

# MARK PAMPUCH

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## EDUCATION

### Master of Science

Expected 08/2023

Western University / Schulich School of Medicine and Dentistry (London, ON)

- Master of Science candidate in Biochemistry
- Supervisor: Dr. Bogumil Karas

### Master of Science

09/2020-12/2020 (withdrawn from program)

University of British Columbia (Vancouver, BC)

- Master of Science candidate in Botany

### Bachelor's Degree (Hons): Science

04/2020

Western University (London, ON)

- Honors Specialization in Genetics

### Ontario Secondary School Diploma

06/2016

Marshall McLuhan Catholic Secondary School (Toronto, ON)

- Ontario Scholar Distinction
- Extended French Certificate
- Gifted Program (Grade 9 – 12)

## PROFESSIONAL EXPERIENCE

### Summer Researcher

04/2021 – 08/2021

Western University / Schulich School of Medicine and Dentistry (London, ON)

- Supervisor: Dr. Bogumil Karas
- Project title: Towards a synthetic algal chloroplast: a streamlined platform for creating designer chloroplast genomes in *Phaeodactylum tricornutum*.

### Snowboarding Instructor

12/2020 - 04/2021

Cypress Mountain Snow School – Cypress Mountain (Vancouver, BC)

### Research Participant / Thesis Student

06/2019 – 04/2020

London Research and Development Centre – Agriculture and AgriFood Canada (London, ON)

**Summer 2020 contract cancelled due to COVID-19**

- Supervisor: Dr. Krzysztof Szczygłowski
- Project title: Shaping the root: assessing a dose dependent role of the *Lotus japonicus* *HAR1* receptor kinase gene

### Summer Student

06/2019 – 08/2019

Biochemistry Summer Research Program – Western University (London, ON)

- Supervisor: Dr. Bogumil Karas

### Snowboarding Instructor

01/2019 – 03/2019,

Boler Mountain Snow School – Boler Mountain (London, ON)

12/2019 – 03/2020

- Beginner – Intermediate skill range
- 70+ students across group and private lessons

### Internship

05/2018 – 08/2018

MolecuLight Inc. – MaRS Discovery District (Toronto, ON)

- Case report forms: Data collection and processing
- Microbiological data analysis
- Literature reviews: Microbiology and Healthcare Economics
- Market research
- Competitor analyses
- Social media content strategy
- Website design aid and QA

**Private Snowboarding Instructor**

12/2016 – 03/2017

- Single client at novice skill level

**Private Tutor**

06/2014 – 08/2016

- Primary focuses: Biology and Chemistry
- Secondary focuses: Mathematics, Physics, and English

**EXTRACURRICULAR INVOLVMENT****Seed your Startup 2023 Semi-Finalist***Morrisette Institute for Entrepreneurship (London, ON)* ✎

03/2023

- Semi-finalist amongst one other student “co-founder” in university business plan competition
- Business plan entailed developing roadside drug screening devices for law enforcement services

**2023 Ivey Business Plan Competition Semi-Finalist***Ivey Business School (London, ON)* ✎

11/2022 – 01/2023

- Semi-finalist amongst two other student “co-founders” in North American business plan competition
- Business plan entailed developing roadside drug screening devices for law enforcement services

**London Track3 Adaptive Snow School Instructor***London Track3 Ski School – Boler Mountain (London, ON)* ✎

12/2019 – 03/2020

12/2021 – 03/2022

12/2022 – Present

- Snowboarding instructor for children and adults with physical, developmental, visual, and hearing challenges

**Community Representative***Biochemistry Graduate Students Association – Western University (London, ON)* ✎

09/2021 – Present

- Entailed promoting department or making a positive impact in the local community
  - ♦ Organized donation drive in partnership with Diabetes Canada
  - ♦ Organized biochemistry exhibit with Science Rendezvous

**Science Rendezvous Organizer***Science Rendezvous – Western University (London, ON)* ✎

07/2022

- Organized booth for Biochemistry Department to promote science to children and parents
- Performed hands-on DNA extraction demos from fruit

