

## Education

### **HARVARD UNIVERSITY**

S.B. in Engineering Sciences, Bioengineering Track; Secondary in Mathematical Sciences  
Cumulative GPA: 3.99; Concentration GPA: 3.98

Cambridge, MA  
May 2022

### **WILLIAM LYON MACKENZIE COLLEGIATE INSTITUTE**

Math and Computer Science honors program, Cumulative GPA: 96%

Toronto, ON  
June 2018

## Research Experience

### **MASSACHUSETTS GENERAL HOSPITAL**

*Research Student / Dr. Marc Wein*

Boston, MA  
June 2019 - May 2020, September 2020 - present

- Developing a novel hydrogel/nanoparticle/small interfering RNA drug delivery system to increase bone healing in fracture models
- Studying the effects of parathyroid hormone and small molecule inhibitors on signaling pathways in osteocytes, osteoblasts, osteoclasts, and hepatocytes in mice

### **TORONTO WESTERN HOSPITAL**

*Research Summer Student / Dr. Michael Tymianski*

Toronto, ON  
June - August 2017

- Studied microvascular decompression surgery efficacy for patients with trigeminal neuralgia
- Entered and analyzed data, created presentations, collaborated with general practitioners and researchers, and spoke with patients about longitudinal experiences post-surgery

## Professional Experience

### **ARTHUR HEALTH**

*Summer Intern / Dr. Raja Rampersaud*

Toronto, ON  
June - August 2020

- Co-developed a care plan for the general patient experiencing musculoskeletal pain
- Coded and updated the patient portal to make it more functional and easier to navigate
- Communicated physician recommendations—such as post-surgery exercise plans, over-the-counter medication suggestions, and concerning symptoms—to patients

## Volunteer Experience

### **BUTTERFLY CHILDREN'S HOSPICES**

*Volunteer*

Cambridge, MA  
May 2020 - present

- Manage and post on social media
- Fundraise for the Butterfly Home
- Co-directed a holiday fundraising effort (2020 winter)

### **HERZIG EYE INSTITUTE**

*Volunteer / Dr. Sheldon Herzig*

Toronto, ON  
January 2021

- Observed cataract, LASIK, PRK, SMILE, intraocular collamer lens, corneal cross linking, and refractive lens exchange surgeries, as well as patient consultation meetings
- Performed eye examinations using various tools and machines under the supervision of Dr. Herzig and/or other ophthalmologists, optometrists, and technicians at the practice
- Interacted with and took vitals of pre and post operative patients

**HARVARD UNDERGRADUATES RAISING AUTISM AWARENESS**

Cambridge, MA

*Co-President*

May 2020 - present

- Organize, volunteer in, and execute weekly events involving Harvard and Boston University volunteers and the autism community in the greater Boston area

*Volunteer*

October 2018 - April 2020

- Volunteered at weekly events

**PROJECT SUNSHINE**

Cambridge, MA

*Fundraising Chair*

August 2018 - May 2019

- Organized fundraising initiatives, coordinated with corporate sponsors, and launched social media campaigns
- Attended visits to Shriners and Tufts Children's Hospital

**REENA FOUNDATION**

Toronto, ON

*Volunteer*

October 2013 - May 2018

- Volunteered at weekly events with people who have developmental disabilities
- Participated in various activities such as bowling, cooking, and basketball

**Teaching Experience**

**INTRODUCTION TO FLUID MECHANICS AND TRANSPORT PROCESSES**

Cambridge, MA

*Teaching Fellow*

December 2020 - May 2021

- Created and graded homeworks and midterms
- Contributed to overall course planning
- Taught weekly sections and held office hours

**ZODIAC SWIM SCHOOL**

Toronto, ON

*Swim Instructor*

March 2017 - June 2018

- Designed lesson plans
- Taught and evaluated children from ages 2-15
- Created report cards and communicated with parents about student progress

**Extracurriculars**

**HARVARD UNDERGRADUATE SCIENCE OLYMPIAD**

Cambridge, MA

*President*

May 2020 - April 2021

- Managed the Directors and coordinated between divisions and external contacts

*Division C Director of Logistics & Operations*

May 2019 - April 2020

- Organized the annual Division C (high school) tournament
- Lead a team in organizing an international Science Olympiad in which 60+ high schools and 1000+ students participated

*Engineering and Building Event Supervisor Coordinator*

August 2018 - April 2019

- Oversaw and communicated with Event Supervisors for five engineering and building events in the annual Division C tournament

**KIRKLAND HOUSING COMMITTEE**

Cambridge, MA

*Stein Chair*

October 2020 - present

- Organize and execute social events for students in Kirkland House

**RADCLIFFE VARSITY LIGHTWEIGHT CREW**

Cambridge, MA

*Coxswain*

September 2018 - August 2019

- Raced in Foot of the Charles (Novice), Knecht Cup (Varsity C), and Beanpot (Varsity B)
- Practiced 5-6 days a week
- Steered the boat and gave calls to rowers

## **SOCIETY OF WOMEN ENGINEERS**

### *Member*

- Attended biweekly meetings
- Attended WE18: Society of Women Engineers National Conference

Cambridge, MA  
September 2018 - May 2019

## **WILLIAM LYON MACKENZIE CI**

### *Various Positions*

- Computer Programming Team (Co-President)
- Science Club (Co-President)
- Debate Team (Co-President)
- Health Occupations Students of America Club (Vice President of Training)
- Video Team (Vice President)
- Math Club (Tutor)
- Yearbook (Photographer)
- Envirothon
- Robotics Team

Toronto, ON  
September 2014 - June 2018

## **Fellowships and Awards**

Herchel Smith-Harvard Undergraduate Science Research Fellow	2021
Certificate of Distinction in Teaching	2021
John Harvard Scholar	2019 - 2020
Harvard Undergraduate Research Program Stone Father-Daughter Fund Award	2019
Harvard College Scholar	2018 - 2019
First at Ryerson University Re-Engineering Retail Hackathon	2018
Jim McQueen Excellence in Education Award	2018
Ontario Volunteer Service Award	2018
First in Canadian Computing Competition (Junior)	2016
Placed Fifth in Canada for Health Occupations Students of America (Epidemiology)	2016

## **Projects**

Engineering a Hydrogel Drug Delivery System for Controlled Delivery of SIK2/3 siRNAs in a Bone Fracture Model	2022
Rwandan Road Safety 2030: Strategies for Safer Roads	2021
Investigating the Effects of Vascular Patterning on Cardiac Patch Anastomosis	2021
Analyzing Two-Term Dominant Balances in Ordinary Differential Equations	2020
Education for Flourishing	2020

## **Skills and Techniques**

- |  |                                |
|--|--------------------------------|
| • Protein isolation and quantification | • Cell culture                 |
| • RNA purification                     | • Mouse handling               |
| • cDNA synthesis                       | • Mouse bone marrow extraction |
| • RT-qPCR                              | • RNA-seq analysis             |
| • Gel electrophoresis/ SDS-PAGE        | • Immunoprecipitation          |
| • ELISA                                | • CRISPR                       |
| • Titration                            | • ChIP-seq                     |
| • Western blotting                     | • Java, R, Python, MATLAB      |

**Sarah Goldfarb**  
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## References

**Marc Wein, MD, PhD**

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**Jennifer Lewis, ScD**

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