Jacob Thomas Nearing

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Education

Postdoctoral associate, Harvard T.H. Chan School of
Public health, Broad Institute of Harvard and MIT — Feb. 2023 - Ongoing

- Supervisor: Dr. Curtis Huttenhower

PhD Microbiology and Immunology, Dalhousie University — Sept. 2017 - Dec 2022

- Supervisor: Dr. Morgan Langille
- Title: *Identification of robust biomarkers using microbiome DNA sequencing with a focus on the oral microbiome and cancer associations*

BSc First Class Honours in Microbiology and Immunology
with a Minor in Computer Science, Dalhousie University — 2013 - 2017

- Supervisor: Dr. Roy Duncan
- Title: *SYNPO2As Gene Repression Using the dCas9-KRAB CRISPR System* 2013 - 2017

Faye Sobey Undergraduate Student Research Award — 2016

(Faye Sobey Foundation $7,200/4 months)

NSERC-Undergraduate Student Research Award — 2015

(Government of Canada, $6,000/4 months)

Dalhousie University Faculty of Science Dean's List — 2013-2017

Dalhousie University Renewable Entrance Scholarship — 2013-2017

(Dalhousie University $16,000/4 years)

Publications

* Indicates co-first authorship

1. William A. Nickols, Lauren J. McIver, Aaron Walsh, Yancong Zhang, **Jacob T. Nearing**, Francesco Asnicar, Michal Punčochář, Nicola Segata, Long H. Nguyen, Erica M. Hartmann, Eric A. Franzosa, Curtis Huttenhower, Kelsey N. Thompson. (2024). Evaluating metagenomic analyses for undercharacterized environments: what's needed to light up the microbial dark matter? *Revisions*

2. Tobyn Branck, Zhiji Hu, William A. Nickols, Aaron M. Walsh, Amrisha Bhosle, Meghan I. Short, **Jacob T. Nearing**, Francesco Asnicar, Lauren J. McIver, Sagun Maharjan, Ali Rahnavard, Artemis Louyakis, Dayakar V. Badri, Christoph Brockel, Kelsey N. Thompson, Curtis Huttenhower. (2024). A comprehensive profile of the companion animal gut microbiome integrating reference-based and reference-free methods. *Revisions*

3. Vanessa Declercq, Robyn J. Wright, **Jacob T. Nearing**, Morgan G.I. Langille. (2024). Oral microbial signatures associated with age and frailty in Canadian adults. *Scientific Reports*

4. Emma Finlayson-Trick*, **Jacob T. Nearing***, Jordie AJ Fischer, Crystal D. Karakochuk, David M. Goldfarb. (2023). The effect of Oral Iron Supplementation on Gut Microbial Composition in Cambodian Women of Reproductive Age. *Microbiology Spectrum*

5. **Jacob T. Nearing,** Vanessa DeClercq, Morgan G.I. Langille. (2023). Investigating the oral microbiome in retrospective and prospective cases of prostate, colon, and breast cancer. *npj Biofilms and Microbiomes*

6. Vanessa DeClercq, **Jacob T. Nearing**, Ellen Sweeney. (2022). Plant-Based Diets and Cancer Risk: What is the Evidence? *Current Nutrition Reports*

7. Pre-print: Michael R. McLaren, **Jacob T. Nearing**, Amy D. Willis, Karen G. Lloyd, & Benjamin J. Callahan. Implications of taxonomic bias for microbial differential-abundance analysis. *bioRxiv.*

8. **Jacob T. Nearing*,** Gavin M. Douglas*, Molly Hayes, Jocelyn MacDonald, Dhwani Desai, Nicole Allward, Casey M.A. Jones, Robyn Wright, Akhilesh Dhanani, André M. Comeau, & Morgan G.I. Langille. (2021). Microbiome differential abundance methods produce different results across 38 datasets. *Nature Communications*

