Postdoctoral Fellow — In Vitro Blood–Brain Barrier Models for CNS-Targeted Enzyme Replacement Therapy

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The position

Synth-Med Biotechnology Inc. is hiring a postdoctoral fellow to work in collaboration with Dr. Craig Simmon's lab on in vitro blood–brain barrier (BBB) models supporting Synth-Med's CNS-directed enzyme replacement therapy (ERT) and nanomedicine programs for lysosomal storage disorders.

The successful candidate you will be supporting our pre-clinical in-vitro testing of BBB crossing nano carriers and help unveiling mechanistic processes of the technology.

This is a joint academic–industry role. You will be based in the Simmons Lab with access to its microphysiological systems and stem cell infrastructure, and you will work closely with the Synth-Med R&D team on program timelines and data packages.

What you'll do

- Establish, validate, and maintain Transwell BBB models, including hiPSC-derived brain microvascular endothelial cells in mono- and co-culture with astrocytes, pericytes, and/or neurons
- Run barrier integrity and permeability assays (TEER, paracellular tracer flux, immunostaining for junctional and transporter markers) and set acceptance criteria for study readouts
- Design and execute transport studies on enzyme conjugates, shuttle-peptide and single-domain antibody constructs, and nanoparticle carriers
- Develop quantitative readouts of transcytosis and intracellular trafficking, and distinguish transport from surface association
- Adapt models to disease-relevant genotypes, including patient-derived or gene-edited iPSC lines
- Analyze and present data to the Simmons Lab and to Synth-Med; contribute to internal reports, regulatory-facing documentation, grant applications, and publications
- Mentor graduate and undergraduate students working on related projects

Required

- PhD in biomedical engineering, cell biology, neuroscience, pharmacology, or a related field
- Hands-on experience building and running Transwell BBB models, with demonstrated command of barrier integrity measurement and troubleshooting
- Independent hiPSC culture experience.
- Strong quantitative data analysis and a track record of peer-reviewed publication
- Ability to work to project timelines in a collaborative, partly industry-facing setting

Preferred

- Prior work on lysosomal storage disorders
- Familiarity with nanoparticle or liposomal drug delivery and associated characterization methods
- Experience with receptor-mediated transcytosis approaches
- Microfluidic or organ-on-chip barrier models
- Confocal and live-cell imaging, image quantification

- Experience with electronic lab notebooks and structured documentation practices suitable for regulatory submissions
- Experience with co-culture assays and the practical problems that come with them — media compatibility, seeding order, timing, and controls

What we offer

- A project with a clear translational endpoint and a direct line to program decisions
- Access to the Simmons Lab's microfabrication, imaging, and stem cell facilities, plus the wider Toronto research ecosystem
- Mentorship from both an academic PI and an industry R&D team, with exposure to preclinical development and regulatory strategy
- Support for conference travel and professional development
- Publication rights on project outcomes, subject to standard IP review

How to apply

For your application:

please complete this form:

https://forms.cloud.microsoft/r/Ynd1cw47qB

and upload a cover letter and CV here:

https://synthmed.sharepoint.com/:f:/s/Hiring/IgDZWinpfd1vQ5ojXU6VO2t_AaXXf_W9wKPc0qEXZsLYwcU

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