

## **Suzie Saunders**

How did salmon evolve seawater tolerance? A comparative genomics approach.

Salmonid fish such as salmon, trout, charr and grayling have enormous scientific, economic, and cultural importance, and contribute greatly to global fisheries and aquaculture. They provide an ideal organism for understanding evolution and adaptation and there have been major recent efforts to develop genomic resources for understanding salmonid biology, culminating in the recent publication of genomes for two key commercial species (Atlantic salmon and rainbow trout). Knowledge of the phylogenetic relationships of species is key to understanding how evolution works, and underpins several areas of biological research. Despite intensive investigations, some important phylogenetic relationships within the salmonid family remain unclear or are poorly supported. This FSBI internship is part of a longer-term research project aiming to robustly define salmonid evolutionary relationships, using newly available 'next-generation' sequencing data, taking advantage of additional information gathered from the newly available salmonid genome sequences. The current goal is gather a large set of phylogenetically informative markers from the genome of fifteen different species that span all the major salmonid lineages. The approach being used overcomes previous problems linked to the unusual complexity of salmonid genomes, owing to the duplication of the entire genome in the salmonid ancestor around 95 MYA. The data will eventually be combined in a multi-gene phylogenetic analysis that we hope will resolve the salmonid family tree with much greater confidence than previously achieved.