

OVERVIEW

Fall 2021 Lab Offerings

Tufts Research Experience (TRE)

Last updated: 8/3/2021

The [Tufts Research Experience](#) offered through [Tufts Pre-College Programs](#) and [University College](#) will be offered virtually for Fall 2021! 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 department of Chemistry 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 Fall 2021

School of Arts and Sciences

Chemistry: [Davis Laboratory](#)

Faculty: Professor [Luke Davis](#)

****Please Note**:** Participation in the Davis Laboratory with Professor Davis requires a one-year commitment (spanning Fall and Spring Tufts Research Experience program dates). Any questions regarding eligibility for this program can be directed to precollege@tufts.edu.

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.

Tufts University School of Dental Medicine

[Dry Eyes Research Laboratory](#)

Faculty: Dr. [Driss Zoukhri](#)

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 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.