

PROFILE

- Interested in the brain, neuroscience, and neurosurgery.
- **Conducted 1800+ hours of bioinformatics research** in viral genomics with specific focus on SARS-CoV-2 and Influenza at Walter Reed Army Institute of Research (WRAIR).
- Volunteered 700+ hrs. including **475+ hrs. of clinical volunteering** at area hospitals and retirement home.
- **Shadowed physicians and surgeons for 250+ hrs.**, observing a mix of consultations, clinics, and surgeries.

EDUCATION

- Student at the Pennsylvania State University's (PSU) 7-year **Premedical-Medical Program (PMM)** in partnership with **Sidney Kimmel Medical College (SKMC)**
- Expected completion of PSU requirements – May 2024; Graduation from Medical School – May 2029
- **Distinguished Honor Roll graduate from the Science, Math and Computer Science Magnet Program** at Montgomery Blair High School and recipient of Principal's Award for Academic Excellence.
- Advanced courses include Multivariable Calculus, Differential Equations, Organic Chemistry, Anatomy & Physiology, Genetics, Cell Physiology, AP Chemistry, Quantum Physics, Statistics, and Journalism.

AWARDS & HONORS

- **Top 10 Finalist, USA Brain Bee National Championship** - Placed 7th in the two-day long National Brain Bee in 2021, competing with other regional winners. In 2020, placed 1st in the MD-VA-DC Regional Brain Bee.
- **2021 Maryland Young Women Leaders Award** - Recipient of the award that honors extraordinary young women with demonstrated commitment to leadership, community service, and academic excellence.
- **National Finalist (Top 6) and Regional Winner, Toshiba ExploraVision** - Co-authored a 16-page research proposal on autologous lung transplantation. 1st place in the region and national finalist.
- **2022 Coca-Cola Scholars Semifinalist** – Recognized for outstanding leadership, academics, and dedication to community.
- **2022 National Merit Scholarship Finalist**
- **First Alternate for the 2022 Regeneron International Science and Engineering Fair (ISEF)**
- **2022 Regeneron Biomedical Science Award**
- **Finalist, Junior Science and Humanities Symposium** - Finalist in the 2021 Maryland Research Competition.
- **2020 AspireIT Award** - Received \$1,500 to lead a program and coach underrepresented girls in computing.
- **All-Star American Computer Science League (ACSL)** - Placed 3rd internationally at the intermediate level.
- **Aspirations in Computing (AiC) Award** - 2021 Maryland State winner for outstanding academics, aptitude and aspirations in technology and computing, and leadership experience.
- **5th Annual Prepared for Life Gala presenter** - Invited by the National Area Capital Council, Boy Scouts of America to share medical experiences and present Dr. Anthony Fauci the 2020 Citizen of the Year award.

PUBLICATIONS & POSTERS

- **First Author, Intrahost SARS-CoV-2 k-mer Identification Method (iSKIM) for Rapid Detection of Mutations of Concern Reveals Emergence of Global Mutation Patterns** – Published paper in Viruses 2022 on the detection of mutations associated with SARS-CoV-2 variants of concern.
- **Co-author, Transmission tracking using intra-host quasi-species (variants)** - Contributed to a method of precision tracking that was presented to the SARS-CoV-2 Sequencing for Public Health Emergency Response, Epidemiology, and Surveillance (SPHERES) consortium led by the CDC.

- **Second Author, Abstract for “Forecasting mutations of concern: A survey of SARS-CoV-2 intra-host viral diversity across the NCBI Sequence Read Archive (SRA) data”** – Contributed to research project that will be presented at the American Society of Tropical Medicine and Hygiene meeting in November 2021.
- **First & Presenting Author**, Poster presentation at 2021 Junior Science and Humanities Symposium Fair, 2021 Montgomery County Science Fair and 2020, 2021 National Consortium of Secondary STEM Schools.

RESEARCH & WORK EXPERIENCE

Minor Variant Analysis of SARS-CoV-2 to Predict Variants and Influenza to Track Viral Spread

Mentor: Dr. Matthew Conte and formerly Dr. Irina Maljkovic Berry, Walter Reed Army Institute of Research (WRAIR) June 2020 - Present

- Interned for over 1800+ hours at WRAIR to identify patterns in Influenza genomes to improve precision tracking of viral spread in enclosed spaces. Offered a paid part-time position to continue assisting with SARS-CoV-2 viral analysis.
- Identified patterns in Influenza genomes to improve precision tracking of viral spread in enclosed spaces.
- Contributed to a method of viral precision tracking that was presented to the SARS-CoV-2 Sequencing for Public Health Emergency Response, Epidemiology, and Surveillance (SPHERES) consortium.
- First author of published paper on screening SARS-CoV-2 genomes for mutations and variants of concern rapidly and efficiently.

