**ORIENTATION DAY**

On July 4, 2023, the STEAM Design program welcomed 50 high school students from across the Greater Toronto Area to the Medical Sciences Building at the University of Toronto, St. George Campus for the Summer 2023 program! Students were served a continental breakfast and completed onboarding procedures including a photo shoot for their yearbook and orientation session. In the afternoon, they were invited on a guided tour across campus led by representatives from the Central Recruitment and Admissions Office.

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**INTRO TO DESIGN THINKING AND RESEARCH QUESTIONS**

Speaker: Chidalu Edechi

Students were introduced to 10 research prompts and selected one for their summer STEAM-D research and design project. They were placed into groups based on interest. Chidalu, one of our student coordinators, delivered a presentation on “Intro to Design Thinking and Research Questions” to provide the project overview and timeline. We are so excited to see how the STEAM-D students address the research prompts this year. Stay tuned for the Final Presentations in week 4!

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**SICKLE CELL AWARENESS**

Speakers: Lanre Tunji-Ajayi and Thea Campbell

An insightful presentation on Sickle Cell Disease Awareness was delivered by Thea Campbell and Lanre Tunji-Ajayi, Founding President & CEO of the Sickle Cell Disease Association of Canada. As global patient advocates, they discussed the symptoms, treatments, inheritance patterns, and screening surrounding Sickle Cell Anemia. They highlighted the stigma that people with sickle cell face in their everyday life and talked about a new quality standard launched by Ontario Health to improve care for people living with Sickle Cell Disease. Thank you for sharing your passion and knowledge with us!

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**3D PRINTING SESSION**

Speakers: Wei Fang Dai, Kevin Ho, Elaine Liu

Students ended off the week with a 3D printing session. Wei Fang Dai, Kevin Ho, and Elaine Liu from the “3D printing in Medicine Club” spoke about the three steps of 3D printing: design, slicing, and printing. The role of 3D printing in increasing accessibility and sustainability in the medical field was also highlighted. At the end of the session, students created their own 3D printed keychains!
>>> HOSPITAL VISITS
TORONTO GENERAL HOSPITAL & NORTH YORK GENERAL HOSPITAL

We were very grateful for the opportunity to visit the North York General hospital (NYGH) and the Toronto General Hospital (TGH). Students at NYGH toured the Intensive Care Unit and explored different patient room designs from 1968, 2003, and 2016! At TGH, students had group mentoring sessions with cardiologists and learned about heart anatomy, heart disease, and pacemakers. They also participated in interactive activities including: stent insertion, ultrasounds, and pericardiocentesis procedures!

>>> ARM CASTING, ULTRASOUND, SUTURING
Lash Miller Chemical Lab

Medical students from Discover Health (Tim, Josh, Alex, Hunster and Amanda) taught the students how to suture, use ultrasound equipment to see the heart, and examined a patient case. Students also got the opportunity to create their own arm casts.

>>> FORENSICS 101
Toronto Police Services

Detective Constable John Smith from the Toronto Police Services (TPS) delivered a Forensic Identification workshop. DC Smith shared career options with the TPS and provided insight on innovative policing technologies. Students got to demo some of these technologies in the classroom such as footprint and fingerprint development.

>>> SCAVENGER HUNT
UofT, St. George Campus

STEAM-D students joined the Summer Mentorship Program students on a fun scavenger hunt challenge around the U of T, St. George campus. They collaborated to obtain clues and solve riddles about the UofT campus. Each leg of the scavenger hunt was documented with a fun group picture, and prizes were awarded based on the creativity of these photos. Congratulations to Group 8!

>>> PHYSIOTHERAPY SESSION
Rehabilitation Sciences Institute

At the Rehabilitation Sciences Institute, students worked directly with physiotherapists and learned about the highlights and career pathway of the profession. They had a lesson on human anatomy and applied it to an interactive challenge surrounding mobility with impairment. Students gained exposure to therapeutic technologies used by physiotherapists, and got to try some out themselves!
The highly anticipated Faculty Fair attracted the attendance of 160 STEAM-D and SMP learners which exposed them to a variety of academic pathways available at UofT. The learners interacted with 10 departments across the Temerty Faculty of Medicine alongside others including UofT’s Central Recruitment and Admissions Office, Faculty of Applied Science & Engineering and the Faculty of Kinesiology and Physical Education.

