

KJELDGAARD Lecture - Prof. Alexander Stark

Tuesday 25 April 2023 at 13:15-14:00

Followed by PhD-session at 14:30—15:00

(Coffee and cake will be served between lecture and PhD-session)

1871-120 (MBG Auditorium)

Host: Torben Heick Jensen



Prof. Alexander Stark

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Decoding transcriptional regulation

In higher eukaryotes, genes are expressed dynamically in complex spatial and temporal patterns, which are progressively refined to set up body plans and define specific cell-types. The information about when and where each gene is to be expressed is encoded in the sequences of promoter- and enhancer regions and realized by transcription factor and cofactor proteins.

I am presenting our work towards understanding the how this regulatory information is sequence-encoded and how cells utilize this information with transcription factor and cofactor proteins. Using an interdisciplinary approach, we functionally characterize regulatory sequences by enhancer screens and by assessing core promoter activities of large candidate libraries. We dissect the combinatorics of transcription factors and transcriptional cofactors at enhancers by directed tethering in enhancer complementation assays, which revealed functionally distinct classes of transcription factors. Finally, we also study how enhancers and the cofactor proteins they recruit activate different types of core promoters, enabling distinct sets of genes and alternative promoters of the same genes to be regulated differently. The distinct compatibilities between cofactors and core promoters forms the basis of specificity within and between gene regulatory programs