9. Vanessa DeClercq, **Jacob T. Nearing,** Morgan G.I. Langille. (2021) Investigation of impact of commonly used medications on the oral microbiome of individuals living without major chronic conditions. *PLOS ONE*

10. **Jacob T. Nearing,** André M. Comeau, & Morgan G.I. Langille. (2021). Identifying biases and their potential solutions in human microbiome studies. *Microbiome*

11. Mohammad Sultan, **Jacob T. Nearing,** Justin M. Brown, Thomas T. Huynh, Brianne M. Cruickshank, Emily Lamoureaux, Dejan Vidovic, Margaret L. Dahn, Wasundara Fernando, Krysta M. Coyle, Carman A. Giacomantonio, Morgan G.I. Langille, & Paola Marcato. (2021). An in vivo genome-wide shRNA screen identifies BCL6 as a targetable biomarker of paclitaxel resistance in breast cancer. *Molecular Oncology*

12. Janie Zhang, Jamie Cook, **Jacob T. Nearing**, Junzeng Zhang, Renee Raudonis, Bernard R Glick, Morgan G.I. Langille, & Zhenyu Cheng. (2021). Harnessing the plant microbiome to promote the growth of agricultural crops. *Microbiological Research*

13. **Jacob T. Nearing**, Vanessa DeClercq, Johan Van Limbergen, & Morgan G.I. Langille. (2020). Assessing the variation within the oral microbiome of healthy adults. *mSphere*

14. Katherine A. Dunn, Jessica Connors, Joseph P. Bielawski, **Jacob T. Nearing**, Morgan G.I. Langille, Johan Van Limbergen, Conrad Vincent Fernandez, Tamara MacDonald & Ketan Kulkarni. (2020). Investigating the gut microbial community and genes in children with differing levels of change in serum asparaginase activity during pegaspargase treatment for acute lymphoblastic leukemia. *Leukemia & Lymphoma*

15. Svetlana N. Yurgel, **Jacob T. Nearing**, Gavin M. Douglas, & Morgan G.I. Langille. (2019). Metagenomic functional shifts to plant induced environmental changes. *Frontiers in Microbiology*

16. **Jacob T. Nearing**, Jessica Connors, Scott Whitehouse, Johan Van Limbergen, Tamara Macdonald, Ketan Kulkarni, & Morgan G.I. Langille. (2019). Infectious complications are associated with alterations in the gut microbiome in pediatric patients with acute lymphoblastic leukemia. *Frontiers in Cellular and Infection Microbiology*

17. **Jacob T. Nearing**, Gavin M. Douglas, Andre Comeau, & Morgan G.I. Langille. (2018). Denoising the Denoisers: An independent evaluation of microbiome sequence error-correction approaches. *PeerJ*. https://doi.org/10.7717/peerj.5364

Presentations

1. **Invited: Jacob T. Nearing.** (November 2023). Integrating post sequencing workflows and statistical approaches to improve the robustness of microbial community data analyses. Microbiome Epidemiology Working Group. Harvard University, Cambridge, Massachusetts.

2. **Invited: Jacob T. Nearing** (November 2023). Integrating post sequencing workflows and statistical approaches to improve the robustness of microbial community data analyses. Tufts University, Boston, Massachusetts.

3. **Invited: Jacob T. Nearing** (March 2023). Gut microbiome-metabolome interactions during ketogenic diets of varied composition. Hill's Pet Nutrition. Topeka, Kansas.

4. **Jacob T. Nearing** (June 2022). Flash Talk: Do microbial biomarkers for breast, colon and prostate cancer exist in the oral microbiome? IMPACTT 2022, Canmore, Alberta.

5. **Invited: Jacob T. Nearing** (June 2022). Seeking out robust microbial biomarkers in sequencing data. NCI Journal Club, National Cancer Institute.

6. **Invited: Jacob T. Nearing** (February 2022). Microbiome differential abundance methods produce different results across 38 datasets. Second Genome.

7. **Invited: Jacob T. Nearing** (February 2022). Microbiome differential abundance methods produce different results across 38 datasets. Leah Greathouse's lab, Baylor University.

