

Kevin Mercurio

kjbmercurio@gmail.com | kjbmercurio.com

EDUCATION

Doctor in Philosophy, Microbiology
Trinity College, University of Dublin

Mar 2021 – present
Dublin, Ireland

- Thesis Title: The mechanistic impact of miR-21 on gut barrier integrity and susceptibility to intestinal inflammation.
- Supervisor: Dr. Sinéad Corr

Master of Science in Biochemistry
University of Ottawa

Sept 2017 – April 2020
Ottawa, Ontario

- Thesis Title: Identifying genes required for *Saccharomyces cerevisiae* growth in mucin.
- Supervisor: Dr. Kristin Baetz

Honours Bachelor of Science, Major in Biochemistry (with Co-op)
University of Ottawa

Sept 2011 – Jun 2016
Ottawa, Ontario

- Thesis Title: Identifying novel genes involved in biofilm-specific antibiotic resistance in *Pseudomonas aeruginosa*.
- Supervisor: Dr. Thien-Fah Mah

RESEARCH EXPERIENCE

Graduate Student
Trinity College, University of Dublin

Mar 2021 – present
Dublin, Ireland

- Determine the role miR-21 plays within an inflammatory bowel disease model and characterize its impact on the gut epithelium, immunological response, microbiota and metabolism.
- Conduct molecular biology assays; qPCRs, immunoblotting, confocal microscopy, cell culture.
- Support the management of trials for murine genetic knockout and inflammation models; animal handling, tissue isolation, genotyping.

Laboratory Technician
University of Ottawa

Sept 2020 – Jan 2021
Ottawa, Ontario

- Provided general technical assistance and laboratory procedures as needed, routine maintenance and cleaning of equipment and glassware.
- Supported in laboratory ordering and stockpiling.
- Performed strain construction, live-cell microscopy, western blotting with yeast to understand the effect of undesired industrial toxins like adipic acid on cellular growth.

Graduate Student
University of Ottawa

Sept 2017 – Apr 2020
Ottawa, Ontario

- Utilized genetics and microscopy tools to determine how yeast metabolize mucin as an energy source, such as how fungi survive in the human gut.
- Performed high-throughput screening of the *Saccharomyces cerevisiae* Deletion Mutant Array, and RNA sequencing that led to the identification of important genes for growth in mucin.

Undergraduate Student (Honours)
University of Ottawa

Sept 2015 – Aug 2016
Ottawa, Ontario

- Investigated biofilm-specific antibiotic resistance in *Pseudomonas aeruginosa* found in cystic fibrosis patients using minimal bactericidal concentration assays on transposon-insertion mutants.
- Conducted qPCR analyses comparing gene expression between biofilm and planktonic cells.
- Constructed gene deletion mutants via plasmid manipulation and gene recombination.

Co-op Researcher
FPIInnovations

Sept 2014 – Dec 2014
Montreal, Quebec

- Enhanced the efficiency of enzymatic hydrolysis on softwood paper pulp material, as a means to obtain useful sugars for biochemical synthesis.
- Utilized cellulases, hemicellulases and performance-enhancing additives (acids, sulphites) to break down problematic lignin biomass, leading to optimal product formation.
- Developed strong communication skills through presentations to company superiors.

Co-op Researcher
University of Alberta

May 2014 – Aug 2014
Edmonton, Alberta

- Developed a robust method for spectrophotometric quantification of phage virulence.
- Established microplate virulence assay protocols using different infection conditions by varying parameters like temperature, adsorption efficiency and infection media.

PEER-REVIEWED PUBLICATIONS AND PRESENTATIONS

Publications

- **Mercurio K.**, Stiegeler S., Iancu M. A., Corr S. C. (2021). The Impact of MicroRNAs during Inflammatory Bowel Disease: Effects on the Mucus Layer and Intercellular Junctions for Gut Permeability. *Cells*, 2021, 10, 3358.
- **Mercurio K.**, Singh D., Walden E., Baetz K. (2021). Global analysis of *Saccharomyces cerevisiae* growth in mucin. *G3*, 2021, 11(11), jkab294.
- O'Callaghan A. A., Dempsey E., Iyer N., Stiegeler S., **Mercurio K.**, Corr S. (2021). Intestinal Metabolites Influence Macrophage Phagocytosis and Clearance of Bacterial Infection. *Frontiers in Cellular and Infection Microbiology*, 11: 622491.
- Fletcher E., **Mercurio K.**, Walden E., Baetz K. (2021). A yeast chemogenomic screen identifies pathways that modulate adipic acid toxicity. *iScience*, 24(4): 102327.
- Storms Z., Teel M., **Mercurio K.**, Sauvageau D. (2019). The Virulence Index: A Metric for Quantitative Analysis of Bacteriophage Virulence. *PHAGE: Therapy, Applications, and Research*, 1: 1X. Invited article for the preview/inaugural issue.

