

Summer Internships in Biotechnology through the Technion Israel Institute of Technology

Program leader name	Lori Herz
Country	Israel
Dates	May 28, 2018 - August 8, 2018
Duration	10 weeks (6 students for 10 weeks; 1 faculty member for 10 days)
Number of students who will participate as Iacocca Interns	4-6
Additional students. Will additional students beyond IIP Program be considered?	Yes, additional students will be considered if fewer than six IIP students participate. However, these students would need to find another funding source or self-pay.
Host organization name	Technion - Israel Institute of Technology
Host organization website	http://int.technion.ac.il/ http://int.technion.ac.il/academic-programs/summer-programs/introduction/
Host organization contact information	Hadas Shafir Shekhter, Marketing Director hadass@int.technion.ac.il +972-77-887-1732 Administrative office office@int.technion.ac.il +972-77-887-1736

Executive Summary

A group of four to six Lehigh students will participate in a ten-week summer internship at a biotechnology company or in an academic laboratory in Haifa, Israel. Our partner institution, Technion - Israel Institute of Technology, will match the students to internships, based on their academic background and interests. Students participating in the program will gain hands-on experience while living at a world-renowned university in a city that prides itself in tolerance and is home to people of many religions and cultures. Students will live in Technion dormitories, participate in academic and social activities in the Haifa vicinity, and travel to several locations throughout Israel, all with Israeli and international students studying at Technion. The total budget request for six students and one faculty leader is \$49,831.

Goals and Objectives

- Goal:** Provide students interested in biotechnology with an internship experience in a modern industry or academic environment. **Outcomes:** Students will apply their technical knowledge, learn new hands-on skills, obtain practical experience, and increase their communication skills.
- Goal:** Enable students to travel and develop professionally in a Middle East locale that is a hub of biotechnology, innovation, and entrepreneurship, and has a reputation for diversity and tolerance. **Outcomes:** Students are comfortable living, working, and traveling independently. Students build professional and personal connections with people from a broad range of backgrounds. Students learn the culture and history of the region.

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Internship Description and Schedule

Summary of internship experience: The students will gain practical experience in biotechnology in a country known for innovation and entrepreneurship. Our partner institution, Technion - Israel Institute of Technology in Haifa, Israel, will match students to biotechnology companies or academic laboratories, based upon their background, skills, and interests. The program for our students will be run similarly to Technion's Neubauer Internship Program for international students. All the students will have an "academic manager" at the Technion to monitor their progress and their on-the-job performance. Additionally, companies are required by the Technion to carry \$1,000,000 in liability insurance, and will provide appropriate safety training for their work environment.

Partnering organization: The partnering organization is Technion - Israel Institute of Technology, which is consistently ranked in the top 100 universities worldwide for engineering and technology. Technion and the city of Haifa are centers of biotechnology, innovation, and entrepreneurship in Israel, and the institute's faculty and alumni are recognized throughout the world for their excellence and leadership in these areas. Dr. Herz initiated Lehigh's recent connection with Technion in 2017, which led to the participation of four Lehigh Bioengineering students in Iacocca Internships at Technion in 2018.

Faculty role: Lori Herz, the faculty leader, will ensure that the students are settled into their dormitories, internships, and commutes to work. Additionally, she plans arrange student activities, including visits to Rambam Medical Center, biotechnology companies (Pluristem, ATVIO), and the

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Beit Hagefen Arab-Jewish Cultural Center. She also plans to make further connections with potential industry and academic partners.

Advancement of IIIP goals: This program will enable a broader geographic reach, since last year's IIIP in Israel was the only one in the Middle East. Our students will live at Technion among Israeli and international college students, and work with Israelis during their internships. This experience is unique in that it provides an immersive and professional experience in a region in which visitors are more apt to travel in organized groups as tourists. Additionally, while several Lehigh faculty have collaborated with Technion faculty, this program can potentially help increase the connections for faculty and students between the two institutions.

Tentative schedule: This will be a ten-week internship that runs from May 28 to August 8, 2019. The students will typically work 30 to 35 hours per week and live in Technion dormitories. They will participate in the social, cultural, and educational activities that are organized by Technion. The 2019 schedule has not been set, but will be similar to the 2018 program, which included (1) excursions in and around Haifa (Baha'i Gardens, hummus making contest, day trips to Akko and Rosh HaNikra), (2) academic events (tour of Rambam Medical Center), and (3) several overnight trips to popular tourist sites (Jerusalem, Masada, Dead Sea, Galilee, Jordan River kayaking).

Student qualifications: This program is targeting students majoring in Bioengineering, Biology, and Biochemistry, as well as students in science and engineering fields with an interest in biotechnology or healthcare. Students majoring in science and engineering disciplines, outside the scope of biotechnology, will also be considered. Rising juniors and seniors with a minimum GPA of 3.0 are welcome to apply. Students should have completed introductory laboratory courses in chemistry and/or biology. Ideal candidates will have strong quantitative and computational skills.

Outcomes from previous IIIP awards: Four Lehigh Bioengineering participated in Iacocca Internships at Technion in 2018. Two students interned at the Haifa Life Sciences Hub, an incubator for biotech start-ups, and the two other students worked in a Technion nanobiotechnology research laboratory. All the students found the professional, cultural, and social aspects of their experience to be overwhelmingly positive. Specific student outcomes included:

- (1) **Growth** in their technical, communication, and leadership skills. For example, the students working in the Technion lab learned techniques in cell culture, protein purification, and electrochemistry, and one of the students working at Haifa Hub was the Student Leader for a project involving the development of a vascular device.
- (2) **Travel** throughout the country. While the Lehigh students traveled with Technion personnel and other students for organized activities, they also traveled independently to work and on weekend excursions (Tel Aviv, Eilat).
- (3) **Engagement** with people of different backgrounds. The students frequently interacted with diverse roommates and coworkers, many of whom were happy to share their opinions on matters ranging from beaches and restaurants, to religion and politics. For 2019, Dr. Herz plans to have a more active role in the internship matching process, as two interns were initially assigned to a company that was not suitable for their academic background, and moved to a more appropriate lab at Technion during the third week of the program. Dr. Herz also plans to provide additional basic Hebrew instruction for the students prior to the start of the program, as the 2018 students indicated that more knowledge of the language would have helped with travel and improved the immersive experience.