Sleep, Vascular Function, and Circadian Clearance of Molecular Species in Apolipoprotein E4-Associated Alzheimer’s Disease Risk

Mentors: Dr. Elizabeth Proctor and Dr. Bruce Gluckman Aug 2022 - Present

- Conducting Partial Least Squares (PLS) analysis on neocortex data of mice with Alzheimer’s to understand impact of cytokines and the immune system
- Studying sleep and sleep scoring in mice

Prediction Model to Differentiate Mantle Cell Lymphoma (MCL) and Diffuse Large B-Cell Lymphoma (DLBCL)

Mentor: Dr. George Wright, National Cancer Institute (NCI) Aug 2019 - Mar 2020

- Analyzed the genetic expression of patients with DLBCL and MCL and created a predictive model to differentiate between DLBCL and MCL, solely based on the expression of the gene.
- Achieved an accuracy of 98.5% and identified a correlation between MCL and the mTOR pathway by running a gene signature expression analysis.

CLINICAL VOLUNTEERING

Intensive Care Unit (ICU) Volunteer, Suburban Hospital (290 hrs.)

July 2018 – March 2020

- Volunteered for over 290 hours at the ICU, assisting critically ill patients, their families, physicians, and nurses. Supported medical staff by delivering medications and answering calls from patient’s families.

Red Cross Volunteer, WRNMMC (50 hrs.)

July 2018 – Aug. 2018

- As part of the VolunTEEN program, volunteered for 50 hours with the Red Cross at WRNMMC’s Pediatric Hematology and Oncology unit by assisting young patients with life-threatening illness.

Volunteer, Village at Rockville Retirement Home (140 hrs.)

2016 - 2018

- Served the residents of the Village at Rockville Retirement Home for over 140 hours. Visited elderly patients including patients from the memory ward and assisted them around the retirement home.

MEDICAL SHADOWING

Clinical Observer, WRNMMC (200 hrs.) July 2018 - July 2019

- Observed over 200 hrs. of patient consultations, clinics, and life-changing surgeries as part of the Student Clinical Observer Opportunity Program (SCOOP) over two summers.
- Gained medical care knowledge and exposure to certain patient-care protocols.

Clinical Observer, Suburban Hospital (50 hrs.) July 2018 – March 2020

- Shadowed for 50 hours observing physicians, intensivists hold rounds, conduct consultations and create custom treatment plans. Observed intubations and a cardiac surgery.

RedCross VolunTEEN Observer, Pediatrics, WRNMMC (20 hrs.) July 2018 - Aug. 2018

- Observed for 20 hours as pediatricians in the pediatric unit assisted young patients with life-threatening diseases, such as cancer. Witnessed chemotherapy treatments, taking vitals, and blood draws.

LEADERSHIP & SERVICE

Managing Editor, Journal, International Youth Neuroscience Association (IYNA) June 2020 - Present

- As Managing Editor, support the monthly publication of the IYNA's youth neuroscience journal. Manage team of editors, edit articles, and collaborate closely with the Editor-in-Chief.
- As Public Relations Director, managed and led social media and fundraising teams for the IYNA, a growing organization with 6000+ members. Developed strategies to advertise and cultivate member base.
- As a MYELIN High School Reviewer, contributed to the development of a global high school neuroscience curriculum. Dedicated several hours weekly to reviewing and improving didactic materials.

Youth Commissioner, Montgomery County Commission on Children and Youth Oct. 2018 - June 2020

- Appointed and reconfirmed as a Youth Commissioner for two years in a row. Advocated, developed, and helped pass legislation to improve programs and services for youth in Montgomery County by collaborating with the county council, Board of Education, and other stakeholders in the community. Successfully advocated to pass legislation to fund the "Kids Ride Free" program that provides 24/7/365 free access to transit services for youth.
- Increased awareness and improved pedestrian safety via the Vision Zero initiative and initiated the involvement of student voices in the process. Conducted the Annual Youth Roundtable Conference two years in a row and co-chaired the Mental Health sub-committee and Strengthening Youth and Law Enforcement Relations sub-committee.

Leader, Code Girls, an AspireIT program Sep. 2019 – May 2022

- Coach and mentor underserved and underrepresented high school girls in the field of computer science. Organized a Women in Stem Seminar to introduce students to female professionals in STEM careers.
- Teach members skills such as Python, Java, HTML, Java Script, and web design. Applied for and received \$1,500 funding to continue to provide resources, tools to inspire girls to foster a passion for computing.

Ombudsman and News Editor, Silver Chips Print Sep. 2019 – May 2022

- Serve on the editorial board and leadership team for the award-winning school newspaper. Write a personal column to inform the Silver Spring and Blair community.

Scout and Program Officer, Medical Explorer Post, Suburban Hospital Sep. 2018 - June 2020

- Trained to provide CPR, AED and severe bleeding restriction services. Organize medical related activities in an interactive and educational program to introduce students to health professions by collaborating with the region's top physicians and healthcare professionals.