8. **Invited: Jacob T. Nearing** (October 2021). Gut Feelings in Microbiome Analysis. Ben Callahan's lab, North Carolina State University.

9. **Jacob T. Nearing** (March 2021). Exploration of the healthy oral microbiome and potential robust biomarkers in cancer. Dalhousie Microbiology and Immunology Seminar Series 2021.

10. **Invited: Jacob T. Nearing** (January 2021). Investigating the oral microbiome for biomarker discovery in cancer using data from the Canadian Partnership for Tomorrow's Health. Canadian Partnership for Tomorrow's Health Webinar 2021.

11. **Jacob T. Nearing** (June 2020). Demographic, Lifestyle, Anthropometric and Dietary Factors that Impact the Healthy Oral Microbiome Composition. Dalhousie Research Day 2020 (Halifax, Canada)

12. **Jacob T. Nearing** (March 2019). The Oral Microbiome of Individuals Living in Atlantic Canada with Prostate, Breast, or Colon Cancer. Crossroads Interdisciplinary Health Research Conference (Halifax, Canada).

13. **Jacob T. Nearing** (March 2019). How tiny communities of microbes living within the body can impact human disease. Three Minute Thesis Competition (Halifax, Canada).

14. **Jacob T. Nearing** (December 2018). Infectious Complications are Associated with Alterations in the Gut Microbiome in Pediatric Patients with Acute Lymphoblastic Leukemia. Dalhousie University Department of Microbiology and Immunology Seminar Series (Halifax, Canada).

15. **Jacob T. Nearing** (May 2018) Identifying Associations Between the gut Microbiome and Acute Lymphoblastic Leukemia. Dalhousie Graduate Student Research Day (Halifax, Canada)

16. **Jacob T. Nearing** (May 2018). Acute Lymphoblastic Leukemia and the Gut Microbiome. Cancer Research Training Program Workshop (Halifax, Canada).

17. **Jacob T. Nearing** (May 2018). Denoising the Denoisers. Centre for Comparative Genomics and Evolutionary Bioinformatics (Halifax, Canada).

Academic Awards

2019 I3V Graduate Studentship 2019-2021

(Dalhousie Medical Research Foundation, Honorary)

Research Nova Scotia, Scotia Scholars Award 2019-2022

(Research Nova Scotia $45,000/3 years)

Nova Scotia Graduate Student Scholarship 2019-2023

(Provincial Government of Nova Scotia $60,000/4 years)

Cancer Research Training Program Travel Award 2018

(Beatrice Hunter Cancer Research Institute $1,500)

2018 International Human Microbiome Congress Best Poster Award 2018

(University College Cork)

Cancer Research Training Program 2018-2019

(Terry Fox Research Institute $29,750/1.5 years)

Outstanding Academic Achievement in Microbiology and Immunology 2017

(Dalhousie Department of Microbiology and Immunology $100)

Abstracts

1. **Jacob T. Nearing**, Kelsey N. Thompson, Artemis S. Louyakis, Amrisha Bhosle, Tobyn Branck, Dayakar V. Badri, Eric A. Franzosa, Christoph Brockel, Curtis Huttenhower, Meghan I. Short. (July 2024). Capturing Primer-Specific Ambiguity in Taxonomic Classification for Amplicon Sequencing. ISMB 2024, Montreal, Quebec, Canada

2. William A. Nickols, **Jacob T. Nearing,** Kelsey N. Thompson, Curtis Huttenhower. (May 2024). Refining and extending generalized multivariate linear models for meta-omic discovery with MaAsLin3. HCMPH Symposium 2024, Boston, Massachusetts, USA.

3. **Jacob T. Nearing**, Dayakar Badri, Kelsey N. Thompson, Amrisha Bhosle, Tobyn Branck, Eric A. Franzosa, Christoph Brockel, Curtis Huttenhower, Meghan I. Short. (May 2024).

