Independent Study Opportunity in Immunology and Food Allergy

We are looking for a motivated **undergraduate or master's student** majoring in **Biology, Bioengineering, Biomechanical Engineering** or related fields to join our research project focused on understanding how various cofactors (e.g., wildfire exposure, pollen season, NSAIDs) affect the sensitivity of food-allergic patients to allergens.

Food allergy has become an epidemic. Evidence to date suggests that climate change can significantly impact the food allergy landscape, yet the mechanisms are poorly understood. The project investigates whether the presence of environmental and other physiological cofactors changes the activation of basophils--a type of immune cell that releases histamine to cause allergic symptoms--in food-allergic patients when exposed to allergens.

The work involves *in vitro* experiments using human blood samples. This project is a close collaboration between the lab of Prof. Sindy Tang and the world-class clinical research units at the Stanford Sean N. Parker Center for Allergy & Asthma Research.

What You Will Learn:

- **Human Subject Research**: Working directly with human patient blood samples.
- **Flow Cytometry**: A powerful tool to analyze immune cell activation.
- **Basophil Activation Test**: A clinical diagnostic test for food allergies.
- **Human Immunology**: Specifically, the immune responses related to food allergies (Type 2 Hypersensitivity), and the effect of physiological cofactors (e.g., estrogen) on allergic responses.
- **Climate Change & Immunology**: Understanding the impact of environmental factors on allergic reactions.
- **Multidisciplinary Collaboration**: Be part of a dynamic research team with expertise in various fields.

Requirements:

- Minimum commitment of **2-3 quarters**, **8-10 hours/week**, including one **6-hour continuous block** on a given day for processing blood, plus data analysis and group meeting attendance
- Previous **wet lab experience** (e.g., pipetting) is required; experience with **human blood samples** is a plus.
- Strong **attention to detail** and ability to follow and write meticulous methods and protocols.
- Interest in immunology, allergy research, and environmental health.
- Basic skills in data analysis and plotting (use of Excel at a minimum)

This is an excellent opportunity to gain hands-on experience in cutting-edge research, work with human samples, and contribute to impactful discoveries in immunology and allergen sensitivity. If you are detail-oriented, enjoy lab work, and are eager to learn, we encourage you to apply!

To Apply: Please send your resume, transcript, and a brief cover letter outlining your interest and relevant experience to Prof. Sindy Tang (sindy@stanford.edu).