

Undergraduate Student Summer Position in the Carvunis Lab

The Carvunis Lab at the Computational Systems Biology Department of the University of Pittsburgh School of Medicine (www.carvunis.com) is looking for 2 undergraduate students to participate in a paid hands-on immersive research experience during the summer of 2022.

The Carvunis lab studies the molecular mechanisms of change and innovation in evolution. This involves thinking about how genomes change over time, what cellular processes enable these changes, and how novel molecular networks emerge. We consider evolution in the light of systems biology and systems biology in the light of evolution, to gain a better understanding of how cells and organisms live and evolve. The research tools we rely on the most are bioinformatics, yeast genetics and genomics.

In trying to understand how novel protein-coding genes evolve, our lab recently discovered that translation of seemingly random intergenic transcripts can be beneficial for the cell (Vakirlis et al, Nature Communications 2020). How is this possible? The students will begin answering this question by examining these novel “proto-genes” and working out how their overexpression impacts the growth of our model organism budding yeast, *Saccharomyces cerevisiae*, in different environmental conditions.

Throughout the summer, the students will learn how to design and execute a research experiment while practicing various wet-lab techniques including cloning, microbial phenotyping, high-throughput robotic, and bioinformatics. The students will be closely mentored by Dr. Anne-Ruxandra Carvunis and senior research specialist Nelson Castilho Coelho and work in a vibrant and inclusive lab environment. The students will meet weekly with their summer mentor, participate in the laboratory’s journal clubs, small group meetings, local seminars, and present their research at the weekly group meeting at the end of the summer. The students will be co-authors on publications resulting from their summer research. The Carvunis Lab is a very diverse team that actively promotes equality for all members.

The internships consist of 30 hours a week compensated at \$20/hour for 10 weeks anytime between May 31 and August 12, 2022. Up to \$2,000 will be reimbursed to compensate additional costs related to moving to Pittsburgh for the summer. No accommodations for housing will be provided. Referrals for housing options can be provided upon request.

To apply, interested participants must send a CV that includes courses and GPA information as well as a one-page essay explaining their motivation and a letter of recommendation from a professor of a course relevant to the program (ex. biological sciences, biochemistry, etc.), instructor of a laboratory course, or a research advisor to Kate McCourt (kmm325@pitt.edu) **by April 1, 2022**. Previous research experience is valuable, but it is not necessary for application. Having participated in an ORFAN workshop or otherwise done work on yeast orphan genes in the past will be considered a plus. Applicants will be interviewed virtually before acceptance into the program. If applicants have any questions, contact Kate or Dr. Carvunis (anc201@pitt.edu). **Applicants will be notified if they are accepted in the program by April 15th, 2022.**