Preserving and Assimilating Region-specific Ambiguities in Taxonomic Hierarchical Assignments for Amplicons. HCMPH Symposium 2024, Boston, Massachusetts, USA.

4. **Jacob T. Nearing**, Dayakar Badri, Kelsey N. Thompson, Amrisha Bhosle, Tobyn Branck, Eric A. Franzosa, Christoph Brockel, Curtis Huttenhower, Meghan I. Short. (December 2023). Preserving and Assimilating Region-specific Ambiguities in Taxonomic Hierarchical Assignments for Amplicons. Broad Retreat 2023, Boston, Massachusetts, USA.

5. **Jacob T. Nearing**, Kelsey N Thompson, Amrisha Bhosle, Veronica Perdomo, William A. Nickols, Tobyn Branck, Christoph Brockel, Dayakar Badri, Curtis Huttenhower, Matthew Jackson. (May 2023). Gut microbiome-metabolome interactions during ketogenic diets of varied composition. CSM 2023, Halifax, Nova Scotia.

6. **Jacob T. Nearing**, Kelsey N Thompson, Amrisha Bhosle, Veronica Perdomo, William A. Nickols, Tobyn Branck, Christoph Brockel, Dayakar Badri, Curtis Huttenhower, Matthew Jackson. (May 2023). Gut microbiome-metabolome interactions during ketogenic diets of varied composition. HCMPH Symposium 2023, Boston, Massachusetts.

7. Tobyn Branck, Zhiju Hu, William A. Nickols, Aaron M. Walsh, Amrisha Bhosle, Meghan I. Short, **Jacob T. Nearing**, Artemis Louyakis, Dayakar V. Badri, Christoph Brockel, Kelsey N. Thompson, Curtis Huttenhower. (May 2023). A comprehensive profile of the companion animal gut microbiome integrating reference-based and reference-free methods. HCMPH Symposium 2023, Boston, Massachusetts.

8. Vanessa DeClercq, **Jacob T. Nearing**, Morgan Langille. (June 2023). Oral microbiome signatures associated with age and frailty in Canadian adults. IMPACTT 2023, Canmore Alberta.

9. Vanessa DeClercq, **Jacob T. Nearing**, Morgan Langille. (June 2023). Oral microbiome signatures associated with age and frailty in Canadian adults. CSM 2023, Halifax, Nova Scotia.

10. **Jacob T. Nearing**, Vanessa DeClercq, Morgan Langille. (June 2022). Examining the salivary microbiome for biomarkers of breast, prostate, and colon cancer. IMPACTT 2022, Canmore Alberta.

11. Vanessa DeClercq, **Jacob T. Nearing,** Morgan Langille. (June 2021). Commonly used medications have little impact on the oral microbiome of individuals living without major chronic conditions. IMPACTT 2021, Virtual.

12. **Jacob T. Nearing,** Gavin M. Douglas, Molly Hayes, Jocelyn MacDonald, Dhwani Desai, Nicole Allward, Casey M.A. Jones, Robyn Wright, Akhilesh Dhanani, André M. Comeau, & Morgan G.I. Langille. (June 2021). Microbiome differential abundance methods produce strikingly different results across 38 datasets. IMPACTT 2021, Virtual.

13. **Jacob T. Nearing**, Gavin M. Douglas, Molly Hayes, Jocelyn MacDonald, Dhwani Desai, Robyn Wright, Akhilesh Dhanani, André M. Comeau, & Morgan G.I. Langille. (2020). Reproducibility issues in microbiome data analysis – Differential abundance tools produce inconsistent results across 38 datasets. 2020 Microbiome Cold Spring Harbor Meeting, Virtual.

14. **Jacob T. Nearing,** Vanessa DeClercq, Morgan G.I. Langille. (May 2020). Oral microbiome biomarker discovery for the future diagnosis of breast, prostate, and colorectal cancer. Keystone Sympsoia: Inflammation, Microbiota, and Cancer, Taipei Taiwan (Cancelled).