- Fletcher E., Gao K., **Mercurio K.**, Ali M., Baetz K. (2019). Yeast chemogenomic screen identifies distinct metabolic pathways required to tolerate exposure to phenolic fermentation inhibitors ferulic acid, 4-hydroxybenzoic acid and coniferyl aldehyde. *Metabolic Engineering*, 52: 98-109.

Oral Presentations

- **Mercurio K.** (2022). *The mechanistic impact of miR-21 on gut barrier integrity and susceptibility to intestinal inflammation*. Presentation for Trinity College Dublin Department of Microbiology Postgraduate Symposium (18-month), Dublin, Ireland.
- **Mercurio K.** (2022). *The mechanistic impact of miR-21 on intercellular junctions, gut microbiota and susceptibility to intestinal inflammation*. Presentation for the School of Genetics and Microbiology Early Career Researcher Seminar Series, Dublin, Ireland.
- **Mercurio K.** (2021). *Investigating epithelial-specific mechanisms of miR-21 influence on inflammation and the gut microbiome*. Presentation for Trinity College Dublin Department of Microbiology Postgraduate Symposium (6-month), Dublin, Ireland.
- **Mercurio K.** (2019). *Identifying genes required for Saccharomyces cerevisiae growth in mucin*. Presentation for the International Conference on Yeast Genetics and Molecular Biology, Gothenburg, Sweden.
- **Mercurio K.** (2019). *Identifying genes required for Saccharomyces cerevisiae growth in mucin*. Presentation for the University of Ottawa Faculty of Medicine's Seminar Day, Ottawa, Ontario.
- **Mercurio K.** (2018). *Wanted: Saccharomyces cerevisiae in the gut. Dead or alive?*. Presentation for the Department of Biochemistry, Microbiology and Immunology's Trainee Seminar Series, Ottawa, Ontario.
- **Mercurio K.** (2016). *Floxcatcher: A study on predicted biofilm-specific genes in P. aeruginosa and their impact on ciprofloxacin resistance*. Presentation for the University of Ottawa's Biochemistry Program Seminar Course (BCH4932), Ottawa, Ontario.
- **Mercurio K.** (2014). *Finding the Midas Touch: Strategies to increase the value of a lignin-rich softwood high yield pulp fraction*. Presentation for the FPIInnovations' Co-op End-of-Term, Montreal, Quebec.

Poster Presentations

- **Mercurio K.**, Corr S. C. (2024). *The impact of miR-21 on epithelial intercellular junctions influencing gut inflammation and barrier repair*. Primary author of abstract and poster for the European Congress of Immunology, Dublin, Ireland.
- **Mercurio K.**, Corr S. C. (2024). *Investigation epithelial-specific mechanisms of miR-21 influence on intestinal inflammation and IBD*. Primary author of abstract and poster for the International Congress of Mucosal Immunology, Copenhagen, Denmark.
- **Mercurio K.**, Corr S. C. (2022). *The mechanistic impact of miR-21 on gut epithelial intercellular junctions and host-microbiome interactions*. Primary author of abstract and poster for the School of Genetics and Microbiology Early Career Researcher Symposium, Dublin, Ireland.
- **Mercurio K.**, Corr S. C. (2022). *The mechanistic impact of miR-21 on gut epithelial intercellular junctions and host-microbiome interactions*. Primary author of abstract, poster and flash presentation for the Microbiology Society UK's Focused Meeting, Dublin, Ireland.
- **Mercurio K.**, Corr S. C. (2022). *The mechanistic impact of miR-21 on gut epithelial intercellular junctions and host-microbiome interactions*. Primary author of abstract and poster for the APC Microbiome Symposium, Cork, Ireland.

