

OVERVIEW

Summer 2022 Lab Offerings

Tufts Summer Research Experience (TSRE)

Last updated: 2/22/2022

The [Tufts Summer Research Experience](#) offered through [Tufts Pre-College Programs](#) and [University College](#) will host placements for residential, commuter, and virtual opportunities for Summer 2022! Placements in labs are open for highly-qualified high school juniors and seniors (ages 16+) to learn from distinguished scholars, scientists, and clinicians in a wide array of disciplines across the university.

Current lab placements include faculty in the departments of Anthropology, Chemistry, and Psychology in the School of Arts and Sciences and the Department of Comprehensive care in the Tufts University School of Dental Medicine.

Please see the links above for program details. Here are some important notes for you:

- Additional lab openings will be listed as they become available, and labs will be marked as 'filled' as soon as possible when slots are no longer available.
- Any lab that is listed as 'unavailable' are labs that are currently not planning on making a conversion to virtual research this summer.
- Students must be juniors/seniors and 16 years or older at the time of the program to apply.
- Admission to this program is competitive and rolling!
 - During the admissions process, you will be permitted to select up to three lab preferences
 - After you are accepted, we will process your lab selections on a first-come, first-served basis
 - If your three lab preferences are no longer available when you are admitted, we may reach out to you to discuss other options (if they are available)
 - You will have a limited amount of time to accept your offer of admission and deposit before your spot is given to another student

Our staff are available for questions and advice in selecting lab preferences. Please contact us at precollege@tufts.edu.

Labs Available for Summer 2022

School of Arts and Sciences**Chemistry: [Davis Laboratory](#)**Faculty: Professor [Luke Davis](#)

****PLEASE NOTE: The Davis Laboratory is offering residential, commuter, and virtual research placement options for Summer 2022.****

The Davis Laboratory at Tufts is a diverse team of inorganic, physical, and materials chemists interested in sustainability in inorganic materials. We synthesize and characterize molecules and materials that might have applications as thin-film photovoltaics, light-emitting diodes, and superconductors. We also explore carbon-free syntheses of industrially important metals and materials. Students will have hands-on experience in computational chemistry, studying fundamental questions about the electronic structures of metal complexes with low coordination numbers. Quantum chemical methods allow us to understand the shapes and energies of orbitals (the places electrons live in a molecule). These shapes and energies, in turn, dictate many of the properties of the molecule. This project is particularly interested in magnetism that arises from a few special configurations of the orbitals in some low-coordinate compounds.

Applicants to this lab would benefit from previous chemistry knowledge from an advanced Honors or AP Chemistry course. Some programming/coding experience is preferred, and exposure to atomic structure and quantum numbers required. Applicants will also be required to complete an Annual Lab Safety Training, as well as the Tufts Chemistry Department Lab Safety Training prior to program start.

Psychology: [Tufts University Social Cognition Lab](#)Faculty: Professor [Keith Maddox](#)

****PLEASE NOTE: The Tufts Social Cognition Lab is offering residential, commuter, and virtual research placement options for Summer 2022. Additionally, the Maddox lab, while open, will not be reviewing any applications until early May. By indicating your interest in this lab as your first preference, you are confirming that you will wait to be considered for admission until this time. If you do not wish to wait until May to have your application reviewed for this lab, we strongly encourage you to take a look at our [other available lab opportunities](#) here.****

The Maddox lab conducts social psychological experiments to explore ways to better understand elements of interracial perception and judgment. Research topics include using emotion regulation and humor to minimize interracial anxiety, exploring methods to encourage and empower efforts to confront expressions of racial bias, and exploring how within-race variation in facial characteristics can affect social judgments. During the summer, students perform various activities to support past and future data collection. These include psychological literature reviews, development of experimental stimulus materials, IRB proposal preparation

and revision, data coding and preliminary analyses, project pre-registration, and experiment survey design using Qualtrics or other relevant software. Occasionally, students can be involved in recruitment and data collection for virtual studies. These activities will be coordinated through meetings with the PI and smaller student research team meetings (in person or via Zoom) and supported using collaboration software (e.g., Canvas, Open Science Framework, Slack).

