Life Sciences Seminar

IST Austria Award Lecture

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Host: Leonid Sazanov

Structural studies of the ovine mitochondrial electron transport chain: First atomic structure of complex I and the architecture of respiratory supercomplexes

Cellular energy metabolism is mainly carried out in the double membrane organelle known as the mitochondria. The mitochondrial oxidative phosphorylation electron transport chain (OXPHOS-ETC) is made up of five large membrane protein complexes (CI-CV) in the inner mitochondrial membrane and is responsible for the majority of cellular ATP synthesis. ATP is a energy rich small molecule known as the "energy currency of the cell" and is used throughout the cell to power many fundamental reactions. Of the five complexes CI is the largest (~1 MDa, 45 subunits) and remains the least well structurally and mechanistically characterized. Here we present the first fully-assigned nearly all-atomic 3.9 Å structure of CI from sheep heart mitochondria, solved by cryo-EM. Additionally, it is known that the OXPHOS-ETC complexes come together to form supercomplexes (SCs) of defined stoichiometry. We also present here two distinct architectures of SCs I+III2+IV, containing all subunits required to pass electrons from NADH to molecular oxygen (O2), as well as an architecture of SC I+III2.

Monday, February 20, 2017 04:00pm - 05:00pm
Raiffeisen Lecture Hall, Central Building

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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.