The Hispanic Medical Students Association (HMSA) taught STEAM-D students about vital signs and physical examination techniques. Students learned how to check pulses, measure heart rate, respiratory rate, use stethoscopes to listen to the heart, and take blood pressure! Elements of the respiratory lung exam were also reviewed.

Professor Jongstra-Bilen discussed the role of the immune system in atherosclerosis, a medical condition where plaque blocks blood vessels. She also discussed the association between atherosclerosis, heart attacks, and stroke. She wrapped up her presentation by sharing advice on developing research questions, dealing with failure, and pursuing a career in immunology.

STEAM-D concluded the week by exploring the social determinants of health at the YMCA, Regent Park Community Health Center, and a Community Walk. At YMCA, students participated in the Green Roof Revitalization Project, where they helped plant new trees to increase green spaces. At Regent Park Community Health Center, students supported a family resource drop-in program by facilitating recreational activities for children and their families. From this experience, STEAM-D students learned about the importance of social support networks; the impact of systemic barriers on marginalized families, and the positive influence of early childhood development activities. Students who went on the Community Walk in the Annex and Bay Corridor neighborhoods critically explored a case study centered around the life of a university student by examining their financial position in relations to housing, food security, physical & mental health etc.
RESEARCH & DESIGN COMPETITION

Show time! After a month of hard work, STEAM-D students presented their final Research and Design projects highlighting innovative solutions to healthcare systems issues. Students presented to a panel of judges who all work in health sciences fields. The top three groups were awarded prizes. Our first place group worked on 3D printing medical devices and is featured in the image to the right. Congrats to James, Ananya, Akua, Karen, and Ezekiel!

MD STUDENT PANEL TALK

STEAM-D students interacted with students from the Temerty Faculty of Medicine at the MD Student Panel Talk. MD students discussed their unique pathways into medicine, the MD application process, what a day in their life looked like, as well as tips for those entering university. They also discussed overcoming adversity, study strategies, and extra curricular involvement.

STEAM-D GRADUATION

Graduation Day! We are proud to announce that we have a 100% retention rate for the Summer 2023 STEAM-D Program! All 50 students who started have now successfully completed the program where they’ve earned the SNC 4M credit and will be receiving a stipend of $1600.

Design project awards were presented to the top three teams, and program coordinators gave speeches to celebrate the month-long program close. Valedictorian Philip Nguyen gave a heartwarming address, and two talented students, Karen Li and Ananya Pawtey, gave performances on the Guzheng instrument and spoken word poetry, respectively. We are so proud of everything STEAM-D students have accomplished this summer!
POLITICS, PUBLIC POLICY & HEALTHCARE

Speaker: MPP Dr. Jill Andrews

The STEAM-D program was honoured to have Dr. Jill Andrew, MPP for the Toronto-St Paul's region, talk to students. Dr. Andrew talked to students about her pathway into politics, her role, and current legislations being put forward in the healthcare field, such as “The Improve Access to Health Care Act”, which implemented a universal protocol for high standard care of people with Sickle Cell Disease. Students asked questions, furthered their understanding of public policy, and even took a group picture with Dr. Andrew!

RUNNING GELS

Speaker: Ayokunie Lekuti

Under the direction of PhD candidate Ayokunie Lekuti, STEAM-D students learned about running gels to conduct gel electrophoresis, a lab technique used to separate proteins, RNA, or DNA based on molecular size and charge. Mr. Lekuti discussed his career in research and highlighted career opportunities available for PhD graduates. In groups, students also learned how to micropipette.

OPEN DATA, AI, AND 3D MODELLING

Speaker: Jonathan Brown

The STEAM-D program welcomed Jonathan Brown to talk about Open Data, AI, and 3D modelling. Mr. Brown discussed new innovations in community science, applying AI and machine learning, and future opportunities in the field. Students then participated in an interactive activity outdoors where they measured the dimensions of trees and calculated the amount of carbon cycling through it!