Applicants interested in conducting research with the Maddox Lab will need to have access to the Microsoft Office suite.

Unavailable Labs

Cummings School of Veterinary Medicine at Tufts University

Infectious Diseases and Global Health: [Discovery Pathology for Infectious Research](#)

Faculty: Professor [Amanda Martinot](#)

****PLEASE NOTE: The Martinot Lab is offering commuter research placement options ONLY for Summer 2022. There will be NO residential or virtual element for this placement.****

The Martinot Lab works on mycobacterial genetics and virulence factors. We are interested in tuberculosis host-pathogen interaction and the development of novel whole cell tuberculosis vaccines, using murine and non-human primate models of human disease. We also focus on comparative pathology (HIV/SIV, Zikavirus, TB, COVID-19). Students will be integrated in the current research projects of the lab, which will involve image analysis of digital histology and immunohistochemistry slides using Aperioscope (open source) software for image analysis and HALO (remote access) to analyze tissue specimens obtained from experimental animal models of tuberculosis infection or COVID-19.

Applicants interested in conducting research with the Martinot Lab will need a computer to access provided software.

School of Arts and Sciences

Anthropology: [Kibale Chimpanzee Project](#)

Faculty: Professor [Zarin Machanda](#)

****PLEASE NOTE: The Kibale Chimpanzee Project will be operating in the Tufts Virtual Campus for Summer 2022. There will be NO on campus residential or commuter element for this placement.****

The Kibale Chimpanzee Project, established in 1987, is a long-term field study of the behavior, ecology, and physiology of wild chimpanzees. Our researchers and field staff conduct daily behavioral observations on a group of approximately 60 chimpanzees in the Kanyawara region of Kibale National Park, Uganda. We also conduct non-invasive urine sampling for hormonal analysis, fecal sampling for genetic studies and photographic data for studies of growth. The KCP archive is located at Tufts University and projects in the lab involve archiving, coding, and analyzing this data. This research contributes to our understanding of primate behavioral diversity, human evolutionary psychology, and chimpanzee conservation. Projects for the summer of 2021 include analyzing a photographic dataset to assess growth trajectories of wild chimpanzees, extracting long-term data on tool use to understand if some chimpanzees have innovative personalities, and analyzing how particular aspects of social behavior change as individuals enter old age.

Applicants to this lab would benefit from: being extremely detail-oriented and having some familiarity with using spreadsheet software (e.g. Excel or Google Sheets), and should have access to the Microsoft Office suite.

Psychology: [Tufts Applied Cognition Lab](#)

Faculty: Professor [Nathan Ward](#)

****PLEASE NOTE: The Tufts Applied Cognition Lab is offering residential, commuter, and virtual research placement options for Summer 2022.****

The Tufts Applied Cognition Lab's goal is to investigate the underlying mechanisms of cognition, with a particular interest in multitasking, and whether cognition can be altered through the use of brain stimulation and other interventions. Activities may include help with data collection, literature reviews, data wrangling, data analysis, and manuscript preparation.

Applicants to this lab would benefit from being with technology, and prior knowledge of R, Python, Javascript, Qualtrics a plus. Applicants will also be required to complete an Annual Lab Safety Training, Responsible Conduct of Research Training, and review IRB protocols for research involving human subjects prior to research start.

Tufts University School of Dental Medicine

[Dry Eyes Research Laboratory](#)

Faculty: Dr. [Driss Zoukhri](#)

****PLEASE NOTE: The Dry Eyes Research Laboratory is offering residential, commuter, and virtual research placement options for Summer 2022.****

The current main research focus is on investigating the impact of chronic inflammation, such as occurs with Sjogren's syndrome, on lacrimal gland myoepithelial cells function. The hypothesis being



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tested is that inflammation impairs the contractile function of the myoepithelial cells resulting in decreased tears production and ensuing dry eyes symptoms.

Applicants interested in conducting research with the Dry Eyes Lab would benefit from knowledge in biology and biochemistry.