Graduate Certificate in Translational NeuroTechnology 1 (TNT1)

February 9, 2015

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Background and Rationale

The NSERC CREATE-funded Rehabilitative And Diagnostic Innovation in Applied NeuroTechnology (RADIANT) program will produce highly qualified personnel (HQP) who possess the skills, knowledge, and experience to bridge the existing gap between people with the scientific know-how to develop new neurotechnology applications, and those who have the knowledge and ability to bring them to market. We will provide HQP with:

1. Advanced interdisciplinary training and research skills in translational neuroscience;
2. A solid understanding of basic neuroscience, neurological syndromes, neuroimaging technologies, and current methods of cognitive enhancement and rehabilitation;
3. Essential business skills that will facilitate interactions with industry;
4. Skills to work with interdisciplinary teams in order to translate basic neuroscience into marketable applications in health care, entertainment, defense, and other sectors;
5. The ability to evaluate complex legal and ethical issues associated with neurotechnologies and therapies;
6. Practical experience in commercialization through project-based teamwork and internships.

The first of its kind in the world, RADIANT will include a number of new training initiatives. These include undergraduate and graduate certificates open to students in a wide range of programs; a new free-standing graduate program in translational neurotechnology; postdoctoral fellowships; workshops and seminars; and a summer institute open both to students from Dalhousie and trainees from across Canada and around the world.

The core goal of RADIANT is to produce HQP who have proven skills in neurotechnology and clinical neuroscience, and the professional skills needed to work in clinical and industrial settings to design solutions that meet a real need and have the potential to be commercialized or otherwise make it into the hands of people who can benefit from the solutions. This is reflected in the requirements outlined below.

Certificate Description

The certificate in Translational NeuroTechnology (TNT) is designed to add value to a range of graduate degree programs at Dalhousie. Its aim is to provide both a scientific grounding in neurotechnology and clinical neuroscience, and the professional skills needed to work in translating scientific knowledge into products that benefit people. These include skills in the process of innovation, intellectual property, business, and communication. Graduates will be suited to jobs industrial and academic settings, designing solutions that meet real needs and commercializing or otherwise mobilizing these innovations.

RADIANT offers two graduate certificates: TNT1 and TNT2. These are designed to be completed sequentially, although some components of the TNT2 certificate may be completed prior to the awarding of the TNT1 certificate. Normally, it is expected that students will complete the TNT1 certificate during their Master's degree, and the TNT2 certificate during their PhD degree; other scenarios are possible however.

Personnel

RADIANT faculty at present include: Manohar Bance, Surgery; Steven Beyea, Physics/Radiology; Shaun Boe, Physical Therapy; Gail Eskes, Psychiatry; Shannon Johnson, Psychology; Ray Klein, Psychology; Ed Leach, Management; Aaron Newman, Psychology; George Robertson, Pharmacology; and Thomas Trappenberg, Computer Science.

RADIANT is governed by a Management Committee composed (as of this writing) of Aaron Newman (Program Director), Jillian Bray (Program Coordinator), Manohar Bance, Shaun Boe, Gail Eskes, Thomas Trappenberg, and Ed Leach. Oversight is provided by a Program Committee composed of members of the wider Dalhousie academic community as well as representation from local hospitals, industry organizations, and international neurotechnology companies.

Certificate Requirements

The graduate certificate program will be open to students enrolled in a graduate program at Dalhousie University. Students may come from programs in the Faculties of Science (including Psychology, Chemistry, Biology), Computer Science, Management (MBA), Medicine (including Anatomy and Neurobiology, Physiology & Biophysics, Pharmacology, and Biochemistry), Engineering (including the School of Biomedical Engineering), and Health Professions (including Audiology, Kineseology, Occupational Therapy, Physical Therapy, Speech Pathology, and Clinical Vision Sciences).

The Graduate Certificate in Translational Neurotechnology be awarded by the RADIANT Management Committee upon successful completion of all the requirements of the student's Master's program, as well as the following:

- The two following classes:

  PSYO 7705.06 Summer Institute — Neurotechnology Innovation, Commercialization, and Entrepreneurship

  PSYO 7701.03 RADIANT Seminar

- A thesis or other research project supervised by at least one member of the RADIANT program and approved by the RADIANT Management Committee.
  The nature of the thesis/research project requirement will vary somewhat by the student's discipline. This research project may fulfill a requirement of the student's degree program (e.g., thesis or comprehensive research project) as well as the requirement of the Certificate. This project must approved by the Management Committee and deemed to be consistent with the core tenets of RADIANT as stated above.
- One Professional Development Workshop per year.