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OF FISH AND MICRORNAS

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Fish is an important small vertebrate multidisciplinary model for investigating various aspects of reproduction, development, disease (immunology, toxicology, carcinogenesis), and aging. It is also an important model for comparative and evolutionary studies because it represents the lower vertebrates and serves as an essential link to early vertebrate evolution. Microribonucleic acids (miRNAs) are 18-22 nucleotide-long endogenous RNAs that bind to specific mRNAs, usually at the 3'-untranslated region, (UTR), thereby potently regulating a wide spectrum of target mRNAs. This adds a new layer to the mechanisms of control of gene expression, impacting a broad range of biological processes. Thus far, >25, 000 miRNA sequences have been identified in 193 species, including fish. In fish, the interest on miRNAs started with the analysis of their expression and function during embryonic development. In our lab, we investigate miRNA regulation during viral infection and vaccination in rainbow trout. We aim to identify miRNA biomarkers during infection and vaccination in order to understand the complex web of interactions involved in the underlying host immune responses. They may also be used as suitable selection markers to identify disease-resistant fish.