Supervisor & Project Information Form

Please complete and return via email ONLY to gdip.hres@utoronto.ca by November 2, 2020

**Supervisor Information**

*MUST have unrestricted University of Toronto School of Graduate Studies (SGS) appointment (to independently supervise graduate students)*

<table>
<thead>
<tr>
<th>Name: Padmaja Subbarao</th>
<th>Email: <a href="mailto:Padmaja.subbarao@sickkids.ca">Padmaja.subbarao@sickkids.ca</a></th>
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<tr>
<td><strong>SGS Department:</strong> Department of Physiology, Dalla Lana School of Public Health</td>
<td><strong>Field of Research:</strong> Asthma, epidemiology, intervention studies, infant pulmonary function, respiratory medicine</td>
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<td><strong>Research Institution affiliation (if applicable):</strong> SickKids Research Institute</td>
<td><strong>Location of Work:</strong> Hospital for Sick Children</td>
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<td><strong>Student contact time (number of hours per week YOU are available to the student for any concerns or to review progress):</strong> 2 hours</td>
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**TITLE:** The Interactive Role of Genes and the Environment in the Developmental Origins of Asthma in the CHILD Cohort Study

**DESCRIPTION (MAX 500 WORDS):**

**Overview:** Asthma is the most common chronic disease in childhood. Worldwide, 14% of all children aged 6 to 14 years report asthmatic symptoms. Severe childhood asthma is associated with a 32-fold increased risk of chronic obstructive pulmonary disease (COPD) in later life. Asthma and COPD account for 6% of global mortality and a high economic burden for society. Findings from the Canadian CHILD Cohort Study and other studies suggest that early life factors (e.g. breastfeeding may help prevent the development of childhood asthma), yet not much is known on other environmental (prenatal and postnatal) and genetic determinants, both separately and in combination, in the development or asthma risk. We seek to understand factors that improve lung health, leading to strategies to mitigate or ultimately prevent the development of chronic respiratory disease.

**Platform:** This project will used data from the CHILD Cohort Study (www.childstudy.ca) which I lead as Director and Nominated PI. CHILD is a population-based study of 3455 families recruited from four Canadian provinces to determine the role of environmental and host factors in the early life origins of asthma. CHILD provides an unprecedented pool of longitudinal data from pregnancy onwards including maternal and infant nutrition, socioeconomic factors, health and environmental exposures monitored through frequent questionnaires and clinical assessments at ages 1, 3, 5 and 8 years. The CHILD study has collected repeated lung function measurements to study lung health trajectory, asthma diagnoses and asthma risk stratification from infancy to 8 years of age. The successful student will work with the supervisors to develop and test a relevant hypothesis related to longitudinal asthma analysis and the role of genes and the environment on asthma development.

**Training:** The student will gain exposure to applied lung physiology by observing and applying quality control criteria to specialised pulmonary function tests (PFT) e.g. multiple breath washout, airway oscillometry etc. The student will also be supported to acquire basic statistical analytic tools such as using R and will be taught how to perform basic analyses using this platform. They will also be supported by a local interdisciplinary research team made up of research assistants, coordinators and managers as well as biostatisticians, post-doctoral fellows, and other students. Students are encouraged to take advantage of seminars and networking opportunities within the Hospital for Sick Children and University of Toronto (e.g. Respiratory Medicine Chest Rounds, Clinical Research Interest Group Lunch and Learns and Translational Medicine’s Speaker Series).
If human subjects are involved, have the appropriate Research Ethics Board approvals been obtained?
☑ Yes  ☐ No  ☐ Application Submitted (Date: _November_ 2020__)

Do you expect this work will be published within the 20 months?
☑ Yes  ☐ No  ☐ Uncertain / Other

**Student Roles & Responsibilities (please be as specific as possible)**

The student is expected to take on the following responsibilities:

1. Attend scheduled meetings with the supervisor and research team.
2. Conduct current literature reviews related to their project.
3. Learn to perform statistical analyses in R, SPSS and/or SAS.
4. Engage in research discussions with clinicians and researchers regarding the results of their project analyses and clinical implications.
5. Draft the manuscript for publication.
6. Present the research in local, national or international meetings.

*Indicate who will serve as the student's direct report for daily oversight (PI, PhD student, technician, etc...)*

The student will be supervised by the Dr. Subbarao’s post-doctoral fellow and the Biostatistician on a day to day basis and will meet with the Dr. Subbarao weekly to review the progress of the project.

*Indicate to what extent the student’s research activities could, if necessary, be completed remotely.*

While the majority of work by the student can be conducted remotely (e.g. 80%), accommodations can be made to conduct in-person and remote training and meetings. Depending on the situation in the community, students may be encouraged to attend on-site
training sessions to speed up their understanding of the lung function testing. This will assessed on an ongoing basis as required and in consultation with the student.