**Phylogentic analysis of weak electric knifefish of the family Apteronotidae (Teleostei: Gymnotiformes: Apteronotidae)**

**Farzeen Daruwalla** & **Dr. Nathan Lovejoy**, University of Toronto

The South American rivers and streams are home to a number of endemic electric fishes. These fishes have developed various morphological and genetic adaptations that allow them to thrive in the murky waters of the Amazon river. A family of weak electric fish known as Apteronotidae consists of 25 species from 12 genera of the order Gymnotiformes. These fish have developed a primary sensory mechanism such as an electric organ that aids them to survey their environment. Previous morphological and electric organ studies have restricted the taxonomic classification of the family by generating a phylogeny with a small sample size. This study aims to generate a phylogenetic tree of the family Apteronotidae using mitochondrial cytochrome b (CytB) and nucleus recombination-activating (RAG2) genes. CytB is a good indicator of interspecific variation between species due to its high evolutionary rate. In contrast RAG2 a nuclear gene has a slower evolutionary rate and is highly conserved. Using basic PCR and DNA extraction techniques the gene for CytB and RAG2 were amplified and phylogentic trees were constructed using PAUP analysis, after sequences were edited. Our results indicated differences in phylogenetic patterns using CytB and RAG2 genes as criteria. Our study adds to the lack of molecular data for the family Apteronotidae and addresses the limitations of using just morphological data. In conclusion, genetic analysis and morphological analysis would allow for an explicit phylogeny of Apteronotidae.