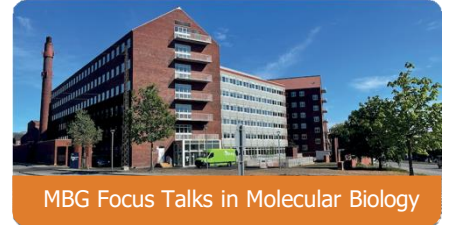


MBG FOCUS TALK

Hosted by Mikkel Schierup

Thursday 30 May 2024 at 12:00

1870-716



Jennifer James

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Variation in natural selection at different levels of organisation

What are the causes of variation in natural selection, and how do these causes differ at different levels of organisation (e.g., the species level, population level, and genome level)? In this seminar I will discuss my work examining variation in natural selection at both the species and population level, and at the level of the protein domain. In the first half of the seminar, I will present my work on the distribution of fitness effects of new mutations of populations and species, and I will describe my findings on how factors such as demography, local adaptation, N_e (effective population size) and genome structure do, and do not, affect the efficiency of selection and the fitness effects of new mutations. In the second half of the seminar, I will present work that investigates selection acting at the level of the protein domain. Domains are evolutionarily homologous lengths of protein sequence that can be both inherited through speciation events (orthologs) and become duplicated within genomes, such that they are present in multiple copies (paralogs). I assess whether the molecular properties of domains predict their loss and duplication rates, which suggests the action of natural selection on the molecular properties of domains over long periods of evolutionary time. Overall, my findings highlight the importance that genome structure and content has on the evolution of species.