15. Ketan Kulkarni, Katherine A. Dunn, Jessica Connors, Joseph P. Bielawski, **Jacob T. Nearing**, Morgan Langille, Johan Van Limbergen, & Tamara MacDonald. (2020). Investigating gut microbial taxa and asparaginase related genes in children showing different direction of change in serum asparaginase activity levels during pegasparaginase treatment for acute lymphoblastic leukemia. *BLOOD*.

16. **Jacob T. Nearing**, Tamara Macdonald, Jessica Connors, Morgan G.I. Langille, Ketan Kulkarni. (October 2019). The association of gut microbiome with asparaginase levels in pediatric patients with acute lymphoblastic leukemia: A Pilot study. SIOP 2019, Lyon France.

17. **Jacob T. Nearing**, Jessica Connors, Scott Whitehouse, Johan Van Limbergen, Tamara Macdonald, Ketan Kulkarni, Morgan G.I. Langille. 2018. Infectious Complications are Associated with Alterations in the Gut Microbiome in Pediatric Patients with Acute Lymphoblastic Leukemia. 2018 Terry Fox Research Institute Ontario Node Research Symposium, Toronto Canada

18. **Jacob T. Nearing**, Jessica Connors, Scott Whitehouse, Johan Van Limbergen, Tamara Macdonald, Ketan Kulkarni, & Morgan G.I. Langille. (2018). Alterations in Gut Microbiome are Associated with Infectious Complications in Patients with Acute Lymphoblastic Leukemia. Paediatric Blood & Cancer. 65: S29-S30.

19. **Jacob T. Nearing**, Jessica Connors, Scott Whitehouse, Johan Van Limbergen, Tamara Macdonald, Ketan Kulkarni, Morgan G.I. Langille. 2018. Infectious Complications are Associated with Alterations in the Gut Microbiome in Pediatric Patients with Acute Lymphoblastic Leukemia. 2018 BHCRI/TFRI Cancer Research Conference in Atlantic Canada, Halifax Canada

20. **Jacob T. Nearing**, Jessica Connors, Scott Whitehouse Johan Van Limbergen, Tamara Macdonald, Ketan Kulkarni, Morgan G.I. Langille. 2018. Infectious Complications are Associated with Alterations in the Gut Microbiome of Pediatric Patients with Acute Lymphoblastic Leukemia. The International Human Microbiome Congress, Kilarney Ireland.

21. **Jacob T, Nearing**, Jessica Connors, Scott Whitehouse, Johan Van Limbergen, Tamara Macdonald, Ketan Kulkarni, Morgan G.I. Langille. 2018. Infectious Complications are Associated with Alterations in the Gut Microbiome in Pediatric Patients with Acute Lymphoblastic Leukemia. 2018. Keystone Symposia: Manipulation of the Gut Microbiota for Metabolic Health, Banff Canada.

Research Experience

Postdoctoral Associate: February 2023– Ongoing

Harvard T.H. Chan School of Public Health

Broad Institute of Harvard and MIT

Supervisor: Dr. Curtis Huttenhower

My current postdoctoral studies include the investigation of the microbiome using both DNA and RNA sequencing as well as metabolomics. I am currently the lead on multiple projects including a multi-omics study investigating the impact of low carbohydrate foods on the gut microbiome in dogs and a study on improving sequence classification through phylogenetics.

PhD Thesis: September 2017 – December 2022

Dalhousie University

Department of Microbiology and Immunology

Supervisor: Dr. Morgan Langille

Title: Identification of robust biomarkers using microbiome DNA sequencing with a focus on the oral microbiome and cancer associations

My PhD thesis is focused on the identification of robust biomarkers using microbiome DNA sequencing data with a focus on the oral microbiome and cancer. There are two main aspects to my thesis research; the first being the examination and comparison of various bioinformatic tools for processing amplicon sequencing data and the second being the use of population-based cohorts to identify biomarkers for breast, prostate, and colon cancer. Through this work I have identified various aspects of microbiome analysis that are not robust to bioinformatic tool choice. This includes a focus on differential abundance analysis and the correction/grouping of amplicon sequencing data using OTUs or denoising methods.

