

Eawag Seminar Invitation

Molecular Mechanisms of Adaptation in Stickleback Fish

Speaker **Dr. Felicity Jones**, Friedrich Miescher Laboratory of the Max Planck Society, Tübingen, Germany

When **May 25, 11.00 – 12.00 a.m.**

Where **Forum Chriesbach, room C20, Eawag Dübendorf**

Abstract The ability of organisms to rapidly adapt to new environments is both facilitated and constrained by molecular mechanisms that are often challenging to dissect in non-model organisms. Our previous work has used the powerful parallel divergent adaptation to marine and freshwater environments in three spine stickleback to map >81 predominantly intergenic adaptive loci with kilo base resolution. This presents a unique opportunity to discover and functionally dissect molecular mechanisms influencing evolution in a naturally adapting organism. In my talk I am going to discuss two linked aspects of this research programme: defining the components of transcription regulation using functional genomics approaches like allele-specific RNAseq, ChIPseq, ATACseq, and transgenic assays, and charting variation in the recombination landscape among individuals, sexes and ecotypes using whole genome sequencing of pedigrees, linked-read sequencing and ChIPseq methods. These approaches highlight how cis-acting changes may be particularly important for divergent adaptation with on-going gene flow because they are closely linked to the genes whose expression they regulate; and together with maps of recombination hot- and coldspots show how linked haplotypes may facilitate adaptive divergence. Together these approaches provide key insight into how fundamental biological processes such as meiosis and gene regulation shape the adapting genome in the early stages of divergence and ecological speciation.