

Application deadline: December 1<sup>st</sup> or until filled

Reference: Research Assistant Position

Contract: Full-time, 12 months (possibility of yearly renewal)

Location: University of Maryland, College Park MD

Starting date: January 2021

Cichlid fishes are some of the most diverse species on the planet. They have rapidly speciated from South America to Africa to India, over quite recent times making them a textbook example of adaptive radiations. Cichlid differ in nearly every aspect of their ecology and physiology and make a wonderful model for understanding phenotypic diversity and rapid speciation. We are fortunate that at the University of Maryland, we have three cichlid groups. This makes for a vibrant community of researchers working to understand the genetic and genomic basis of cichlid diversity underlying their neuroethology, visual communication, and sexual determination.

Along with their other modes of diversity, cichlids have some of the most variable visual sensitivities in all of vertebrates. Species differ in their sensitivities to different parts of the light spectrum. This is the result of species expressing different subsets of the seven available cone opsin genes. This produces species sensitive to either UV to green wavelengths, violet to green wavelengths, or blue to red wavelengths. We have shown that these differences are linked to varying ecologies including the local light environment and foraging styles. We have also used behavioral training experiments to show that cichlids utilize color vision in these important tasks.

We have made some progress in identifying the genetic and genomic mechanisms behind how the seven cone opsin genes are differentially regulated. We have also identified some candidate genes that form part of the opsin regulatory network. This project is a collaboration between the lab of Dr Scott Juntti and Dr Karen Carleton. We are working to make CRISPR mutants to test the role of several of the candidate regulatory genes. This will help us unravel the more complete regulatory network and see how it varies across cichlid diversity.

The position: We are looking for a Research Assistant who can help manage the generation of CRISPR mutants. This will include performing CRISPR injections, and rearing and breeding new cichlid lines. In addition, the research assistant will perform wet lab experiments such as PCR for genotyping and quantitative PCR for quantifying gene expression. They will also be trained in next generation sequencing technologies. The goal will be to contribute to generating data as well as assisting with manuscript preparation.

The ideal candidate: The ideal candidate will have at least a BSc (undergraduate) degree in life sciences. Some molecular biology experience is desirable, including DNA and RNA extraction, gel electrophoresis, genotyping, or quantitative PCR. Strong organizational and record-keeping skills are important. It is key to have some independence but also be willing to work as a member of team of graduate student, post-doctoral and faculty researchers. We are currently also looking for post-doctoral fellows in neuroscience (Juntti lab).

If you are interested in the position, send your CV, cover letter, and list of references to [kcarleto@umd.edu](mailto:kcarleto@umd.edu).

Karen Carleton  
Professor  
Department of Biology  
University of Maryland, College Park