RESEARCH SCHOLAR PROGRAM – 2018

SUPERVISOR & PROJECT INFORMATION FORM

Please complete and return, via email only (crems.programs@utoronto.ca) by ***November 3rd 2017*** *(forms received after this date will not be posted).*

Supervisor Information

Name: **Saeid Amini-Nik** Email:**saeid.amininik@utoronto.ca**

Degree: **MD, PhD** SGS Appointment (IMS, IHPME, LMP etc.): **YES/LMP**

Academic Rank: **Assistant Professor**

Field of Research: **Stem Cell, Skin Regeneration, Skin healing**

Research Institution Affiliation (if applicable): **Sunnybrook Research Institute**

Allocation of student contact time (number of hours per week YOU are available to the student for any concerns or to review progress): **5 hours**

Project Information

Title: ***The genomics and transcripteomics basis of variability in response to Adalimumab treatment of Hidradenitis Suppurativa***

Description (max 500 words):

Hidradenitis Suppurativa (HS) is a chronic relapsing inflammatory skin disease characterized by recurrent subcutaneous nodules and dermal abscesses at the intertriginous areas along the milk lines, most commonly the axillae, submammary folds, perineum and medial thighs. Upon healing, the abscesses eventually lead to fibrosis, scarring and permanent disfigurement of the skin. Apart from the skin disfigurement caused by HS, one of the most common morbidity of the illness is an intense pain, which significantly impairs quality of life. Chronic HS is associated with significant risk of developing secondary psychiatric disorders such as depression. Moreover, studies have shown HS to have a significant impact on health care system with more hospitalizations and emergency department visits than associated with psoriasis. The estimated prevalence of HS is 3.8% in the Canadian population. New biologic therapies have emerged for the management of the chronic inflammatory conditions like Crohn's disease, psoriasis, psoriatic arthritis. For HS, the efficacy of TNF-α inhibitors), IL12/IL23

inhibitors, IL-1 inhibitor therapies have been reported by several studies. Adalimumab, a fully human antibody against TNF-a, is the only approved treatment for HS. In a randomized controlled studies, only 45% of patients treated with adalimumab achieved 50% reduction in their disease activity.
It is not clear why HS patients vary widely in their responses to Adalimumab. The approximate cost per patient (of achieving 50% reduction in disease activity) is about $180,000. Moreover, anti-TNF therapy is associated with significant side effects including serious infections and malignancies. As such, it is essential to categorize patients to the group which is most likely to be responsive to Adalimumab and explore other modalities in non-responsive patients, an ideal approach in the modern dermatology. Using genomic, transcriptomics and proteomics approaches, here we aim to unravel the genetic and transcriptomics predictors that can categorize patients to "responsive" and "non-responsive" groups in order to minimize costs and side effect burdens on patients and society.

If human subjects are involved, have Ethics been obtained?

☐ YES ☐ NO ☒ Application Submitted ☐ N/A

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

☒ YES ☐ NO ☐ Uncertain

Student's roles and responsibilities (please be specific)

Please indicate who will serve as the student's direct report (PI, PhD student, technician etc…) ***PI.***

Student will help in making tissue bank of the HS patients and will perform: DNA, RNA and protein isolation from biopsied samples. The DNA and RNA will be used for microarray analysis and the student help in in analysis of the array data. The student will perform western blot as well as Immunohistochemistry experiments in the laboratory in order to verify the level of target proteins in the lesion and the surrounding intact tissue. Student will be trained in order to work with confocal microscope for multi-color staining of the lesions.