



Life Sciences Seminar

Insights into N-linked protein glycosylation from cryo-EM studies on the yeast oligosaccharyltransferase complex

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The central enzyme in the N-glycosylation pathway is the oligosaccharyltransferase (OST), which catalyzes the transfer of a lipid-linked oligosaccharide onto peptide substrates. We determined the structure of the yeast octa-subunit OST complex to uncover the function of the different subunits, their structures and their assembly into the complex (Wild, Kowal, Eyring et al., Science, 2018). Our single-particle cryo-EM structure at 3.3 resolution reveals that the STT3 subunit harbors the catalytic center, which faces away from the other subunits, thereby allowing unhindered access to the lipid-linked oligosaccharide and peptide substrates. The non-catalytic subunits form a rigid scaffold providing additional binding surfaces for substrate recognition and for potential protein interaction partners. Of note, our high-resolution OST structure fits well into a previously published cryo-electron tomography map of the mammalian OST-translocon-ribosome complex. The docking analyses reveal an orientation of the OST complex with its catalytic site facing the translocon. This architecture allows OST to efficiently glycosylate native peptide chains entering the ER through the translocon.

Monday, January 21, 2019 10:00am - 11:00am

Mondi Seminar Room 2, Central Building



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