**What is it?**
The opportunity to engage with innovative science is still taking place this summer with the move of SummerScience@Jefferson to an online virtual platform. Through this program — **designed for high school juniors and seniors** — you can still learn from Jefferson science faculty and engage with them in research projects conducted in an online environment. Working with Jefferson faculty, staff, postdoctoral scholars, and students, you will build your understanding and proficiency about real-life research questions, methods, and applications.

To cap off your experience, we will host our virtual Summer Science Symposium Day, during which you'll prepare and make formal presentations on a topic that you have explored during the summer program. SummerScience@Jefferson brings together faculty from across our College of Life Sciences programs. These topics may include:

- **Biochemistry and Molecular Biology**
- **Neuroscience**
- **Genetics, Genomics and Cancer Biology**
- **Clinical 3D Printing**
- **Microbiology and Immunology**
- **Cell and Developmental Biology**

**Biochemistry and Molecular Biology, Forensic Science, and Genetics**
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 and Neuroscience**
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. Students will explore biological concepts from the single cell to whole brains. 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, Cancer Biology, Microbiology and Immunology**
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.
When & Where is SummerScience@Jefferson?

The VIRTUAL SummerScience@Jefferson will be held daily typically from 9:00 am – 1:00 pm from June 22, 2020 through July 20, 2020. There will be no class Friday, July 3, 2020 to allow for the July 4th holiday weekend. All classes are held online and internet access is necessary in order to participate.

Am I eligible to apply to SummerScience@Jefferson?

The program is open to high school students who:

- Will be a high school junior or senior by September 2020
- Are in good academic standing in your high school program and have completed a high school level biology course
- Demonstrate a sincere interest in the biomedical sciences
- Students who identify as underrepresented minorities including first generation college students, particularly in the area of biomedicine, are strongly encouraged to apply.

How much does SummerScience@Jefferson cost?

The program fee is $300. A non-refundable deposit of $25 is required to apply to the program.

When is payment due?

- The $25, non-refundable application fee is due along with submission of application. The application deadline is June 12, 2020. The $300 Program fee is due by Monday, June 22, 2020.

All payments are accepted online, via credit card: https://jefferson.catalog.instructure.com/courses/ssa

How do I apply?

Interested students should submit the following information for consideration:

- Completed Application (Incomplete applications will not be considered.)
- 250-500 word essay explaining your interest in the biomedical sciences/the SummerScience@Jefferson Program
- Two letters of recommendation (1 must be from a science teacher who has first-hand knowledge of your academic performance and the other from a 2nd teacher or guidance counselor)
- Official high school transcript
- $25, non-refundable application fee

PLEASE NOTE: Please ensure the transcripts are emailed directly from your high school. Incomplete applications will not be considered.

Where do I send my Application?

Complete Application Packets should be emailed to Ms. La’Verne Webb at laverne.webb@jefferson.edu.

Important Payment Information: Payments can only be made online via credit card by clicking on the link: https://jefferson.catalog.instructure.com/courses/ssa