

Aviva H. Schwarz

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<https://avivaschwarz.github.io/>

Summary:

Aviva Schwarz is a senior at the Bronx High School of Science. She is passionate about STEM, particularly engineering, with a focus on environmental applications and mitigating anthropogenic climate change. Her favorite courses at school are American Studies, the Science Research Track, AP Physics C, and AP Bio. She is also a cellist in the Bronx Science Orchestra.

In school, she is the digital director of the Bronx Science Journal of Biology. Aviva is also an engineer on the FeMaidens, Bronx Science's all-girls FIRST robotics team. Recently, she was named Chief of Mechanical Engineering on Bronx Science's new unmanned aerial systems team named "Skunkworks", where she will be designing and constructing a system capable of autonomous flight and navigation for the annual AUVSI SUAS competition, against teams from colleges and international air force academies. She is part of Bronx Science's National Honor Society and volunteers as a Big Sib in Bronx Science's little sib program to welcome and advise the 9th graders.

Outside of school, she is a volunteer mentor for three middle school robotics teams (FLL), and she is the chairwoman of the NYC FIRST Student Event Coalition. Aviva is also NYC's chapter leader in the Youth Climate Action Coalition (YCAC).

She has spent the past two years working as a research intern with Dr. Joaquim Goes' lab at the Lamont-Doherty Earth Observatory, part of Columbia University, and they are studying algal blooms of the Arabian Sea at the microscopic level of the cells and the macroscopic level of satellite imagery.

Recently, she has taken on an additional research internship with NYU Professor Joshua Aronson and Professor Barry Cohen in their new Applied Mindfulness Development Group (AMDG), and she is a leader on the engineering side of a research and development project to create accessible mindfulness and meditation tools for children based on real-time biological feedback.

Some fun facts about Aviva: her name is a palindrome, and she has been playing cello for 13 years!

Education: Senior at The Bronx High School of Science.

Advanced Courses Currently Taking:

- AP Physics C (Electricity + Magnetism, as well as Mechanics)
- AP Calculus AB¹
- AP Comparative Government
- AP English Literature
- Senior Physical Science and Biology Research

Notable Completed Courses:

- Research Literacy
- Elements of Engineering
- Honors Biology
- Honors Algebra
- Honors English
- Physical Science and Biology Research (10th, 11th)
- AP Biology
- AP European History
- AP English Language
- AP US History
- AP Psychology
- AP Physics 1

Overall Unweighted GPA:

- 97.18 on the hundred-point scale²
- 4.00 on the four-point scale

¹ See personal disruption in the context of the Coronavirus pandemic note (pg 10) for explanation

² The Bronx High School of Science does not have weighted GPAs, nor do they provide class rankings

References

1. Max Chomet, my research teacher at the Bronx High School of Science.
 - a. chometm [at] bxscience [dot] edu

2. Professor Shaiel Yitzchak, the director and founder of LearningWorks Hacker Camp, (a camp in which I was a staff member). He is also a robotics professor at the Hebrew University of Jerusalem.
 - a. shaiel [at] thelearningworks [dot] org

Research

- Intern Researcher at Columbia University's Lamont-Doherty Earth Observatory (June 2019-present)
 - Investigative lead on experiment studying anthropogenic nutrient impact on harmful algal blooms. Two papers in progress.
 - Worked under Dr. Joaquim Goes and Dr. Helga Gomes at their marine biology lab, focusing on climate change impacts and algal blooms. Specifically, I worked with *Noctiluca scintillans* in both a lab and satellite setting to understand the algal blooms of the Arabian Sea and the causes of their proliferation.
- Intern Researcher with NYU Professor Joshua M. Aronson and NYU Professor Barry Cohen's new Applied Mindfulness Development Group (AMDG).
 - I am leading the engineering side of a research and development project to create accessible mindfulness and meditation tools based on real-time biological feedback for young children, particularly those who have experienced trauma or are in high-stress conditions.
 - We have a team of seven students in addition to the two professors

- Represented the Bronx Science research program in a Math For America (MfA) panel
 - The MfA class was called "Building a Science Research Program", and the purpose was to illustrate the Bronx Science research track process to aid teachers and administrators from other high schools in developing their own science research programs.

- I discussed the process of getting my research internship at the Lamont Doherty Earth Observatory, and how the research program was a contributing factor in my choice to pursue a career in STEM. I also discussed how I learned perseverance and how I dealt with rejection in the process of sending dozens of cold emails while seeking a research position before I finally found my lab. I was on the panel at the request of my senior science research track teacher.

