major pancreatic cells are mostly as old as the organism. Using nuclear pore complexes (NPCs) as a paradigm for long-term protein persistence, we describe two distinct NPC maintenance mechanisms in quiescent and post-mitotic cells: NPC removal from intact nuclei and piecemeal replacement, respectively. Strikingly, human beta cells exhibit age-dependent loss of NPC components and defects in nuclear integrity similar to old neurons. Our findings link long-lived cells and proteins to the aging process and reveal age mosaicism as a principle of adult tissue and protein homeostasis.

Tuesday, January 9, 2018 11:00am - 12:00pm
Raiffeisen Lecture Hall, Central Building

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.
Please find a schedule of the ISTA Shuttle on our webpage:
https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.