**cGEM Competition Judge**

10/2021

*cGEM* ✎

- Judge for national biotechnology competition in Canada

**Community Representative**

10/2020 – 04/2021

*SynBio Canada* ✎

- Update SynBio Canada executives on synthetic biology research at UBC and BC province

**iGEM Graduate Advisor**

10/2020 – 12/2020

*UBC iGEM – University of British Columbia (Vancouver, BC)* ✎

- Aid in different aspects of UBC undergraduate iGEM research project

**Council Member (Botany Department Representative)**

09/2020 – 12/2020

*Graduate Student Society – University of British Columbia (Vancouver, BC)* ✎

- Speaker on behalf of department needs to student government body
- Elected as representative by Botany Graduate Student Association
- Member of the elections committee

**Writer / Researcher**

09/2018 – 04/2019

*Western University Technology Review – Western University (London, ON)* ✎

- Writing articles on novel technologies for a local audience
- Sustainability department

**Chito Ryu Karate Training**

2004 – 2016

*Higashi Dojo (Toronto, ON) ♣*

- 1<sup>st</sup> Dan Black Belt in Chito Ryu Karate
- Weekly senior and youth group training
- Tournament competitions
  - ♦ Kata: 4 gold, 3 bronze; Kumite: 3 gold, 1 silver, 3 bronze
- Various demonstrations at other dojos and events

**Snowboarding Team**

2014 – 2016

*Marshall McLuhan Catholic Secondary School (Toronto, ON)*

- Participated in racing events at Mount St. Louis Moonstone (Coldwater, ON)

**CASI Level 1 Program**

12/2015

*Canadian Association of Snowboard Instructors – Lakeridge Ski Resort (Uxbridge, ON) ♣*

- Obtained CASI Level 1 Snowboard Instructor Certification

**Staff in Training**

07/2015 – 08/2015

*Seneca Summer Camps – Seneca College (Toronto, ON)*

- Mini-Multi's Sports Camp (ages 4 – 6)
- Engaging enthusiastically w/ children
- Planning and organizing weekly activities

**Model United Nations (CHAMUN)**

04/2015

*Chaminade College School (Toronto, ON)*

- Researching, debating, and cooperative problem-solving w/ regards to contemporary political issues

**Leader in Training Program**

07/2014

*Seneca Summer Camps – Seneca College (Toronto, ON)*

- Focuses: management, decision making, and problem-solving skills

**AWARDS****Chair's Travel Award**

09/2022

*Issued by the Department of Biochemistry of the Schulich School of Medicine & Dentistry*

- Issued to promote communication of research findings by supporting participation at international conferences.
- \$500

**Canada Graduate Scholarships – Master's Program**

09/2022

*Issued by the Natural Sciences and Engineering Research Council of Canada (NSERC)*

- \$17,500

**Ontario Graduate Scholarship**

09/2022

*Issued by the Ontario Government*

- \$15,000
- Awarded but declined due to conflict with NSERC award

**Ontario Graduate Scholarship**

09/2021

*Issued by the Ontario Government*

- \$15,000

**British Columbia Graduate Scholarship**

09/2020

*Issued by the Government of British Columbia*

- \$15,000

**Deans Honor List**

2017 – 2020

*Issued by Western University***Western Scholarship of Distinction**

09/2016

*Issued by Western University*

- \$1000

## PUBLICATIONS

- Walker, E.J.L., Pampuch, M., Chang, N., Cochrane, R.R., and Karas, B.J. (2023) Design and assembly of the 117-kb *Phaeodactylum tricornutum* chloroplast genome. *Plant Physiology*. Submitted, manuscript number: PP2023-RR-00842
- Pampuch, M., Walker, E.J.L., and Karas, B.J. (2021) Towards synthetic diatoms: The *Phaeodactylum tricornutum* Pt-syn 1.0 project. *Current Opinion in Green and Sustainable Chemistry*. <https://doi.org/10.1016/j.cogsc.2022.100611> ↗