- **Mercurio K.**, Corr S. C. (2022). *The mechanistic impact of miR-21 on intercellular junctions and susceptibility to intestinal inflammation*. Primary author of abstract and poster for the Irish Society of Immunology, Maynooth, Ireland.
- **Mercurio K.**, Corr S. C. (2022). *The mechanistic impact of miR-21 on intercellular junctions and susceptibility to intestinal inflammation*. Primary author of abstract and poster for the Dublin University Microbiological Society's Focused Meeting, Dublin, Ireland.
- **Mercurio K.**, Singh D., Baetz K. (2019). *Identifying genes required for Saccharomyces cerevisiae growth in mucin*. Primary author of abstract and poster for the Ottawa Institute of Systems Biology Conference, Cornwall, Ontario.
- **Mercurio K.**, Butcher J., Stintzi A., Baetz K. (2018). *Determining the survival ability of budding yeast in human gut-like conditions*. Primary author of abstract and poster for the Department of Biochemistry, Microbiology and Immunology's Poster Day, Montebello, Quebec.
- **Mercurio K.**, Hall C. W., Mah T. F. (2016). *Identification of a novel gene involved in Pseudomonas aeruginosa biofilm-specific resistance to antibiotics*. Primary author of abstract and poster for the Canadian Society of Microbiologists' Conference, Toronto, Ontario.
- **Mercurio K.**, Mah T. F. (2016). *The impact of predicted biofilm-specific genes on ciprofloxacin resistance in Pseudomonas aeruginosa*. Primary author of abstract and poster for the University of Ottawa's Undergraduate Biochemistry Program Poster Day, Ottawa, Ontario.
- **Mercurio K.**, Storms Z., Sauvageau D. (2014). *Determining a method of quantifying bacteriophage virulence*. Primary author of abstract and poster for the University of Alberta's Research Experience (UARE) Poster Symposium, Edmonton, Alberta.

HONOURS AND AWARDS

- Winner of the Dublin University Microbiology Society's Best Infographic (2022)
- Participant in the FameLab Ireland National Finals (2021)
- Winner of the FameLab Ireland National Video Heat (2021)
- Selected postgraduate for the Annual LERU Summer Conference (TCD, 2021)
- 3rd in audience vote in the National Canadian Science Grand Slam (2020)
- 1st place at M.Sc. Biochemistry Seminar Day (uOttawa, 2019)
- Graduate Studies Leadership Award for Student Engagement (uOttawa, 2018)
- *Cum laude* undergraduate academic honours (uOttawa, 2016)
- NSERC Industrial Undergraduate Student Research Award (2014)
- Entrance scholarship valued at \$8,000 (uOttawa, 2011-2012)

ANALYTICAL AND PROFESSIONAL TRAINING

Student Demonstration & Mentorship

- **Demonstrator, School of Genetics and Microbiology & School of Biology and Biomedical Sciences** for undergraduate labs teaching methods like sterile technique, cell culture, strain identification, fluorescence microscopy.
- **Teaching Assistant, Science Communication Module (EDU11001/2)** for running tutorials and organizing assessment projects with module coordinator.

- **Tutor, Scholars Ireland** in collaboration with AccessEd and Trinity Access, bringing university-style tutorials to high school students in underrepresented communities.
- **Mentor, URNCST Journal Mentorship Program** for academic writing in the field of gut health.
- **Supervisor, Faculty of Medicine's Translational and Molecular Medicine Program** for an undergraduate student in classic molecular biology techniques.
- **Supervisor, Faculty of Medicine Annual DEGREE Program** for an undergraduate student in chemogenomic screening.

Technologies for Microbiome Science and Engineering (TechnoMiSE)

- Part of the Natural Science and Engineering Research Council of Canada's Collaborative Research and Training Experience Programs (NSERC-CREATE).
- Developed bioinformatics skills in workshops about the analysis of large datasets via RStudio.
- Advanced science communication skills through practicing oral presentations and networking with industry partners in microbiome science.
- Expanded on skills such as time-management, productivity, stress management and work-life balance through professional Mitacs workshops.
- To encourage trainee participation in program development, organized the TechnoMiSE Student Committee for trainee networking and project support.

SOCIETIES AND AFFILIATIONS

- Member of the Society for Mucosal Immunology, US (2024-2025)
- Member of the Microbiology Society, UK & Ireland (2022-2025)
- Member of the Irish Immunological Society, Ireland (2022-2025)
- Co-Director for Pint of Science Charity, Ireland (2022-2024)
- Chairperson for the Dublin University Microbiological Society, Ireland (2022-2023)
- Policy Coordinator for Science Slam Canada Charity, Canada (2021-2022)
- Program Coordinator for the Science to Business Network, Canada (2019-2020)
- Researcher of the Ottawa Institute of Systems Biology, Canada (2017-2020)

OTHER PROFESSIONAL EXPERIENCE

PhD Tutor

Sept 2021 – Aug 2024

Scholar's Ireland

Dublin, Ireland

- Bringing university-style tutorials to high school students in underrepresented communities.
- Lecture groups of 15 students about microbiology, molecular biology, and microbiome research.

