UNIVERSITY OF SASKATCHEWAN

Family (ASPA and CUPE 1975 only): N/A
Phase: Salary Band 8
Employment Group: Research
Full Time Equivalent (FTE): 1.0
Shift (i.e., Mon-Fri, 8:00-4:30): N/A
Posted Date: 01 Apr 2025
Closing Date: 01 June 2025
Number of Openings: 1

Join a dynamic, world-class, well-funded basic and translational science team, led by Dr. Michael Levin, the Saskatchewan Multiple Sclerosis Clinical Research Chair. Dr. Levin offers personalized mentorship, state of the art laboratory facilities, and the opportunity for basic scientists to work hand-in-hand with clinicians in Saskatoon City Hospital and the University of Saskatchewan. This university laboratory is physically located in Saskatoon City Hospital, as part of the Cameco MS Neuroscience Research Centre.

Primary Purpose:
Our team studies neurodegeneration - the death and damage to neurons, and the major cause of permanent disability in multiple sclerosis (MS) and other neurological diseases. Using the latest in computer modeling, molecular and imaging technology, we have invented a series of small molecules that inhibit neurodegeneration and promote neuroprotection using both in vitro and small animal in vivo models of disease. We are looking for a research assistant with a strong background in molecular neurobiology that has experience in using primary mouse neurons, human induced pluripotent stem cells (IPSCs), small animal handling/testing as well as molecular biology (RNA/DNA isolation, RNAseq, AAVs, single cell isolation and sequencing, etc.) to test which small molecules can be moved forward in our pipeline to clinical trials in humans. Led by Dr. Michael Levin, the Saskatchewan Multiple Sclerosis Clinical Research Chair, you can learn more about our research by clicking on the following links: our TED Talk, 'STOP MS IN ITS TRACKS!', showing our preliminary small molecule data and the basics of the experiments you will be doing, our lab and dynamic team members (LEVIN LAB), our most recent publication in Nature Communications (LEVIN TEAM NATURE COMMUNICATIONS 2024 and A1 in MS DISCOVERY). Located in Saskatoon, Saskatchewan, Canada; a diverse college town with plenty to do and like in all of Canada, universal healthcare. If interested, please submit your curriculum vitae/resume and a 1-page summary of how you will contribute to the science in our lab and your ability to collaborate with a team.

Nature of Work:
- Works independently to design, conduct and support discovery and validation of research in MS and other neurological diseases in a basic science laboratory with a focus on neuroimmunology, neuroscience, immunology, molecular biology, bioinformatics and biostatistics
- Reports to the SK MS Research Chair regularly

- Works with the SK MS Research Chair to plan and meet research project requirements and deadlines
- Helps prepare comprehensive documented observations, analyses and interpretations of results, including written technical reports, summaries, protocols and quantitative analyses
- Assists in publishing activities, findings and conclusions in recognized scientific publications
- Documents research leading to patent disclosure or technical and/or scientific advancement
- Acts as a resource, trains and monitors the progress of trainees at all levels (undergraduate/ medical students, MSc and PhD candidates, post-doctoral fellows, and research technicians)
- Assists in planning, writing, and editing grants and scientific manuscripts
- Assists in preparing and submitting scientific manuscripts to journals, including formal correspondence with editors and addressing revisions, as necessary

Typical Duties or Accountabilities:

- Perform, troubleshoot, and optimize *in vitro* experiments using cell lines of various origins including neuroblastoma, primary neurons derived from mammals and human IPSCs
- Maintains a meticulous laboratory notebook with detailed documentation of experiments
- Transfection of cell lines
- Transduction of primary neurons and cells with AAVs.
- *In vivo* experiments using models of MS and naïve controls in mice and rats such as experimental autoimmune encephalomyelitis, Theiler's Virus induced demyelination, intracranial injections, and oral administration and injections of drugs
- Perform, troubleshoot, and optimize *in situ* experiments using human tissue samples
- Improve upon and/or develop new methods and protocols to address key experimental questions
- Document, compile, and analyze experimental data
- Presentations at lab meetings
- Assists collaboratively with the SK MS Clinical Research Chair to prepare publications and abstracts at international and national scientific meetings
- Attend scientific meetings at the discretion of the SK MS Clinical Research Chair
- Train and educate trainees
- Establish and maintain training SOPs for trainees and staff at all levels.
- Meet with the SK MS Clinical Research Chair at regular intervals
- Other duties, tasks and assignments as required by the SK MS Clinical Research Chair

Education: Graduate degree required (PhD preferred, MSc acceptable) in molecular biology, cell biology, biochemistry, immunology, neuroscience or a related field with 3-5 years of work experience.

Licenses: N/A

Experience:

- Experience in research using one or more of the following is necessary:
    - Mouse models, including perfusion, dissection of central nervous system and peripheral tissues, blood collection, oral and injectable administration of drugs, intracranial injections and sample processing for downstream analyses
    - Cell culture work, experience in generating and working with cell lines, primary cell lines derived from mice and human IPSCs, transfection of cell lines and transduction of primary neurons and cells with AAVs.
    - Imaging techniques, including fluorescence and brightfield microscopy; live-cell imaging
    - Protein analyses, including recombinant protein expression/purification, western blot

    - PCR and qPCR
    - Molecular cloning
    - DNA/RNA sequencing and library preparation
    - Human tissue analyses, including immunohistochemistry and immunofluorescence
    - Broad computer experience using advanced scientific and statistical software
    - Bioinformatics
- Knowledge of data analysis and interpretation using statistical software is required
- Experience in one-on-one mentoring of junior trainees, including graduate and undergraduate students, is required
- Demonstrated grant writing and publication record
- Experience working and collaborating in diverse and inclusive settings is required

Skills:

- Immunohistochemistry, immunofluorescence and immunocytochemistry
- Fluorescent and brightfield microscopy
- Computer skills including bioinformatics, advanced scientific and statistical software
- Intracranial injection, perfusion, and blood sampling of small animals such as mice and rats
- Oral administration and injections of drugs into mice and rats
- Tissue dissection, embedding, and sectioning (fresh frozen, fixed frozen, paraffin)
- Molecular techniques including but not limited to Western blotting, PCR, RT-PCR, qPCR, in situ hybridization, RNA/DNA extraction from cell lines and tissues, recombinant protein expression and purification
- Extraction of immune cells from lymphoid organs
- Isolating primary neurons from mice and rats, cell culture and human IPSC cultures
- Cell culture: primary neurons, cell lines, transfection and transduction.
- FACS analyses and cell sorting
- Knowledge and use of Photoshop and related platforms
- Strong interpersonal skills, demonstrated leadership abilities, and attention to detail
- Excellent time management and organizational capabilities
- Ability to work independently
- Effective oral and written communication skills

Inquiries regarding this position can be directed to Catherine Hutchinson at c.hutchinson@usask.ca.
