

Kevin Mercurio, PhD

Scientist in Microbiology and Immunology

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SUMMARY

Self-driven, PhD-trained scientist with 9+ years of research experience in various institutes. Strong scientific literacy, ability to publish and present in international conferences, along with paid educator positions while in Trinity College Dublin and the University of Ottawa. Genuine interest in translational science and science communication demonstrated by a proven track record in project management roles across academic, government and non-profit sectors.

RESEARCH EXPERIENCE

Graduate Researcher (PhD), Trinity College Dublin

Dublin, Ireland | Mar 2021 – Feb 2026

- Determined novel mechanistic roles of microRNA-21 for the colonic epithelial barrier and immunological response using animal and cell-based inflammatory bowel disease (IBD) models.
- Gained deep knowledge of innate and adaptive immunity, cell biology and function of epithelial tissue, microRNA therapeutics and delivery systems for treating inflammatory bowel disease, fibrosis and cancer.
- Managed disease trial projects for murine genetic knockouts, developing skills in animal care and handling, *in vivo* drug administration and monitoring, tissue isolation, *ex vivo* culture methods, genotyping, histology.
- Advanced technical skills in cell-based assays (TEER, scratch test), gene expression (qPCR, qRT-PCR) and protein analyses (ELISA, western blotting, multiplexed immunofluorescence confocal microscopy).
- Strong development of communication skills through scientific presentations in local/international conferences.
- Primary author of research article currently in review and co-wrote review article on microRNAs and their impact on the intestinal barrier through regulation of mucus production and intercellular junctions.

Research Assistant, University of Ottawa

Ottawa, Canada | Sept 2020 – Jan 2021

- Performed strain construction, chemogenomics screening, live-cell microscopy, western blotting with yeast to understand the effect of industrial toxins on cellular growth in industrial bioreactors.
- Provided laboratory support through ordering and stockpiling, routine calibration and maintenance of equipment.
- Secondary author of research article on understanding adipic acid toxicity effecting yeast growth.

Graduate Researcher (MSc), University of Ottawa

Ottawa, Canada | Sept 2017 – Apr 2020

- Utilized genetics and microscopy tools to determine how yeast metabolize mucin as an energy source in the human gut, developing bioinformatics skills through analysis of large datasets via R Studio.
- Performed high-throughput chemogenomics screening of the *Saccharomyces cerevisiae* Deletion Mutant Array and Illumina RNA-sequencing to identify genes of interest.
- Primary author of research article showcasing the importance of yapsin proteases for the breakdown of carbohydrate-rich mucins along the intestinal tract.

Undergraduate Researcher (BSc), University of Ottawa

Ottawa, Canada | Sep 2015 – Aug 2016

- Investigated biofilm-specific antibiotic resistance of cystic fibrosis pathogen *Pseudomonas aeruginosa* using bactericidal concentration assays on transposon-insertion mutants in biofilm and planktonic growth states.
- Employed for industry co-op research project for FPIInnovations to enhance the efficiency of enzymatic hydrolysis on softwood paper pulp material to obtain useful sugars for downstream biochemical synthesis.
- Recruited for an academic co-op research project for the University of Alberta Research Experience (UARE) program to establish microplate virulence assay protocols using different infection conditions.

PUBLICATIONS AND PRESENTATIONS

PUBLICATIONS (ORCID: <https://orcid.org/0000-0002-3126-5509>)

- **Mercurio K.**, Corr S. C. miR-21 regulates epithelial adherens junctions and intestinal wound healing processes during inflammation. *In review*.
- *Stiegeler S., ***Mercurio K.**, Iancu M. A., Corr S. C. The Impact of MicroRNAs during Inflammatory Bowel Disease: Effects on the Mucus Layer and Intercellular Junctions for Gut Permeability. *Cells*, 2021, 10, 3358. * - equal contribution.
- O'Callaghan A. A., Dempsey E., Iyer N., Stiegeler S., **Mercurio K.**, Corr S. C. Intestinal Metabolites Influence Macrophage Phagocytosis and Clearance of Bacterial Infection. *Frontiers in Cellular and Infection Microbiology*, 2021, 11: 622491.
- **Mercurio K.**, Singh D., Walden E., Baetz K. Global analysis of *Saccharomyces cerevisiae* growth in mucin. *G3: Genes | Genomes | Genetics*, 2021, 11(11), jkab294.
- Fletcher E., **Mercurio K.**, Walden E., Baetz K. A yeast chemogenomic screen identifies pathways that modulate adipic acid toxicity. *iScience*, 2021, 24(4): 102327.
- 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*, 2019, 52: 98-109.
- Storms Z., Teel M., **Mercurio K.**, Sauvageau D. The Virulence Index: A Metric for Quantitative Analysis of Bacteriophage Virulence. *PHAGE: Therapy, Applications, and Research*, 2019, 1: 1X. Invited article for the preview/inaugural issue.

SELECTED ORAL & 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.** 2022. The mechanistic impact of miR-21 on gut epithelial intercellular junctions and host-microbiome interactions. Primary author of abstract, flash presentation and poster for the Microbiology Society UK's Focused Meeting, Dublin, 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.** 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.**, 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.**, 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.

