



BRIGHT LIGHTS IN THE LAB - THE SCIENCE OF THE BRAIN
Presented by University of Toronto Schools and Firefly Foundation
SummerUp 2022
Course Description

Program Name: Bright Lights in the Lab – The Science of the Brain

Who should Apply: Black Ontario youth who will be enrolled in **Grades 9, 10 or 11** in September 2022 and who have a passion for science.

Visit the SummerUp Website: <https://lileaders.com/summerup/>

What

To appreciate this incredible learning opportunity, start with the question: What is neuroscience? [One answer is as follows:](#) “Neuroscience is a class of science that studies the nervous system and incorporates various other disciplines, such as psychology, medicine, chemistry, and linguistics. This science is focused on all aspects of the nervous system, including how it functions on a cellular, behavioural, functional, and molecular level. Neuroscience strives to understand how neural circuits and neurons work in relation to a person’s behaviour, memory, perception, and various other daily and vital functions.”

This course is a starter kit into the world of neuroscience – into the science of the brain. It is designed to introduce high school students who are curious about the brain, about medical science, and about science in general. It’s an in-person course that will introduce students to neuroscience concepts, enable them to conduct hands-on experiments, and empower them to engage in brain-training games. This course will guide students in laboratory techniques, provide a foundation for conducting effective scientific research, foster the development of critical thinking and design skills, and also introduce students to effective mindfulness practices. In general, this course provides a greater understanding of how science is applied.

This course was designed for students who have a passion for science and who are seeking new fuel for their intellectual curiosity into science. This course allows students a peek into the many careers that are rooted in neuroscience – such as psychologist, pharmacologist, neurologist, neurosurgeon, researcher, and health educator. Instructions will be provided by top neuroscience researchers at the University of Toronto and by other medical science professionals. The opportunity to be a ‘bright light in the lab’ is one that is not often available. Seize it!

Why this Matters

This course is made available to Black youth so that they will be encouraged on their journey in the sciences. This course also positions participating students in the early stages of the career pipeline - inspiring them towards a pathway for fulfilling their career ambitions in the sciences, and in the broad health and medical fields. That the course is offered in-person enhances the student experience in that students will undertake lab experiments, utilize exotic medical equipment, and learn first-hand from professionals in the field. Of course, given the disruptive impact of the pandemic, this course offers Black youth every opportunity to socialize, collaborate, and to celebrate their ‘togetherness’. This is summer learning that can have deep and everlasting impact on student learning and student ambition.

The brain is considered “the most complex system in the known universe”. How well we learn, how healthy we are, and how we function as social beings all depend on brain health. Our brain will best serve us if we

understand how it works and how to take good care of it. This course fosters appreciation for the power of the brain and brain health, and this knowledge will serve students well.

At the end of this course, students will:

- understand fundamental neuroscience concepts around learning and memory,
- understand the relationship between healthy mental wellness and brain development,
- explore academic research working on a project in collaboration with other students, and
- obtain valuable insights from medical-industry professionals from fields which will include neuroscience, pharmacology, and psychology.

In Summer 2021, this course was offered in online mode which limited the full learning experience that in-person-mode provides. Here are the opinions of three students who took this course in summer 2021:

Student #1: *"I enjoyed the engaging lessons and learning about different learning styles, how the brain functions. The different meditative techniques we could incorporate in our day-to-day lives. The research aspect was very insightful. The mind games. The visiting presenters that came to talk about their contributions in the field of neuroscience/medicine."*

Student #2: *"This is a great program that really sparked my interest in neuroscience. I admire the fact that it is not just about lessons, but it also engages the students by letting us participate in group discussions, research and games. I like that it also incorporated breaks in between as well. Also, I like how the lessons help us make insightful connections to our day to day lives."*

Student 3: *"It was fun and I learned a lot and it's made me want to pursue a career relating to the brain even more."*

Admissions Information

Who: You will be considered for admission if you are a Black student residing in Ontario, and if you will be enrolled in Grades 9, 10 or 11 in September 2022. As well, you must have a passion for science, be keen to learn collaboratively with other students, and be totally committed to attending all five in-person classes (see class schedule below). Given that seats are limited, applicants will be required to provide information regarding their interest in science and also attend an orientation session.

Admissions Process: Eligible applicants with a passion for science will be considered for admission. Refer to application deadlines at <https://llileaders.com/summerup/> Applicants will be required to attend a course orientation.

Start/Stop Dates: SummerUp's *Bright Lights in the Lab* will span five days – all within one week starting Monday, July 18 and ending Friday, July 22, 2022. Classes will commence at 9.30 a.m. and end at 3.30 p.m. each day. There will be breaks – including a lunch break. There will also be special programming on the first and last day of the program, including a showcase of work on the final day (parents invited).

