**What is it?**

SummerScience@Jefferson is a 4-week program which aims to foster an appreciation of the role of science in everyday life, to promote an informed understanding of scientific issues that appear in headlines in the news, and to familiarize students with the vital and expanding field of biomedical sciences. The instructors for SummerScience@Jefferson are faculty members of the various Colleges at Thomas Jefferson University who are passionate about sharing their knowledge with high school students through lectures, discussion, and hands-on laboratory experiences. The culmination of the program is a student presentation day, during which the students present formal presentations on a topic of their choice, which may be based on theoretical knowledge, laboratory experiences, and possibly interactions and observations with Jefferson researchers. Summer Science overarching topic areas include:

![Diagram of SummerScience@Jefferson topics: Molecular Biology, Medical Laboratory Science, Anatomy and Molecular Mechanisms of Disease, Cell Biology]

**Molecular Biology**

Students are introduced to the basics of molecular biology, with an emphasis on the exciting field of Biotechnology. Topics of study include the human genome and genomics, recombinant DNA technology and cloning, gene expression, and an introduction to gene editing techniques, such as RNA interference and CRISPR/Cas9. Students’ laboratory experiences include: isolation of genomic DNA, bacterial transformation and gene expression, DNA fingerprinting and forensics. They discover how these techniques are applied to such diverse purposes as criminal investigations, testing foods for genetic modification, disease diagnosis and the development of new therapies and pharmaceutical products.

**Cell Biology**

Students are introduced to the basic facts of cell biology, including cell morphology and physiology, and learn about the macroscopic and microscopic aspects of reversible and irreversible cell injury. Students also study the morphology of cancer cells in comparison to normal healthy cells and learn about apoptosis (programmed cell death) and how cancer cells evade this phenomenon. Laboratory experiences include culturing of bacterial, insect or animal cells, staining of cancer and healthy cells, and learning how to count cells and determine cell viability. They are also introduced to the unique story of HeLa cells and how these immortal cells have contributed to many scientific advances all over the world, from the development of the polio vaccine to testing the effects of zero gravity on humans in space!

**Anatomy & Molecular Mechanisms of Disease**

Students are introduced to the etiology and pathogenesis of various diseases such as cancer, AIDS, Diabetes, and infectious diseases, including the Ebola Hemorrhagic Fever, while focusing primarily on genetics, environmental factors, and an introduction to epigenetics. Laboratory experiences include an introduction to immunohistochemistry and ELISA (enzyme-linked immunosorbent assay) to diagnose infections such as HIV. Students may also have the option to perform and/or observe the dissection of animals and human cadavers.

**Medical Laboratory Science**

Students are introduced to the process of disease diagnosis through the understanding, application, and performance of clinical laboratory analyses. Combining medicine, the basic science of biology and chemistry, and the clinical sciences to function as detectives, students will learn how to investigate the causes of diseases. Laboratory experiences include bacterial identification, epidemiological studies using ELISA assays, and hematological studies.
When & Where is SummerScience@Jefferson?

SummerScience@Jefferson is held daily typically from 9:00 am – 3:00 pm from June 18, 2018 through July 20, 2018. There will be no class July 2-July 6, 2018 to allow for the July 4th holiday and family away time during that week. More specific details regarding the schedule will be sent to registrants upon acceptance. Because of the timing of experiments in the afternoon, occasionally a class may end early or run late. SummerScience@Jefferson is held in the same classes where TJU undergraduate and graduate students learn. Thomas Jefferson University is located in Center City, Philadelphia (9th and Walnut Streets).

Am I eligible to apply to SummerScience@Jefferson?

The program is open to high school students who:

- Have completed at least 2 years of high school by June 2018
- Are in good academic standing in your high school program
- Have completed a high school level biology course
- Demonstrate a sincere interest in the biomedical sciences

New for 2018!!!!

Students with a strong interest in laboratory research can apply for an opportunity to spend dedicated time in a Jefferson researcher’s laboratory. Their time spent in the researcher’s lab would be during regular SummerScience hours. If a student wishes to have this experience, s/he can apply by completing a 2nd personal statement, answering the 2 additional questions in Appendix A of the application. For more information about this experience, please contact Nannette Vliet at 215.503.7941.

How much does SummerScience@Jefferson cost?

The program fee is $2500, which includes lunch daily, detailed course materials, and laboratory supplies. A non-refundable deposit of $25 is required to apply to the program; however, if accepted into the program, this $25 will be applied to the tuition balance.

When is payment due?

- A $25, non-refundable application fee is due along with submission of application. The application deadline is March 30th.
- A deposit of $475 will be due within 2 weeks of notification of acceptance, which is expected by April 16, 2018 or earlier (your $25 deposit will be applied to the cost of the program if accepted).
- Payment in full of the remaining $2000 is due by Thursday, May 31, 2018.
- Refunds cannot be processed after the final payment due date of May 31, 2018.

Payment for initial deposits is accepted via personal check or money order made payable to “Thomas Jefferson University”. We are looking at options to accept tuition payments via credit card; however, at this moment only checks and money orders can be accepted. More details will follow if a credit card payment option becomes available.

How do I apply?

Interested students should submit the following information for consideration:

- Completed Application
- 200-500 word essay explaining your interest in the biomedical sciences/the SummerScience@Jefferson program
- Two letters of recommendation (from a teacher and guidance counselor)
- Official high school transcript
- 2nd personal statement (answering 2 questions in Appendix A of the application). This is required ONLY if you wish to apply for the Research Observation Experience.

Please note: If mailing your application via United States Postal Service, you may mail official transcripts separately. Please ensure that the transcripts are addressed as indicated below to ensure timely receipt. You may also email all application materials to Tamika Landers (contact information below) and mail the application fee separately. Official transcripts can be emailed directly from your guidance counselor.
Where do I send my Application?

Completed Application Packets, along with $25 application fee, made payable to “Thomas Jefferson University”, can be mailed to:

SummerScience@Jefferson
c/o Tamika Landers
Department of Professional and Continuing Studies, Thomas Jefferson University
130 South 9th Street, Edison Building, Suite 530
Philadelphia, PA, 19107
Tamika.landers@jefferson.edu

Additional Questions?

If you have additional questions, please contact Nannette Vliet at nannette.vliet@jefferson.edu or 215.503.7941.