

ENT Summer Research Project Posting

Project Title: **Unified Airway Model: Comparison of the Microbiome of the Upper and Lower Airways in Chronic Rhinosinusitis and Asthma Patients**

Description of Project: (maximum 250 words)

Chronic rhinosinusitis (CRS) impacts approximately 5% of Canadians. Individuals suffering from CRS have a health status similar to those suffering from other chronic conditions like arthritis, congestive heart failure, etc. Moreover, concomitant asthma may additionally worsen quality of life. The unified airway model illustrates a link between both conditions as tissue from the middle ear to the sinus cavity to the distal bronchioles function as one unit. Despite the evidence showing the importance of dysbiosis of the microbiome in CRS and asthmatics independently and the strong relationship between CRS and asthma, the microbiome has not been evaluated in the same patient (with and without both conditions) and whether similarities in microbiome exist between the individual's upper and lower airways is unknown.

The aim of this study is to:

- Determine if the upper and lower airway microbiome of CRS with asthma patients is similar and
- Compare the microbiome of the upper and lower airway of CRS with asthma to those without asthma.

We aim to collect following samples from CRS patients with or without asthma who are going under sinus surgery: nasal and bronchial brush, nasal and mouth wash and bronchoalveolar lavage (BAL).

The primary endpoints includes:

- Alpha diversity of airway microbiota and total bacterial count in sinus and lung samples.
- The inflammatory cell count in BAL fluid, and characterization of bacterial OTUs and membership.
- The difference in the airway microbiota between the asthmatic and non-asthmatic airway and difference between the nasal microbiota between asthmatics and non-asthmatics with CRS.

Student's Role in the Project: (maximum 200 words)

The student will work directly under the supervision of a Clinical Fellow. Student will be actively involved in screening and recruiting patients for the study. Student will perform a chart review under the PI's supervision to identify potential candidates for the study. She/he will make the initial contact with the patients to provide study information and ask if they are interested in taking part in the study. She/he will meet with patients on their clinic visit to answer their questions and obtain the consent. The student would be responsible to ensure all required data have been collected at every scheduled study visit. She/he will take part in sample processing in wet lab and training will be provided as needed. Monthly progress reports are required except if instructed otherwise.

Performing literature review and active involvement in manuscript preparation would be another required task for this study.

Does this project require ethics approval? (Yes or No) Yes and ethic approval is been granted

for this study.
What are the plans for research funding? (select the choices) a) Apply for UBC Faculty of Medicine Summer Student Research Program (1 st and 3 rd years – Deadline Feb 15, 2019) https://www.med.ubc.ca/current-learners/summer-student-research-program/
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