

Abigail Miller

55 Wendell Street
Winchester, MA 01890
firencasey@gmail.com

High school senior seeking pursuing college acceptance in biology and/or chemistry and medicine.

SKILLS

Google Docs	Google Slides	Google Sheets
Canva Graphic Design	Google Drawings	Discord Coding
Fiji Analysis Software (ImageJ)		

WORK HISTORY

Aging & Neurodegenerative Diseases Intern / Research Assistant **Summer 2024** **University of Rhode Island – The Ross Lab**

<https://ryaninstitute.uri.edu/ross-overview/>

Dr. Jaime Ross' lab works towards attaining a greater understanding of the metabolic consequences and underlying molecular mechanisms of aging and age-related diseases with a particular focus on brain aging and neurodegenerative disorders including Alzheimer's and Parkinson's diseases. The Lab's work investigates the interconnectedness of several hallmarks of the aging process: mitochondrial dysfunction, deregulated gene expression (epigenetic alterations), and chronic inflammation, focusing on the whole body as well as key brain regions and neuronal populations. Activities performed working with Dr. Ross' lab and team include the following:

- Contributed to the lab's overall research project methods, specifically in the areas of cell cultures, tissue histology, and staining.
- Regularly washed, lysed, and split cell populations (test, 24hr, 48hr, and 72hr samples) for lab team experiments.
- Sectioned and stained mouse brain and liver samples and prepared slides to support lab team experiments.
- Performed multiple Western Blot procedures.
- Successfully grew and managed my own population of carcinogenic epithelial cells.
- Participated in weekly full lab team meetings to discuss progress and outcomes of research activity.
- Assisted in research used for publication of abstract on the above referenced work, *The Interconnectedness of Epigenetic Alterations and Mitochondrial Dysfunction During the Aging Process*, by Hunter, Bartman, Coppotelli and Ross.

Genetics & Molecular Biology Lab Intern **Tufts University - Malavika Raman Lab**

Summer 2023

<https://gsbs.tufts.edu/faculty-research/malavika-raman-lab>

Dr. Malavika Raman's lab seeks to modify and enhance how cellular activity impacts DNA. The lab studies neuro-degenerative diseases and how Valosin-containing protein (VCP) and Ubiquitin-Modified Substrates can reverse various disease impacts. See above weblink for a more formal (and likely more

correct) technical description. Activities performed working with Dr. Raman's lab and team include the following:

- Reviewed peroxisome activity in kidney STEM cells to analyze various drugs reactivity
- Reviewed, analyzed, and recorded capability of synthetic degenerative neurons to permanently correct cell behavior through receipt of various drug elements.
- Reviewed disease activity in the progression and development of Henrietta Lacks (HeLa) cell line
- Observed image analysis of STEM cells using a LSM 880 confocal microscope
- Regularly observed and exchanged experiments at the lab's three fume hoods for lab partners.
- Participated in weekly full lab team meetings to discuss progress and outcomes of research activity

Fashion Model & Professional Actress

2011 to Present

- **AMC Television Network** – *Invitation to a Bonfire* TV movie, production Sept 2022 – January 2023, played the part of Dorothy, one of the top actors.
- **Hasbro, Inc.** Harry Potter Lego Set Print Advertising
- **Hasbro, Inc.** Video Commercial & Print Advertising – Transformers Bumblebee
- **Burberry & Company** – *Boston Magazine*, July 2011, Inside Cover Table of Contents main graphic image and Center Kids fashion page
- **Hasbro, Inc.** – Mousetrap Game website
- **Hasbro, Inc.** – Gymnastics Vault Game website commercial

Landscape Maintenance

2021 to Present

Mowed lawns for new subdivision common areas for local general contractor.

EDUCATION

National Institutes of Health (NIH)

Introduction to Lab Safety Course

January 2024

Learned risk management principles regarding common hazards and exposure risks, including chemical, physical and biological hazards that are typically found in NIH research laboratories. Learned how to reduce or eliminate hazard exposure and emergency response procedures as well as NIH waste handling procedures Learned best practices for engineering and personal protective equipment.