Accolades

International

- Coauthored research that was presented by a peer at the American Geophysical Union (AGU) Ocean Sciences Meeting (2020)
- Cubes in Space Winner
 - Experiment selected to go into the upper atmosphere on NASA's RB-6 mission (originally scheduled for 2020, delayed due to COVID-19)
- AP Scholar with Distinction (2020)
- Film Showing and Honorable Mention from the United Nations (2016)
 - Writer and Editor on "Day of Stress" short film selected to be shown at *Peace in the Streets Global Film Festival* at the United Nations

National

- NMSC National Merit Semifinalist (2020)

School

- Bronx Science National Honor Society Member, based on both academic achievement and community service (2019, 2020)

Teaching and Leadership

- Chief of Mechanical Engineering on Bronx Science's new Association for Unmanned Vehicle Systems International Student Unmanned Aerial Systems Competition team ([AUVSI SUAS](#)). (Sep. 2020- Present)
 - I am directing the fabrication and design process as well as collaborating with our software engineers to develop a competitive unmanned aerial system.
 - Helped create the team this fall by recruiting members
 - We are one of three high school teams in the world registered to compete. All other teams are from universities and international military academies.
 - I am co-leading fundraising efforts through outreach to potential sponsors
 - The competition involves designing, documenting, and demonstrating an unmanned aerial system with autonomous flight capabilities such as remote sensing and navigation.

- Chairwoman, formerly officer in the New York City FIRST Student Events Coalition (2018-present)
 - We support student leadership in the NYC FIRST robotics community by involving students in the organization of events and coordination with NYC FIRST staff, teams, students, mentors, and professionals.

- Editorial Leadership Team (Digital Director, Webmaster, Acting Treasurer) for the Bronx Science Journal of Biology (2019-present)
 - Pioneered our new website, manage the website as the primary publication platform.
 - Oversee bookkeeping and outreach within the school.
 - Contributed my own climate research to the journal

- Youth Climate Action Coalition NYC Chapter Founder, Leader (2020-present)
 - Applied to create a new chapter in NYC. Currently, I lead the chapter and collaborate with other NYC students on climate justice initiatives such as online awareness campaigns to expose corporate and political greenwashing.
 - Manage online platforms, recruit new members

- National Honor Society Member, the Bronx Science National Honor Society

- Tutored students, volunteered for community service (2019-present)

- Big Sib in Bronx Science's program (2019-present)
 - Lead guidance meetings with freshmen, foster bonds in freshman community, advise freshmen on academics, mental health, and creating a school/life balance.

- Staff at the LearningWorks' Hacker Camp in Jerusalem (2017, 2018)
 - Taught kids ages 6-13 robotics, engineering, programming, research literacy, chemistry, workshop + prototyping and software development at the Hacker Camp, part of The Learning Works Organization.
 - Helped supervise field trips to companies and startups such as Facebook, Intel, Google, Glide, and The 3D Printing Factory
 - Organized activities such as designing a model city and debating the necessity of space exploration.
 - Worked in my native language, English, as well as Hebrew.

- Volunteer for the Anderson School's three FLL Teams (2018- Present)
 - Taught students ages 10-12 FIRST lego league robotics, including programming, robot design and construction, and values such as cooperation and communication.
 - Taught scientific research skills for the science project component of the FLL competition

- Hand in Hand Camp Robotics Workshops (2018)
 - Volunteered to teach Lego Robotics and Eeve3 Mindstorm programming and design robotics workshops to a group of students, ages 9-12, communicating only Arabic and Hebrew
 - Worked with the Hand in Hand Organization, which is dedicated to building inclusion and equality between Arab and Jewish citizens of Israel through a growing network of bilingual and integrated schools and summer camps.

Volunteering

- Manager, Founder, Ugandan Artisans online store (2020-present)
 - Created + manage an online store for female Abayudayan artisans (Ugandan Jews). I sell their crafts and send them the proceeds. I work with a college student in Kenya named Isaac Wamani, whose mother and grandmother make the crafts.
- Bottomless Closet in NYC (2016)
 - Spoke to corporate companies including the Colgate-Palmolive Company on behalf of the Bottomless Closet organization to secure donations of toiletries and funds. Bottomless Closet is an organization that works to reduce the barriers New York City homeless or unemployed women face in the search for employment as well as provide on-going support and education so they gain the tools to join or rejoin the corporate workforce.
- Hand in Hand Camp Fundraising (2016)
 - Raised funding for a puppet-making program at the Hand in Hand school in Jerusalem, as well as volunteering at one of the summer camps.
 - Worked with the Hand in Hand Organization, which is dedicated to building inclusion and equality between Arab and Jewish citizens of Israel through a growing network of bilingual and integrated schools and summer camps.

Hackathons

- ByteHacks, an all-female Hackathon at ThoughtWorks, 2018
<https://devpost.com/software/vendaje#updates>
 - Organized a group of high schoolers and college students.
 - Designed Vendaje, an Expo- based application that targets children and teaches children how to self-treat minor injuries such as bug bites, cuts, and bee stings. We made the app as usable for very young children as possible, and all treatments can be played out loud in English or Spanish so children with limited reading proficiency will be able to follow the intuitive design. Another major feature of our app is the emergency feature which immediately dials and calls 911.

- AtomHacks, at The Bronx High School of Science, 2018
 - <https://devpost.com/software/student-overflow>
 - Founded and organized a co-ed freshman high school team
 - Designed and developed Student Overflow, an application that optimizes the forum-based question and answer uses of Yahoo answers and Reddit, but without the unnecessary mess. We used Material Design principles to create an intuitive user interface, and we provided the features that we know students search for when they look for academic help online

Competitions

- 2020 Congressional App Challenge (submitted, awaiting results)
 - I designed a COVID-19 resource (video demo [here](#)) for the 2020 Congressional App Challenge. It makes information on the virus more accessible for New Yorkers, with translations to Spanish and Mandarin throughout. It also helps people explore the city while avoiding overcrowded areas, with a hub to real-time camera feeds of popular destinations.

Certifications

- [AWS Fundamentals: Going Cloud-Native](#)
 - To develop my computer science skills, I completed a Coursera Amazon online course in cloud computing fundamentals, which improved my understanding of cloud computing and data processing.

C.A.D. Software

- Autodesk Fusion 360
- TinkerCad
- SolidWorks
- Onshape

Languages

- English- ILR Level 5 – Native or bilingual proficiency
- Spanish- ILR Level 2- Limited Working Proficiency
- Hebrew- ILR Level 2- Limited Working Proficiency

Robotics Team

- Engineer on the FeMaidens (FRC 2265) FIRST Robotics Team (all-girls), at the Bronx High School of Science (2017-Present)
 - Lead engineering mechanism group on the robot that took us to the international championships (2019)
 - Represent the team in efforts to win various awards
 - Solely presented team business plan and went through the interview process to win the Entrepreneurship Award at the NYC Regional (2019)
 - Represented team for Chairman's Award, the most prestigious award in our league. Picked for representation due to my extensive STEM-related volunteering efforts.
 - Design, construct, and program a robot to compete in the FIRST Robotics Competition in six weeks
 - The FeMaidens team's work has been featured in: Teen Vogue, Forbes, The New York Times, USA Today, The Today Show, Cosmopolitan, Popular Mechanics, Lenny, the book She's So Boss, the 2016 San Francisco International Film Festival Schools at the Festival Official Selection Fe Maidens (Iron Maidens), and the PBS six-part mini-series Iron Maidens, as well as several international publications in Canada, Italy, China, and South Korea.
 - The team won the Semifinalist and Imagery Award in 2017 at the New York City Regional, FIRST Robotics Competition
 - The team won the Engineering Inspiration award in 2018 at the New York City Regional, FIRST Robotics Competition, for our outreach and bringing engineering and STEM to younger students in our community

Musical Training

- Studied cello for 13 years through independent practice and training with the Kaufman Center (2007-2017)
 - Member of the Anderson School's orchestra (2013-2017)
 - Member of the Bronx High School of Science's orchestra (2017-present)

Personal disruption in the context of the Coronavirus pandemic

Last spring, during NYC's COVID-19 shutdown, my youngest brother became seriously ill. My parents attempted to care for him at home for several weeks, but when his condition worsened, he had to be hospitalized. His hospitalization and lengthy recovery took a toll on the entire family, myself included. During that time, I fell behind in classwork, and the dip in my grades during that period prevented me from qualifying for AP Calculus BC, which is why I am taking AP Calculus AB along with AP Physics C this year. I worked hard and brought my grades back up by the end of the year, but the time for appealing for the course had passed. Thankfully, my brother has made a complete recovery.

I was not able to take the Physics and Math 2 SAT Subject Tests due to the pandemic and closed testing centers.

My family has been caring for an immunocompromised family member at her home during her ongoing chemotherapy treatment since November, which has resulted in my family being split between her house and our own house in two separate states to minimize the risk of COVID-19 infection.