Curriculum Vitae

Name
Michael Garton

Current Position
Associate Professor, Institute of Biomedical Engineering Faculty of Applied Science & Engineering University of Toronto

Email address
michael.garton@utoronto.ca

Education & Professional Experiences
Dr. Michael J. Garton has held a faculty position in University of Toronto since 2018 following postdoctoral training at the same University and a research fellowship at the Hospital for Sick Children. He obtained his PhD in Computational Biology from the University of Nottingham (2013), focusing on telomeric DNA–protein interactions, after completing an MChem degree in Chemistry at Nottingham (2009). His career trajectory reflects a strong transition from computational molecular science to synthetic biology and biomedical engineering, supported by major funding as a Principal Investigator and recognition as a Canada Research Chair in Synthetic Biology (Tier II). He has led and co-led numerous interdisciplinary projects spanning gene therapy, synthetic biology platforms, and AI-driven protein design, demonstrating rapid progression to an independent and well-funded research leader.

Research Interests
Synthetic biology; computational protein design; AI-driven biomolecular engineering; gene and cell therapy; immunogenicity reduction; engineered cellular systems and tissue design.

Selected Publications
1. https://www.nature.com/articles/s42256-023-00787-2
2. https://www.biorxiv.org/content/10.1101/2024.05.23.595541v3
(Link is preprint. Also in peer review at Nature Biomedical Engineering)
3. https://www.researchsquare.com/article/rs-4850060/v1
(Link is preprint. Also in peer review at Nature Communications)
4. https://pubmed.ncbi.nlm.nih.gov/29378946/
5. https://pubmed.ncbi.nlm.nih.gov/29735742/

Lecture Title
Removing the barriers to integrating synthetic biology with regenerative medicine

Abstract (500 words maximum)
Using synthetic biology to augment human cells offers enormous promise for the development of next-generation therapies and potentially one-shot cures. However, immune system responses, resource loading, and epigenetic silencing make translation to clinic very challenging. I will describe our work attempting to overcome these challenges in the context of both human stem cell-based therapies and viral vector delivered gene replacement.