Postdoctoral Associate (Organ Cryopreservation and Nanowarming)

University of Minnesota (UM)
Bioheat and Mass Transfer Lab &
Transplantation Research Lab

Job Description:
We are seeking one or more postdoctoral fellows to join our collaborative group at UM. We have developed exciting new technology for the cryopreservation and subsequent rewarming of organs and tissues for use in transplant and reconstructive surgery. Nanowarming involves the use of iron oxide nanoparticles and non-contact inductive radiofrequency excitation to successfully rewar 50–80-mL (≥ 5 cm diameter), with plans to expand our systems up to 1 L (12 cm diameter) to rewar vitrified human organ and tissue systems for transplantation [1]. The successful candidate will partake in our research activities geared towards perfusion loading, cryogenic storage and inductive rewar ming and transplant of tissues and whole organs. Postdoctoral associates are expected to be independent while interacting in a highly multi-disciplinary collaborative team environment between the College of Science and Engineering (CSE), the Medical School, and a growing number of national and international labs.

Required Skills & Experience:
PhD in Biomedical, Chemical or Mechanical Engineering, Material Science, or a related field; or MD or MD/PhD with relevant research experience. Demonstrable interest in pursuing either academic positions or translation and commercialization is a requirement.

*Preferred Experience:
1. Transport engineering (heat and mass transfer, biotransport, phase change in tissues and organs)
2. Perfusion engineering (preservation solution and nanoparticle loading/unloading of tissues and organs)
3. Magnetic nanoparticle synthesis, coating, characterization, heating & modeling
4. Biological and functional assessments (cell, tissue and organ viability testing)
5. Small animal surgery (microsurgery and transplant models)
*Candidates do not need to have all skill sets to be considered. The successful candidate will be exposed to all of these areas through collaborative studies in the lab.

BHMT and TRL Labs Description:
The Bioheat and Mass Transfer (BHMT) lab at the University of Minnesota is affiliated with the Mechanical Engineering Department & the Medical School. Our current and former trainees include 28 Master’s students, 22 PhDs (including 2 MD PhDs) and 13 Post Doctoral Fellows. Nine of these students are currently faculty in academia, with the remainder primarily in biomedical industry including: Medtronic, BSCI, St. Jude (Abbott), Angiodynamics, Siemens, Genzyme, and others. The BHMT lab has been continuously funded by NIH, NSF, DOD, and industry since 1993. The Transplant Research Lab (TRL) studies transplant immunology, immune tolerance, and organ cryopreservation. It has been continuously funded with NIH and foundation awards since 2009. Current TRL lab members include 2 postdoctoral fellows and 2 graduate students.
(See: BHMT Lab & Funding).

Application Package:
Applications should be sent to bischof@umn.edu and efinger@umn.edu with the subject line “Postdoc-Organ Warming”, and addressed to John Bischof, PhD and Erik Finger MD, PhD. We prefer the application packages to be submitted as a single pdf document that contains:
1) a cover letter, 2) a full CV with a complete list of publications, 3) name and contacts details of 3 references, 4) and list of laboratory and other methods mastered, or other relevant experience.

[1] Selected Recent Publications and Nanowarming Background: