Life Sciences Seminar

Structural biology of melatonin receptors

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Host: Carrie Bernecky

G protein-coupled receptors (GPCRs) are transmembrane proteins with particular relevance in disease and physiology, and privileged drug targets. Over the past 20 years, advances in crystallography and more recently, cryo electron microscopy have provided a wealth of structural information on GPCRs. Melatonin receptors MT1 and MT2 are GPCRs that in mammals establish circadian rhythm in sync with environmental light-dark cues. Jet lag, shift work and artificial lighting can disrupt a natural rhythm and cause health problems. I will present X-ray free-electron laser structures of MT1 and MT2, determinants for their selective and specific ligand recognition and highly unusual ligand access through a membrane-buried lateral pore. Further, I demonstrate the structure-based design of MT1-selective ligands with novel in vivo efficacy that allow to interrogate the melatonin system chemically and provide a template for future melatonergic therapeutics.Stauch & Johansson et al. (2019). Nature, doi: 10.1038/s41586-019-1141-3Johansson & Stauch et al. (2019). Nature, doi: 10.1038/s41586-019-1144-0Stein et al. (2020). Nature, doi: 10.1038/s41586-020-2027-0

Tuesday, March 10, 2020 09:00am - 10:00am
Mondi Seminar Room 2, Central Building

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