Curriculum Vitae Reviewer

May 2021 – Aug 2024

Trinity Career Services

Dublin, Ireland

- Provide critical feedback on CVs, LinkedIn profiles and cover letters to undergraduates.

**Trade Commissioner
Global Affairs Canada**

**Nov 2016 – Aug 2017
Ottawa, Ontario**

- Mandate was to support the Canadian biopharmaceutical and biotechnology sector.
- Contacted company administration for sector insight and support in business development.
- Designed technical reports and presentations about the Canadian impact in emerging fields such as immune-oncology and gene therapy.
- Participated in interdepartmental sector discussions and government conferences.

**Junior Trade Commissioner (Co-op)
Global Affairs Canada**

**Jun 2015 – Aug 2015
Ottawa, Ontario**

- Gathered intel on the domestic activity of the Canadian Life Sciences industry.
- Acquired fundamental understanding of the fields of immuno-oncology, gene therapy and autoimmune disease for the division.
- Collaborated with team members to design reports and presentations for the division.

**Risk Profiler (Co-op)
Canadian Food Inspection Agency**

**Jan 2014 – Apr 2014
Ottawa, Ontario**

- Gathered and organized massive amounts of information as a basis for food safety reports.
- Assessed the severity of chemical and biological hazards prevalent in common Canadian food items, such as cadmium in rice products and lead in tea leaves.

VOLUNTEER EXPERIENCE

**Co-Director
Pint of Science Ireland**

**Sept 2022 – Aug 2024
Dublin, Ireland**

- Oversees the management of the Pint of Science Ireland National Team; creates agendas and records minutes for every National Team meeting.
- Handles charity finances and communicates with the charity regulator.
- Collaborates with Pint of Science Global and other communities across the globe.
- Ensures Pint of Science Ireland achieves inclusivity/accessibility goals and strives to develop communication skills for participants.
- Prepares and analyzes festival evaluations to provide suggestions for future improvements.
- Manages the Pint of Science Ireland newsletter.

**Chairperson
Dublin University Microbiological Society**

**Sept 2022 – Aug 2023
Dublin, Ireland**

- Managed team of student volunteers responsible for society funding and managing academic/social events in the local microbiology community at Trinity College Dublin.
- Planned seminars and skills development workshops for postgraduates and undergraduates.
- Main organizer for DUMS Annual Focused Meeting, a student-run hybrid conference about hot topics in microbiology involving institutes across Ireland.

Graduate Mentor **Sept 2021 – Aug 2022**
URNCSST Journal **Ottawa, Ontario**
• Supported undergraduate students' development in communication skills via academic writing for conference manuscripts.

Chapter Manager **Sept 2021 – May 2022**
Pint of Science Ireland **Dublin, Ireland**
• Collaborated with volunteers across Dublin to host science communication events, bringing researchers and citizens together in informal settings.

Policy Coordinator **Feb 2021 – Jan 2022**
Science Slam Canada **Ottawa, Ontario**
• As part of the restructuring of the now non-profit, responsible for devising fundamental policies of the organization including finances, volunteer coordination and event planning.

Section Reviewer **Oct 2020 – Sept 2021**
University of Ottawa's Journal of Medicine (UOJM) **Ottawa, Ontario**
• Performed first-line peer review, providing critical appraisal and comments on articles of various topics related to health.

Mentorship Coordinator **Sept 2019 – Aug 2020**
Science to Business Network (S2BN) **Ottawa, Ontario**
• To bridge the gap between science and industry, created the inaugural S2BN Mentorship program for STEM-based graduate students and post-doctoral fellows in the Ottawa region.
• Devised promotional materials, organized call for applications and conducted matchmaking between trainees and governmental/industry professionals.
• Produced marketing materials for the annual S2BN Academia to Industry Meeting (AIM) linking graduate students and other trainees with professionals in government, industry and NGOs.

Judge **Apr 2018 – Mar 2020**
Ottawa Regional Science Fair (ORSF) **Ottawa, Ontario**
• Evaluated scientific projects in the field of biological sciences for elementary and high-school students in the Ottawa region.