Lab Technician May 2017- September 2017

Dalhousie University

Department of Microbiology and Immunology

Supervisor: Dr. Roy Duncan

I was responsible for the creation of a novel system to quantify fusogenic nuclei from differentiated C2C12 mouse myoblast cell lines. During this project I cloned and infected C2C12 cell lines with a lentivirus expressing a nuclear localizing GFP under the control of a myosin heavy chain promoter to identify nuclei from cells that have differentiated and fused to form multicellular myotubes.

Undergraduate Honors Thesis September 2017- April 2017

Dalhousie University

Department of Microbiology and Immunology

Supervisor: Dr. Roy Duncan

Title: SYNPO2As Gene Repression Using the dCas9-KRAB CRISPR System.

I investigated how different isoforms of the novel myogenic promotion factor SYNPO2 changed myoblast differentiation and fusion rates. During this time, I used the CRISPR dCas9-KRAB system to downregulate the expression of three different SYNPO2 isoforms and reported how these changed the rate of myoblast fusion.

Undergraduate Research Student May 2015-Sept 2017

Dalhousie University

Department of Microbiology and Immunology

Supervisor: Dr. Roy Duncan

I worked on the characterization of three different SYNPO2 isoforms during the differentiation and fusion of myoblast cells. During this time, I completed a wound healing experiment on various cell lines over expressing different SYNPO2 isoforms. I then characterized how different extra cellular environments impacted SYNPO2 isoform fusion rates and created plasmids of different SYNPO2 isoform variants that could be used in a mammalian two-hybrid assay.

Reviewer Experience

I have reviewed for the following journals:

Cell Systems, Cell Host and Microbe, Scientific reports, mSystems, Microbiome, PLOS Computational Biology, PeerJ, Nutrition Journal, Frontiers in microbiology, Bioinformatics.

Volunteer Experience

Faculty of Medicine Graduate Student Peer Support Network January 2021- December 2023

I serve on the working group for the Dalhousie faculty of medicine graduate student peer support network. The goal of this organization is to provide mental health support to graduate students within the faculty of medicine through peer support. In this role I interviewed potential peer support volunteers and participated as a peer support volunteer that provided peer support to other graduate students in the faculty of medicine. This role included certified mental health training from Dalhousie's health and wellness center.

Cancer Research Trainee Program (CRTP) Workshop Organizer February 2018 – March 2018

I was part of the 2019 CRTP workshop organizing committee, which is responsible for developing programs for the annual Atlantic Canadian Cancer workshop. Responsibilities include inviting guest speakers, and ensuring that the event runs smoothly, organizing the reception, and reviewing themes and programming for the workshop.

Canadian Society for Virology Volunteer June 13th-15th 2018

I helped run the 2nd symposium of the Canadian Society for Virology. During this time, I manned the registration table, setup poster presentations, showed speakers the venue and helped organise evening events and activities.

Abilities in Motion YMCA Halifax Program September 2017 – March 2020

I helped provide a supportive and fully inclusive environment for individuals with mobility concerns who wish to pursue fitness as a means of maintaining a healthy lifestyle and as part of their rehabilitation efforts. Activities I helped facilitate on a weekly basis included helping individuals with mobility issues walk, use exercise equipment and develop exercise plans.

Family Room Volunteer Ronald McDonald House Charities Atlantic March 2016 – March 2020

I volunteered weekly at a local family room within the IWK Health Center where I ran a room devoted to helping families staying with their children in the hospital. This volunteer role allowed me to provide a comforting and relaxing environment within the hospital setting. My responsibilities included cooking meals, cleaning the kitchen and living room areas, registering individuals in the overnight rooms and interacting with patients and their families.

