Campus: Houston Methodist Willowbrook Hospital, Houston TX

Research Area: Golgi Apparatus in Airway Secretory Cells, Pulmonary Medicine.

Mentor: Burton Dickey, M.D.

Colin Chan is a M2 medical student at Texas A&M University School of Medicine conducting pulmonary research under the guidance of Burton Dickey, M.D., a professor in the Department of Pulmonary Medicine within the Division of Internal Medicine at the University of Texas M.D. Anderson Cancer Center in Houston, TX. Their research project aims to understand the production and intracellular trafficking of mucin in the secretory cells of the lung epithelium. Mucin is the key protein that makes up mucus in the lung airway that is required for lung defense, but whose overaccumulation complicates prognosis for muco-obstructive diseases such as asthma, COPD, and cystic fibrosis. Mucin hypersecretion causes clogged airways making it hard for patients to breathe. Although existing medications can open airways or thin existing mucus, none stop excessive mucus production. Hence, our MSE project focuses on exploring the structure of the Golgi apparatus in airway secretory cells, which plays a key role in mucin assembly. Surprisingly, Golgi outposts, which are non-perinuclear Golgi bodies, are located throughout secretory cells. Using specific Golgi and mucin antibodies coupled with immunofluorescent tags and electron microscopy, our project aims to gain visual insights of the role and distribution of Golgi outposts to better understand the intracellular trafficking and production of mucins in asthmatically induced mouse models. In the future, therapeutic agents that target the mucin production pathway could provide novel ways to help treat muco-obstructive diseases.