RESEARCH SCHOLAR PROGRAM 2017
SUPERVISOR/PROJECT INFORMATION FORM

Due on or before October 21 2016. Forms received after this date will not be posted on the website.

SUPERVISOR INFORMATION

Supervisor Name: Dr. Clifford Librach

Mailing Address: 790 Bay St., Suite 1100, Toronto, ON, M5G 1N8

Telephone Number: 416-323-7727

Email Address: drlibrach@createivf.com

Degree (MD, PhD, MD/PhD): MD

Academic Rank: Associate Professor

Field of Research: Human Reproductive Biology

Graduate School Appointment (IMS, IHPME etc..): IMS and Department of Physiology
Please note that you must be appointed to the SGS in order to be a supervisor in the Scholar Program

Research Institute Affiliation (if applicable): CReATe Fertility Centre

Allocation of student contact time (# of hours per week you are available to the student for any concerns or to review progress): 2hrs

Do you have a student that you have already agreed to work with?
Please note, you may go ahead with a self-initiated project with a student of your choosing. If you choose this option, your project will not be posted online, meaning it will not be open to student applicants.

PROJECT INFORMATION

Project Title: Investigation of Novel Markers of Embryo Competency

Project Description (max 500 words):

In-vitro fertilization (IVF) involves stimulation of the woman's follicular development process, allowing for maturation and retrieval of multiple oocytes. These oocytes are then either directly microinjected with individual sperm or incubated with spermatozoa in a Petri dish for fertilization. The aim of the processes of microinjection or sperm incubation is to create a viable embryo that will result in a pregnancy and consequently a live birth. While multiple oocytes are retrieved and injected with sperm, guidelines recommend only one or two embryos be transferred to the mother, to reduce the number of multiple gestations. Currently, embryologists assess the morphology of embryos and select the embryo(s) with the highest morphology grade to be transferred into the mother. With these selection criteria, about two-thirds of all IVF cycles fail to achieve a successful pregnancy, illustrating the inadequacies of the current approach. Consequently, there is a growing interest in finding tools to improve embryo selection. Invasive tools for improving embryo selection include pre-implantation genetic screening (PGS) for chromosomal abnormalities. Non-invasive tools for improving embryo selection include morphokinetics. In addition, identification of molecular biomarkers through metabolic and exosome profiling of spent embryo culture media is an area of intense research by multiple groups. The goal of this project is to develop invasive and non-invasive tools for embryo screening by identifying novel, minimally invasive biomarkers for improved embryo selection.

The candidate would be part of a growing team of researchers at CReATe dedicated to identifying and testing various non-invasive markers of embryo competency. The first summer semester will involve identifying potential markers by several methods, and beginning to validate their clinical predictive value. The following research terms will involve the investigation of the biological origins of differences in biomarkers, and will potentially lead to animal studies of treatment options for increasing embryo competency.

If human subjects are involved, has Ethics been obtained?

☒YES ☐NO ☐Application Submitted ☐N/A

Do you expect this work will be published within 20 months?

☒YES ☐NO ☐Uncertain

Student's Roles / Responsibilities (Please be as specific as possible) Please indicate who will serve as the student's direct report. (PI, PDF, PhD student, technician etc…):

The student will be required to:

- Perform a literature review of the field and associated techniques;
- Participate in project and experimental design;
- Train in cutting edge molecular analysis techniques and execute experimental plan;
- Process and analyze samples, and correlate with associated clinical data

- Participate in full-time research during the summer semester, not including a 2-week vacation
- Attend and participate in Friday afternoon lab meetings during the summer semester
- Present findings at lab meetings and conferences

The student will work under the supervision of Dr. Stewart Russell, the Director of Embryo and Implantation Research at the CReATe Fertility Centre.