Teaching Experience

Guest Lecturer for MB9000 – Harvard School of Public Health September 2023

As a guest lecturer for this course, I prepared a series of lectures that covered the basics of microbiome analysis including both amplicon and metagenomic sequencing. The goal of these lectures was to introduce students with little to no background in bioinformatics to the types of analysis done in typical sequenced based microbiome studies.

Teacher for Physalia 2023 – Microbial Community Meta-omics June 2023

I was a primary instructor for this course where I covered general analysis of microbial communities using multi-omic methods. Throughout the course I taught various tutorials including the use of various bioinformatic tools and software: MetaPhlAn, StrainPhlAn, PhyloPhlAn, R, and MMUPHIN.

Guest Lecturer for IID 209 – Harvard School of Public Health April 2023 - Ongoing

As a guest lecturer I have prepared and presented on various topics including the use of various metagenomic techniques for the investigation of microbial communities as well as statistical analysis of microbiome data.

Teaching Assistant Microbiome Canadian Bioinformatics Workshop September 2021

As a teaching assistant for this workshop I designed, implemented, and taught a hands-on lab which showed students how to process metagenomic microbiome data using a variety of tools include kraken2, GNU parallel and various quality control software. During this three-day workshop I also gave a 30-minute lecture on microbiome statistics and machine learning along with assisting other TAs (teaching assistants) and faculty with the implementation and teaching of their lectures and labs.

Supervision of Undergraduate Honors project September 2020 – April 2021

I helped supervise the research of an undergraduate student completing their honors project in Dalhousie's medical sciences program. This project involved the profiling of antimicrobial resistance genes in the gut microbiome of pediatric acute lymphoblastic leukemia patients at the IWK.

Teaching Assistant for Virology September 2019 – December 2021

I was responsible for planning, teach and conducting tutorial sessions bi-weekly that focussed on difficult concepts presented during lecture. I was also responsible for creating weekly quizzes that tested the student's knowledge on lecture material. I also was responsible for meeting with students one on one that required assistance in learning lecture content.

Teaching Assistant for Introduction to Microbiology September 2018 – December 2018

I interacted with students by helping them with core concepts presented during lecture through email and office hours. I also reviewed mid-term exams with students by appointment to determine areas of weakness. My responsibilities also included grading mid-term and final exams while also helping students with online lab content.

Teaching Assistant for Nucleic Acid Biochemistry September 2017 – December 2017

I supervised laboratory classes that showed students how to extract and use various experimental techniques to examine and clone nucleic acid sequences. My responsibilities included going through

and explaining cloning procedures for DNA, helping students extract various types of nucleic acids, and grading laboratory reports.

Committee and Society Memberships

International society of computational biology June 2024 – Ongoing

Grad Student Rep. Society of Microbiology & Immunology Students March 2021 – Dec 2022

As one of the graduate student representatives for the society of microbiology and immunology. I am primarily in charge of the organization of the yearly Van Rooyen lecture. This lecture involves the invitation of a guest speaker voted on by graduate students in the department of microbiology and immunology.

Treasurer for the Faculty of Medicine Graduate Student Society March 2018 – March 2021

As treasurer for the Faculty Medicine Graduate Student Society (FMGSS) I am responsible for budgeting all events that the society puts on and overseeing all financial transactions the society makes. This society represents all graduate students within the Faculty of Medicine at Dalhousie and we regularly put on events to promote student well being such as the organization of mental health week, career development panels and graduate student outreach. We often advocate for graduate students within the faculty to improve learning opportunities.

Faculty of Medicine Committee for Social Accountability March 2018 – December 2023

I currently sit on this committee as the representative for graduate students in the Faculty of Medicine at Dalhousie University. The mandate of this committee is to discuss, put forth and help the Faculty of Medicine create polices that are socially accountable to its diverse, internal and external stake holders. We currently review and create new polices that help address issues with equity, diversity, inclusion, sustainability, justice and cultural responsiveness within the Faculty of Medicine at Dalhousie University.