EDUCATION

PhD Microbiology, Trinity College Dublin
Dublin, Ireland | Mar 2021 – Jun 2026 (graduation)

- Thesis Title: The impact of miR-21 on epithelial intercellular junctions influencing gut inflammation and barrier integrity. Successfully defended on 12/11/2025.
- Supervisor: Dr. Sinéad Corr

MSc Biochemistry, University of Ottawa
Ottawa, Canada | Sept 2017 – Apr 2020

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

BSc Biochemistry, University of Ottawa
Ottawa, Canada | Sept 2011 – Jun 2016

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

TEACHING EXPERIENCE

Teaching Assistant & Guest Lecturer, Trinity College Dublin

Dublin, Ireland | Mar 2021 – Dec 2025

- Employed as teaching assistant for multiple faculties (Schools of Genetics & Microbiology, School of Biology & Biomedical Sciences, School of Education) for courses regarding biological sciences and science communication.
- Delivered undergraduate instruction in microbiology, immunology and cell biology laboratories (classes of ~30 students), covering experimental design, aseptic technique, cell culture, molecular biology assays, microscopy.
- Guest lectured in Science Communication courses, contributing to curriculum development, assessment design, and grading assignments.
- Facilitated tutorials using active learning strategies (case-based learning, student-led sessions, skills development activities) to support student engagement and critical thinking.
- Supported hybrid and digitally enhanced learning through use of online platforms and multimedia teaching tools.

Public Speaking Trainer (Science Communication), Pint of Science Ireland

Dublin, Ireland | Sept 2022 – May 2025

- Trained researchers to effectively communicate complex scientific concepts to diverse audiences, particularly in non-expert environments using active-learning methods and language tools.
- Emphasized accuracy, clarity, engagement, and above all accessibility in scientific presentations.

Educator (Scientific Outreach), AccessED

Dublin, Ireland | Sept 2021 – Dec 2024

- Designed and delivered university-level courses in microbiology and immunology topics for students from underrepresented backgrounds in local secondary schools.
- Developed inquiry-based curriculum focused on microbiome science and powerful scientific tools used to investigate these research topics, finalizing with a team project to create probiotic treatments for immunocompromised patients.
- Applied inclusive teaching practices to support diverse learners and promote accessibility in STEM education.

Undergraduate Research Supervisor, University of Ottawa

Ottawa, Canada | Sept 2017 – Dec 2019

- Supervised undergraduate students in molecular biology and chemogenomics research projects as part of the Ottawa Institute of Systems Biology and the uOttawa Translation and Molecular Medicine Program.
- Trained student in aseptic technique, systems biology assays, data analysis and interpretation, and presentation of scientific findings for academic poster presentations and thesis writing.

ADDITIONAL WORK EXPERIENCE

Co-Director, Pint of Science Ireland

Dublin, Ireland | Sept 2022 – Aug 2024

- Coordinated the cross-functional national team in the planning and execution of the Pint of Science Festival, a national, multi-city science festival, overseeing planning, execution, and delivery.
- Oversaw budget planning and financial tracking, aligning festival execution with funding and sponsorship targets.
- Increased sponsorship funding by 100% through discussions with public institutes and private enterprises, building strong relationships among the local scientific community.
- Established and maintained project tracking systems (status reports, progress trackers, communications plans) to ensure transparency and accountability.
- Implemented risk mitigation strategies, anticipating challenges and developing contingency plans for deliverables.

Trade Commissioner, Global Affairs Canada

Ottawa, Canada | Nov 2016 – Aug 2017

- Supported the Canadian Life Sciences sector, with a focus on pharmaceuticals and biotechnology, working mainly with Canadian small-to-medium enterprises to establish connections with key industry stakeholders.
- Major initiatives included providing market intelligence, aiding and expanding to new markets through consultation and funding opportunities, facilitated connections with foreign companies looking to partner, invest or acquire.
- Evaluated funding requests for trade initiatives that helped promote the sector or helped inform Canadian companies of markets with high potential.

SCIENCE ENGAGEMENT EXPERIENCE

Producer/Host, Metaphorigins

Remote | Mar 2020 – Present

- Created a communications podcast aimed at discussing the origins of English expressions, the science behind general communication, and techniques for science communication within the public domain.
- Consistently achieve hundreds of downloads per episode from listeners around the world.
- Interview graduate students and early career researchers (ECRs) about how to connect the scientific community with the public through the use of language tools.
- Manage full workflow of podcast design; script writing (Scrivener), production and sound/video editing (GarageBand, Audacity, Final Cut Pro), social media marketing and graphic design (Canva), performance analytics (Buzzsprout), sponsorship (affiliate marketing).
- Played an advisory role in the creation of other communications podcasts, including the Pint of Science Ireland Podcast and the Trinity Careers Service Graduate Stories Podcast.

Chairperson, Dublin University Microbiological Society

Dublin, Ireland | Sept 2022 – Aug 2023

- Managed team of graduate students responsible for society funding and organizing academic/social events in the local microbiology community at Trinity College Dublin.
- Assisted Chief Technical Officer in operations and improvements to critical department processes.
- Planned seminars and skills development workshops for postgraduates and undergraduates.
- Head coordinator for DUMS Annual Focused Meeting, a student-run hybrid conference about hot topics in microbiology involving research institutes across Ireland.

Mentor, Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal

Remote | Sep 2021 – Sept 2022

- Supported undergraduate students' development in communication skills in microbiology via academic writing for journal manuscripts and conference abstracts.

Section Reviewer, University of Ottawa Journal of Medicine

Remote | Oct 2020 – Sept 2022

- Performed first-line peer review, providing critical appraisal and comments on articles of various topics related to immunology, microbiology and human health.

Program Coordinator, Science to Business Network

Ottawa, Canada | Sept 2019 – Aug 2020

- 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, organised call for applications and conducted matchmaking between trainees and governmental/industry professionals.

Vice President Academic Affairs, uOttawa Department of BMI Graduate Student Association

Ottawa, Canada | May 2018 – Apr 2019

- Represented graduate students in departmental and faculty committees, contributing to academic program development, working with the faculty administration to design skills workshops for trainees.
- Organized academic-related events throughout the school year such as scientific panels, skills workshops and Faculty of Medicine's Career Day.