Student Representative **Nov 2017 – Aug 2019**
Faculty of Medicine Graduate Student Recruitment Committee **Ottawa, Ontario**
• Supported administration in developing strategies to encourage recruitment to the Faculty of Medicine's graduate programs.
• Played a major role in the development of the Faculty's DEGREE Shadowing Program for local and provincial undergraduate students.

Student Committee Leader **Oct 2017 – Aug 2019**
TechnoMiSE Student Association **Ottawa, Ontario**
• Supported the communication between program coordinators and program trainees.

- Encouraged interpersonal and networking skill development through the organization of social events between trainees.

Vice-President of Academic Affairs

May 2018 – Apr 2019

Department Graduate Student Association (BMIGSA)

Ottawa, Ontario

- Represented graduate students both at the departmental and faculty level.
- Communicated academic feedback to department program directors and administration while relaying important information back to the students.
- Organized academic-related events throughout the school year such as scientific panels, skills workshops and Faculty of Medicine’s Career Day.
- To address student confusion about educational and research issues, worked with the faculty administration to design orientation workshops for trainees.
- Actively engaged the student community through the organization of social events.

High School Tutor

Nov 2016 – Apr 2017

Independent

Ottawa, Ontario

- Assisted high school students primarily on the topics of chemistry and mathematics.
- Provided clarification on fundamental concepts, reviewed homework and test questions, as well as advised on the steps to pursue further education.

In-School Mentor

Oct 2015 – Jun 2016

Big Brothers Big Sisters (BBBSO)

Ottawa, Ontario

- Supervised a Little brother at his elementary school on a weekly basis.
- Designed activities to develop communication and creativity skills.
- Signified the importance of education and developing positive relationships with family, friends and members in the community.

Vice-President of Social Affairs

Sept 2015 – Apr 2016

University of Ottawa Healthcare Symposium (UOHS)

Ottawa, Ontario

- Organized the largest conference at the university directed towards the challenges of a frequently changing healthcare field.
- Responsible for coordinating volunteer teams and planning event catering.
- Managed social events and activities, such as designing the “Socrates Cafe” event for discussion amongst attendees on relevant healthcare issues.

Student Educator

Sept 2015 – Apr 2016

University of Ottawa Health Services

Ottawa, Ontario

- Member of Leave The Pack Behind (LTPB): an Ontario university tobacco information program.
- Informed the student body about health-related services and events offered by the organization through in-person interactions.
- Organized events such as CO-testing and contests with the intent of providing information on the disadvantages of all types of smoking, and the benefits of quitting or reducing.

OTHER INFORMATION

Podcast Host

Mar 2020 – present

Metaphorigins

Virtual

- Host personal podcast about the origins of English expressions, the science behind general communication, and techniques for science communication to the public.
- Interview graduate students and early career researchers from all backgrounds around the world about how to engage the scientific community and the public.

Contributing Writer

December 2022

Irish Green Labs

Dublin, Ireland

- Published article about how TCD postgraduates and postdoctoral fellows are advocating for green research practices: <https://irishgreenlabs.org/how-tcd-postgraduates-and-postdoctoral-fellows-are-advocating-for-green-research-practices/>.

Short Story Feature

2020-2022

Health Science Inquiry

Toronto, Ontario

- Featured author of the short story The Climate Solution, published in the journal's 13th Volume about climate change and health (<https://healthscienceinquiry.com/index.php/hsi/issue/view/14/15>)
- Featured author of the short story Pandemonium, published in the journal's 12th Volume about infectious disease (<https://healthscienceinquiry.com/index.php/hsi/issue/view/13/14>)
- Featured author of the short story Blue Elephant, published in the journal's 11th Volume about determinants of health (<https://healthscienceinquiry.com/index.php/hsi/article/view/322/301>)

Short Story Feature

Nov 2021

Healthy Populations Journal

Halifax, Nova Scotia

- Featured author of the short story The Revival, published in the journal's 2nd Volume, Fall Edition (<https://ojs.library.dal.ca/hpj/article/view/11081>)

Contributing Writer

May 2021

The University Times

Dublin, Ireland

- Writer on select topics regarding science initiatives that impact students at Trinity College Dublin.
- Published article about the SciComm Collective sponsored by Ireland's Department of Health: <http://www.universitytimes.ie/2021/06/how-the-science-communication-collective-is-battling-misinformation/>

REFERENCES

Available upon request.