

KJELDGAARD Lecture - Prof. Siavash K. Kurdistani

Wednesday 11 May 2022 @ 10:15—11:00

Followed by PhD-session @ 11:30—12:00

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

Merete Barker Auditorium, Lakeside Lecture Theatres (1253-211)

Bartholins Allé 3, 8000 Aarhus C

Host: Peter Ebert Andersen



Professor Siavash K. Kurdistani, MD

- Chair, Biological Chemistry
- Professor, Biological Chemistry
- Associate Director, JCCC Gene Regulation Program Area

David Geffen School of Medicine at UCLA, Los Angeles

Histones and Copper: A common thread from the origin of eukaryotes to human disease

Histones were initially considered to mainly serve to package large amounts of eukaryotic DNA into the confines of the nucleus. Pioneering experiments in the 1980s and 1990s revealed that histones also function in regulating gene expression and essentially all other DNA-based processes. However, ancestral histones were present in organisms with small genomes, no nucleus, and little ability for epigenetic regulation, suggesting that histones may have an additional, unknown function that might have served as the original impetus for their evolution. We have indeed discovered a novel function for the histone H3-H4 tetramer, the structure most similar to ancestral histone complexes, as an oxidoreductase enzyme with copper reductase activity, catalyzing reduction of Cu^{2+} to Cu^{1+} . I will discuss our rationale and approach that led to this finding, the importance of this reaction, and its implications for eukaryogenesis as well as human disease.

I will also present the future directions of our research based on new and unpublished findings.