Brooks J Rady

Student at The University of Sheffield

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OBJECTIVE

A perpetually curious student with a keen interest in molecular biology and computer science. Seeking to engage in research and work alongside the professionals in the field to further my own skill-set.

FORMAL EDUCATION

Molecular Biology at The University of Sheffield (2019-2023)

Prospective Mark: 1st Class Honours

Bioengineering at The University of Sheffield (2018-2019)

Weighted Average: 89.25%
Received the Sir Harold West Award

Prospect Ridge Academy High School (2014-2018)

GPA: 4.741 (4.00)
Graduated Summa Cum Laude
Received National AP Scholar Award
Received First Place for Senior Capstone Project

EXPERIENCE

Software Lead & Co-Presenter (2019)

Member of the University iGEM Team, Sheffield UK

iGEM is a synthetic biology competition involving universities from around the globe. Our team designed a low-cost, open-source microplate reader for use in community labs. I developed the software that powered our device and presented our project at the Jamboree in Boston, Massachusetts.

- Designed custom sensor and control electronics
- Developed firmware for an ESP32 using C
- Built a web-interface using HTML, CSS, and JS
- Exercised team communication and planning skills
- Awarded Best Presentation in the UK

Programming Mentor & Workshop Instructor (2018-Current)

Volunteer Teaching at the University, Sheffield UK

For the past couple of years I've been either helping to teach Python via organisations like Cookies and Code, or have been running programming workshops for the Sheffield Bionics Society. I've been both an entry-level and advanced instructor, working with both individuals and large groups.

- Communicated complex concepts understandably
- Demonstrated organisational and interpersonal skills
- Developed existing skills in computer programming
- Helped others leverage computation in their research

Lost in Translation: Proteins Post-Expression (2019)

Scientific Poster — `http://bit.ly/36bKMPG`

Scanning the literature, I stockpiled information regarding the post-translational modification and trafficking of proteins. From this body of research, I picked out the most important points to be presented as part of the poster — striking the balance between rigour and brevity.

- Selected key points from a large body of research
- Demonstrated a competency in graphical design
- Elucidated the connections between concepts

Creepy Phenomena: An Investigation of Viscoelasticity (2019)

Scientific Report — `http://bit.ly/2PkNP2b`

As part of a university physics course, I wrote a report analysing an experimental video showcasing a particular viscoelastic model. Working backwards from only the video and the volume of the syringe, the fundamental constants of the system were calculated.

- Used maths and statistics to model a physical system
- Demonstrated writing and problem solving skills
- Created a report using LaTeX, R, and Knitr

Founder of PRA Robotics (2014-2018)

Prospect Ridge Academy, Colorado USA

The PRA robotics team competed in both the First Tech Challenge (FTC) and the Autonomous Vehicle Competition (AVC). The team has now grown to several dozen members and continues foster students' interest in robotics.

- Led software development for both FTC and AVC
- Ran Java programming workshops for new recruits
- Competed as finalists in the FTC State Championship
- Developed skills in autonomous control engineering
- Showed leadership skills by managing a large team

FTC_HTTP: Wireless FTC Robot Programming Tool (2017)

Cross-platform CLI Application — `http://bit.ly/ftc_http`

FTC teams used to be forced to choose between two programming toolchains: either a 5GB+ install and minute-long programming cycles, or an under-featured web-interface prone to code loss. By reverse engineering the web protocol, `FTC_HTTP` allows wireless development from any text-editor, on any platform, in less than 8MB.

- Reverse engineered an undocumented protocol
- Created a polished, cross-platform application
- Demonstrated skills in Rust, HTTP, and Git
- Produced documentation and a video tutorial
- Shared the application with others during FTC events

Assistant Researcher (2016-2017)

Summer Placement at Avidity LLC, Colorado USA

During my time at Avidity, I designed a set of DNA tethers for use in multiplexed pathogen assays, worked on a directed evolution project, and explored the manufacture of lateral flow assays on an aluminium surface.

- Developed extensive wet-lab and digital biology skills
- Applied recombinant DNA technologies
- Showcased an aptitude for independent research

REFERENCES

Mr. Vernon Caswell, AP Computer Science Teacher at PRA <vcaswell@prospectridgeacademy.org>
Dr. Stephane Mesnage, Microbiologist at The University of Sheffield <s.mesnage@sheffield.ac.uk>

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ADDITIONAL WORK

Personal Web Server (2015-Current)
File-Sync, VPN, DLNA, FTP, Games, and Website — `http://thelostlambda.xyz/`

Tissue Who? — A Foray into Histology and Tissue Identification (2019)
A Short Histology Primer & Lab Report — `http://bit.ly/2ooernJ`

Under Pressure — Hydrostatics and Elastic Tube Distention (2019)
Modelling a Biophysical System from Data — `http://bit.ly/2qMQmYA`

In Vivo Detection and Signaling of Arbitrary DNA Sequences (2018)
Highschool Capstone Project Exploring a Novel Use for CRISPR — `http://bit.ly/2pbA9fk`

Pokéstats — What Type Of Pokemon Is The Match For You? (2018)
A Statistical Report Exploring a Large Pokémon Dataset — `http://bit.ly/2FVjMqh`

The Regicide of the Fisher King (2018)
AP English Literature Modernism Essay — `http://bit.ly/2FHoYSy`

Honors Physics "Build a Planet" Project (2017)
Exploring and Mathematically Modelling the Physics of a Fictional Planet — `http://bit.ly/2IA9f5F`

ADDITIONAL AWARDS & CERTIFICATES

- Best Communicated Solution during EWB Global Engineering Challenge (2019)
- Linnaeus Award for Excellence in Biology (2018)
- Hacker Award for Excellence in Computer Science (2018)
- National Honor Society (2017-2018)
- Prospect Ridge Academy High Honor Roll (2015-2018)
- Design Award at FTC State Championship (2017-2018)
- Second place in Junior Energy and Transportation at Colorado Science and Engineering Fair (2014)
- First place in Alternative Fuels at Denver Metro Science Fair (2014)

HOBBIES & INTERESTS

I'm into basically anything that bytes. When I'm not fiddling with programming or one of my computers, I indulge myself in video games. I've built the computer I play games on and have helped a number of others do the same. Since coming to Uni, I've developed an interest in cybersecurity and have joined the Sheffield Ethical Student Hackers.

Aside from computers, I've recently taken up photography. I can't draw to save my life, but I think I've gotten rather good at stealing art from nature. Photography for me is a fun blend of technical knowledge and artistic challenge.

Finally, I love to read and to write. I often end up doing lots of technical reading as a consequence of my computer science hobby, but certainly enjoy an awful fantasy novel when I can find the time for it.

REFERENCES

Mr. Vernon Caswell, AP Computer Science Teacher at PRA <vcaswell@prospectridgeacademy.org>
Dr. Stephane Mesnage, Microbiologist at The University of Sheffield <s.mesnage@sheffield.ac.uk>

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