## CONFERENCES / PRESENTATIONS

<b>International Conference on Algal Biomass, Biofuels and Bioproducts (AlgalBBB 2023)</b> <i>Waikōloa Beach, Hawaii, USA</i> <ul style="list-style-type: none"> <li>▪ Selected to present oral presentation.</li> <li>▪ Title: Towards Synthetic Diatoms: Advances in <i>Phaeodactylum tricornutum</i> nuclear genome engineering</li> </ul>	06/2023
<b>SynDiatoms 2023 Workshop</b> <i>Webinar</i> <ul style="list-style-type: none"> <li>▪ Speaker for 15 min presentation</li> <li>▪ Title: Towards Synthetic Diatoms: Advances in <i>Phaeodactylum tricornutum</i> nuclear genome engineering</li> </ul>	05/2023
<b>Graduate Research Spring Symposium 2023</b> <i>Western University / Schulich School of Medicine and Dentistry (London, ON)</i> <ul style="list-style-type: none"> <li>▪ Speaker for 15 min presentation</li> <li>▪ Title: Towards Synthetic Diatoms: Advances in <i>Phaeodactylum tricornutum</i> nuclear genome engineering</li> </ul>	05/2023
<b>2023 Bioenergy Conference</b> <i>Webinar</i> <ul style="list-style-type: none"> <li>▪ Speaker for 15 min presentation</li> <li>▪ Title: Genetic engineering advances in diatoms</li> </ul>	01/2023
<b>SynDiatoms 2022 Workshop</b> <i>Webinar</i> <ul style="list-style-type: none"> <li>▪ Speaker for 15 min presentation</li> <li>▪ Title: Optimizing transformation methods for <i>Phaeodactylum tricornutum</i></li> </ul>	12/2022
<b>Nanopore Community Meeting 2022</b> <i>Metropolitan Pavilion (New York City, NY)</i> <ul style="list-style-type: none"> <li>▪ Attendee for the workshop: An introduction to machine learning for Oxford Nanopore data, entailed; <ul style="list-style-type: none"> <li>♦ Building a basic basecaller using HMM's</li> <li>♦ Building a variant caller for using a convolutional neural network in PyTorch.</li> </ul> </li> </ul>	12/2022
<b>Canada SynBio 2022</b> <i>MaRS Discovery District (Toronto, ON)</i> <ul style="list-style-type: none"> <li>▪ Submitted abstract and selected for both oral (1/4 presenters) and poster presentations</li> <li>▪ Title: Towards Synthetic Diatoms: The Pt-syn 1.0 Project.</li> <li>▪ Video: <a href="https://www.linkedin.com/feed/update/urn:li:activity:6938749677995470848/">https://www.linkedin.com/feed/update/urn:li:activity:6938749677995470848/</a> ↗</li> </ul>	05/2022
<b>Graduate Research Winter Symposium 2022</b> <i>Western University / Schulich School of Medicine and Dentistry (London, ON)</i> <ul style="list-style-type: none"> <li>▪ Poster presentation</li> <li>▪ Title: Towards Synthetic Diatoms</li> </ul>	01/2022
<b>Ontario Biology Day</b> <i>McMaster University (Hamilton, ON)</i> <ul style="list-style-type: none"> <li>▪ Scheduled for 15 min presentation</li> <li>▪ Title: Shaping the Root: Assessing a dose dependent role of the <i>Lotus japonicus</i> <i>HAR1</i> receptor kinase gene</li> </ul>	03/2020 <i>Cancelled due to COVID-19</i>

## CERTIFICATIONS

### edX Verified Certificate for CS50's Introduction to Computer Science

11/2022

Issued by HarvardX

- Credential ID: [b2f0e720dcab45dabf14307458bffba8](#) ↗

### CASI Level 2 Snowboard Instructor Certification

03/2021

Issued by the Canadian Association of Snowboard Instructors (CASI-ACMS)

### Smart Serve

02/2018

Issued by Smart Serve Ontario

- Credential ID: e180222444625RS

### CASI Level 1 Snowboard Instructor Certification

12/2014

Issued by the Canadian Association of Snowboard Instructors (CASI-ACMS)

