

Joint KJELDGAARD & DANDRITE Lecture

Thursday 7 May 2015 at 11.45 - 13.00

AIAS Aud. (building 1632-201), Aarhus University
Høegh-Guldbergs gade, 8000 Aarhus C

Sandwiches outside the AIAS Aud. from 11.45, lecture start at 12.15



Jason W. Chin

Head, Centre for Chemical & Synthetic Biology
Programme Leader, Division of Protein & Nucleic Acid Chemistry,
MRC Laboratory of Molecular Biology, Cambridge, UK

Reprogramming the Genetic Code

The information for synthesizing the molecules that allow organisms to survive and replicate is encoded in genomic DNA. In the cell, DNA is copied to messenger RNA, and triplet codons (64) in the messenger RNA are decoded - in the process of translation - to synthesize polymers of the natural 20 amino acids. This process (DNA RNA protein) describes the central dogma of molecular biology and is conserved in terrestrial life. We are interested in rewriting the central dogma to create organisms that synthesize proteins containing unnatural amino acids and polymers composed of monomer building blocks beyond the 20 natural amino acids. I will discuss our invention and synthetic evolution of new 'orthogonal' translational components (including ribosomes and aminoacyl-tRNA synthetases) to address the major challenges in re-writing the central dogma of biology. I will discuss the application of the approaches we have developed for incorporating unnatural amino acids into proteins and investigating and synthetically controlling diverse biological processes, with a particular emphasis on understanding the role of post-translational modifications.

Hosts: Daniel Otzen, Section for Protein Science, Dept. Molecular Biology and Genetics, Aarhus University and the Danish Research Institute of Translational Neuroscience - DANDRITE

The lecture will be followed by a chalk-board session for PhD students (in the AIAS Aud.)