Winchester High School, Winchester, MA

2020 to Present (Class of 2025)

Completing Junior year, advanced placement and honors classes. GPA 3.91 (weighted). Advanced Placement (AP) courses are generally not accessible until junior and senior year. Coursework to date is as follows:

AP Calculus AB	AP Literature & Composition
AP English Language & Composition	AP Human Geography
AP Spanish Language & Culture	Honors Anatomy & Physiology
Honors Physics	Honors American History
Honors Biology	Honors Chemistry
Honors Spanish I	Honors Spanish II
Honors Spanish III	Honors Spanish IV
Honors English I	Honors English II & Writing
Honors World History I	Honors World History II

Honors Theatre Arts I

Honors Theatre Arts II

Advanced Math STAG 9 (Statistics, Technology, Algebra, Geometry)

Advanced STAG 10 (Statistics, Trigonometry, Algebra, Geometry)

Advanced Pre-Calculus

Applied Neuroscience Teacher's Assistant (TA)

Student Help Desk Volunteer

Aberjona Chapter of the National Honors Society - Member

Formally recognized and accepted by the National Honors Society (NHS). NHS students must achieve and maintain an exceptional academic record and deliver three (3) separate essays, and maintain a rigorous community service threshold throughout their academic career.

Jose Santos Chocano Chapter of the National Spanish Honor Society - Member

Formally recognizes students in Spanish who attained grade of A or higher for all years of secondary instruction.

Department Award – Social Studies 2024

Recognized for outstanding sustained academic performance over entire secondary school career and exceptional classroom engagement, promoting excellence in achievement and for being an example to other students in leadership.

Audio Video & Lighting Crew - Officer

Elected officer of high school tech crew. Responsible for planning, operating, and maintaining AV & lighting equipment to support all high school performances and productions including plays, musicals, talent shows, guest performances/speakers, and outside events. AV&L Crew has a membership of over 40 students and is a major functional part of the very active 1,600 student body.

Improv Club – Founder

Started and led new after school club gaining official club status focused on the performance art of improvisation. Over a 4-year period reached attendance of 35 students where public performance skills were taught, practiced, and refined.

Ribbons for Cancer, Inc. – Founder & President

Started and led non-profit student organization to raise awareness and money to help find research cures for cancer. Created handmade ribbons in large quantities for all known cancers and a display board where donations were accepted in exchange for a ribbon and a discussion about how important it is to find solutions. Secured approvals from WHS, Stop & Shop, and Starbucks to host awareness tables over many different days. Organized a 12-person student group in that completed all 26 miles of the annual Jimmy Fund Boston Marathon Walk for Cancer (2022, 2023, and 2024).

Backyard State of Mind Musical Performance Group – Founder & Director

Started new 9-piece musical performance group (all students) as mainly a cover band but a group that is also working on performing some of its own musical creations. Created and distributed flyers, held auditions for every member, and is the overall band manager and lead composer. Organizes and leads all practices and successfully (so far) keeps all members inspired and excited to perfect their craft.

EXTRA-CURRICULAR

Ecuador Short Term Work Trip – Member of a 15-person team of all ages who traveled to Ecuador to partner with Life Giving Water International to help build a local rural water system for indigenous poor Quichua at or above 14,000 feet in elevation in the Andes Mountains outside of Riobamba. Spent just under 2 weeks helping to build a new water system for 1,500 people who have never had clean, readily available running water before. June 23, 2023 to July 10, 2023.

Boston Brazilian Jiu-Jitsu – Martial arts self-defense training that I have been doing regularly since 2015. Achieved Orange belt status.

Scouts BSA (formerly Boy Scouts of America) – Quartermaster (managing secretary, a formal troop leadership position) for Troop 507 in Winchester. Participated in numerous overnight camping (including cold weather camping), canoe trips, community service projects, and merit badge related programs of study and activity. Was one of only a few girls to join the BSA after they changed their rules.

Girls Scouts of the USA – Participated in the local Girl Scout Troop from second grade through seventh grade.

Accomplished Pianist performing in local concerts and solo shows to small groups. Taking lessons since 2013.

Science Olympiad – Participated in Winchester's chapter of Science Olympiad. Active in numerous competitions and events district, state, and regional. Won first place in State's competition for Designer Genes in 2022.

Grace Chapel, Lexington, Massachusetts Youth Group and Hope Christian Church Youth Group.

LANGUAGES

Fluent in English and Spanish (read, write, speak). Studying Japanese, Arabic, Haitian Creole, and Esperanto.