## PROGRAMMING AND I.T. KNOWLEGE

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>▪ <b>Python</b> – Intermediate</li> <li>▪ <b>R and R studio</b> – Intermediate</li> <li>▪ <b>bash/Unix</b> – Intermediate</li> <li>▪ <b>Git/GitHub</b> – Intermediate</li> <li>▪ <b>SQL/SQLite/MySQL</b> – Novice</li> </ul> | <ul style="list-style-type: none"> <li>▪ <b>JavaScript</b> – Intermediate</li> <li>▪ <b>HTML</b> – Intermediate</li> <li>▪ <b>CSS/Sass</b> – Intermediate</li> <li>▪ <b>Django</b> – Novice</li> <li>▪ <b>Node.js, Express, and MongoDB</b> – Novice</li> <li>▪ <b>C</b> – Basic</li> </ul> |
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## TECHNICAL SKILLS

- | <u>Computer Software Experience</u>  |  | <u>Laboratory Experience</u>  | <u>Technique Familiarity</u>   |
|--|--|---|--|
| <ul style="list-style-type: none"> <li>▪ <b>VS Code</b> – Proficient</li> <li>▪ <b>Microsoft Office</b> (including <b>Excel</b>) – Proficient</li> <li>▪ <b>Krona</b> – Proficient</li> <li>▪ <b>NCBI BLAST</b>– Intermediate</li> <li>▪ <b>Benchling</b> – Proficient</li> <li>▪ <b>SnapGene</b> – Intermediate</li> <li>▪ <b>ML-DSP</b> – Novice</li> <li>▪ <b>FigTree</b> – Novice</li> </ul> | <ul style="list-style-type: none"> <li>▪ <b>PyMOL</b> – Novice</li> <li>▪ <b>DNASTAR</b> – Novice</li> <li>▪ <b>Adobe Photoshop</b> – Intermediate</li> <li>▪ <b>Adobe Illustrator</b> – Intermediate</li> <li>▪ <b>Sony Vegas Pro</b> – Intermediate</li> <li>▪ <b>Audacity</b> – Intermediate</li> </ul> | <ul style="list-style-type: none"> <li>▪ DNA / RNA isolation</li> <li>▪ DNA assembly / delivery</li> <li>▪ Microbiology techniques</li> <li>▪ Bisulfide Conversion</li> <li>▪ Sanger Sequencing</li> <li>▪ qRT-PCR</li> <li>▪ CRISPR–Cas editing</li> <li>▪ Nanopore Sequencing</li> <li>▪ Bioinformatics for genomics</li> </ul> | <ul style="list-style-type: none"> <li>▪ Western Blotting</li> <li>▪ Agroinfiltration</li> <li>▪ Hairy root transformation</li> <li>▪ GUS staining</li> <li>▪ Minisatellite/Microsatellite analysis</li> <li>▪ Fluorescence <i>in situ</i> hybridization</li> <li>▪ Chaos Game Representation</li> </ul> |

## LANGUAGES

- | <u>English (Native)</u> | <u>French</u>    | <u>Polish</u>    |
|-------------------------|------------------|------------------|
| Speaking: ★★★★★         | Speaking: ★☆☆☆☆  | Speaking: ★★★★★  |
| Listening: ★★★★★        | Listening: ★☆☆☆☆ | Listening: ★★★★★ |
| Reading: ★★★★★          | Reading: ★★★★★   | Reading: ★☆☆☆☆   |
| Writing: ★★★★★          | Writing: ★☆☆☆☆   | Writing: ★☆☆☆☆   |

## ADDITIONAL SKILLS/HOBBIES/PASSIONS

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▪ Photo and video editing</li> <li>▪ Weight training</li> <li>▪ Snowboarding</li> </ul> | <ul style="list-style-type: none"> <li>▪ Web development</li> <li>▪ Rock climbing</li> <li>▪ Fitness enthusiast</li> </ul> |
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