Meeting Pattern: Here is the class/event schedule for the week of July 18, 2022. Classes begin on time. Applicants must attend all sessions/events:

Monday, July 18

- Students arrive by 8.30 a.m.
- Orientation/Issue of T-shirts: 8.30 to 8.45 a.m.
- Community Lunch: Students will be provided lunch on this day. It's a way of 'getting to know you...'
- Class time: 9.30 a.m. to 3.30 p.m. (includes breaks)

Tuesday, July 19

- Students arrive by 9.15 a.m.
- Lunch: Students will provide their own lunch.
- Class time: 9.30 a.m. to 3.30 p.m. (includes breaks)

Wednesday, July 20

- Students arrive by 9.15 a.m.
- Lunch: Students will provide their own lunch.

-Class time: 9.30 a.m. to 3.30 p.m. (includes breaks)

Thursday, July 21

-Students arrive by 9.15 a.m.

-Lunch: Students will provide their own lunch.

-Class time: 9.30 a.m. to 3.30 p.m. (includes breaks)

Friday, July 22

-Students arrive by 9.15 a.m.

-Community Lunch: Students will be provided lunch on this day. It's a way of solidifying 'community'

-Class time: 9.30 a.m. to 2.15 p.m. (includes breaks)

-Project Showcase: 2.30 p.m. to 3.45 p.m. Students will exhibit the project they worked on during the week.

Parents and family are invited.

- It's a wrap! The course ends at 3.45 p.m.

Dress: Inasmuch as this course is delivered in-person and given that appropriate dress is a part of the learning experience, we require students to dress appropriately. While on campus, each student will be provided a T-shirt which must always be worn.

Parent Role: We deliver this course in partnership with parents and legal guardians. We ask parents to ensure students arrive and depart the campus safely and on time; that provision for lunch is made on the three days a 'community lunch' is not provided, and that students are appropriately dressed. Parents must attend an online orientation for selected students.

Mode: This course is delivered in-person. An online version will not be available. Given the organization of this course, students will not need to bring laptop computers to class.

Campus Site: This in-person course will be delivered on the campus of University of Toronto, St. George Campus. University of Toronto Schools (UTS) is on the corner of Bloor Street and Spadina Avenue and is highly accessible by TTC. Selected students will be provided location directions.

Vaccination and Masks (Updated June 15, 2022):

Our SummerUp website (*Student Responsibilities*) makes a general statement relating to Vaccination and Masks. This general statement reads: "We encourage all students, instructors and staff who are engaged in in-person and hybrid classes to be fully vaccinated. While SummerUp will not require proof of vaccination, there may be occasion where this is a requirement by certain institutions..."

University of Toronto Schools, where this course, *Bright Lights in the Lab – The Science of the Brain*, will be taught, does require students on campus to be fully vaccinated. What this means is, in order for you to participate in this particular SummerUp course, you must show proof of vaccination (e.g. your vaccination certificate) prior to the start of the course. Without proof of vaccination, you will not be admitted into this course. Also, "*masking will be strongly recommended, unless a 2-meter distance cannot be maintained (such as close work in a classroom). Exceptions to the 2-meter spacing requirement include when actively eating/drinking, engaged in strenuous physical activity, or playing an instrument/singing/performing. Teachers leading summer camps can require participants to wear masks when the 2-meter rule cannot be maintained.*" (UTS)

Course Faculty

Isabella Liu – Program Leader

[Isabella Liu](#) is a chemistry teacher with a demonstrated history of working in the secondary education and non-profit sectors. She currently teaches at University of Toronto Schools (UTS), Toronto, and has taught students with diverse backgrounds in three different countries. As a recognized Apple Distinguished Educator and Google for Education Trainer, she is skilled in educational technology, curriculum design and assessment delivery.



Other Faculty

Students will learn from top neuroscience researchers from University of Toronto and from other medical practitioners.

About University of Toronto Schools

[University of Toronto Schools](#) (UTS) is an independent, merit-based university preparatory school, affiliated with the University of Toronto. The school is located on the University's St. George Campus. Founded in 1910, the school provides a transformative education program of academic distinction to approximately 670 students in grades 7 through 12. UTS graduates love learning, take initiative, and innovate as socially responsible global citizens and go on to attend many of the most selective universities around the world.

Special Note:

SummerUp is a program designed to serve and support the personal and professional aspirations of Ontario's Black youth. The program is developed and presented by the **Lifelong Leadership Institute** (LLI), and it is primarily funded by the Ontario Ministry of Education. The quality of the SummerUp experience is assured by the contributions of a diverse group of individuals, educators, institutions and corporations. All are committed to championing the well-being, development and advancement of Black youth.

The Lifelong Leadership Institute also offers the **Leadership by Design** program which provides extensive leadership-development opportunities to Black youth.

The **SummerUp** 2022 program is primarily funded by the Ontario Ministry of Education.

