



Homeschool Internship Program for Science and Technology

Homeschooled High School Student Summer Internship Opportunity at MIT -- Spend your summer learning and doing state-of-the-art science in an MIT research lab! See also <https://hip-sat.mit.edu/>. In 2023, we will be hosting 3–5 high school students from the homeschooled community for 8-week summer research internships with flexible starting and ending dates. Students will be assigned a mentor, participate in meetings to plan their project, make scientific presentations of their work to audiences of scientists and engineers, and present their findings in a symposium in August. Projects may involve searching the scientific literature, working in the research lab, writing or utilizing a computer program or scientific software, solving mathematical equations develop a theory, communicating with other scientists worldwide, and graphing or processing scientific data. Projects will be tailored to the skills and interests of the candidate. Students will be paid \$15/hour for approximately 20 hours per week.

If you are interested in a career in science or engineering, this opportunity is a great way to gain experience and learn what it is all about. You will be directly mentored by an MIT PhD student or postdoc to participate in frontier research in chemical biology, chemistry or engineering, and gain experience in research skills, become acquainted with the scientific literature, and present at scientific meetings. Please note that the MIT HIP-SAT internship program is in-person, for local students able to commute to MIT and/or out-of-town students with an appropriate local housing situation. We can neither provide nor supervise housing arrangements. We also cannot provide any supervision outside of time spent on-campus in labs.

The following MIT laboratories, and possibly others, will be accepting HIP-SAT interns for the summer of 2023:

Prof. Katie Galloway's Group (<https://gallowaylab.mit.edu/>): The Galloway Lab designs and builds compact, integrated synthetic circuits to improve the performance of engineered cells and enhance cellular reprogramming. Specifically, they can offer projects that integrate molecular cell biology, single-cell analytics, and computational modeling to build and analyze biological systems.

Prof. Mei Hong's Group (<http://meihonglab.com/>): The Hong Lab develops and applies magic-angle-spinning nuclear magnetic resonance (NMR) spectroscopy to elucidate the structure and dynamics of biological macromolecules. Current interest focuses on membrane proteins in infectious diseases and amyloid proteins in neurodegenerative diseases. Projects involve analysis of NMR data and complementary electron microscopy data for protein structure analysis.

Prof. Matt Shoulders' Group (<https://shoulderslab.mit.edu/>): The Shoulders Lab is broadly interested in understanding protein folding in human cells, with a focus on the development of new methods to treat currently incurable, protein misfolding-related diseases. They also devise new platforms to create medically relevant biotechnologies.

Prof. Michael Strano's Group (<http://srg.mit.edu/>): The Strano Lab is offering projects in the area of plant biology, medicine, and energy applications. Specifically, they are offering projects for the design and incorporation of nanoparticles into living plants for new functions such as chemical sensing, infrared communications and light emission. There are also projects on energy harvesting from ambient heat, and sensors to help treat diabetes and cancer treatment.

Requirements: Appropriate candidates for this internship are homeschooled high school students at least 16 years of age by 6/1/2023, committed and mature, with a demonstrated interest in chemistry, biology, and/or bioengineering, and strong scientific preparation at the high school level. Interest and preparation in computer programming or scientific software is also helpful. The internship will involve a time commitment of approximately 20 hours/week over the 8-week period, with flexibility depending on project and candidate. To the extent possible, candidates should plan to participate continuously in the internship program from June to August.

How to Apply: Your (1) resume, (2) high school transcript, and (3) a two-page description of your background, what motivates you to pursue scientific research, and the types of research that most interest you. The MIT Departments of Chemistry and Chemical Engineering provide a welcoming and supportive environment for exceptional science, teaching, mentorship, and service. We believe that education and research are at their finest when they include and appreciate the experiences of people of all backgrounds. As such, we also ask candidates to (4) summarize in 300 words or less their philosophy of diversity, equity, and inclusion in higher education, including any current activities they are involved in, plans for the future, and how these plans connect with their career goals. **Please send all materials as a single PDF file to Betty Lou McClanahan (blm@mit.edu) by March 1, 2023.**

About HIP-SAT: The HIP-SAT program began as an educational activity sponsored by a grant from the National Science Foundation to the MIT Chemistry Department and has operated through the past seven years, hosting numerous students from the greater Boston area and nationally. MIT is committed to the principle of equal opportunity in education and employment <https://referencepubs.mit.edu/what-we-do/nondiscrimination-policy>.