



**Effects of Phthalate Inhalation on Airway Immunology: a Controlled Human Exposure Study**

**Danay Maestre-Batlle (The University of British Columbia)**

**Supervisor: Dr. Christopher Carlsten, Associate Professor, Department of Medicine**

**Asthma Canada / AllerGen Bastable-Potts Graduate Student Research Award**

**\$20,000 to support investigations into late-onset asthma by a PhD student**

Danay Maestre-Batlle, a PhD student at The University of British Columbia is conducting cutting-edge research on the respiratory and immunological health effects of inhaled environmental pollutants. The goal of her research is to improve the lives of Canadians, specifically vulnerable groups who suffer from chronic inflammatory airway diseases such as asthma.

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Asthma is a complex disease caused by both genetic and environmental interactions that produce an inflammation in the lungs, reducing a person's intake of air. Specific environmental exposures can modify the immune system and accelerate the development of asthma.

Danay Maestre-Batlle, a PhD student at The University of British Columbia, is conducting cutting-edge clinical research on the respiratory and immunological health effects of inhaled environmental pollutants. She is specifically studying phthalates, a class of plasticizers that are used as softeners in many commercial products, such as cosmetics, industrial plastics, children's toys, and even medical devices.

Phthalates leak into the environment and are therefore routinely found in the air we breathe and food we consume. A number of studies suggest that phthalate exposure causes the development or worsening of lung diseases, like asthma, but no firm link has been established.

Maestre-Batlle wants to understand how phthalates can contribute to lung diseases like asthma. She will be conducting a controlled human exposure study, which has been approved by The University of British

Columbia, to investigate how allergens and the inhalation of a specific phthalate called dibutylphthalate (DBP) may alter the human immune system.

Volunteers recruited for Maestre-Batlle's study will be exposed on separate occasions to fresh air and a controlled, safe amount of DBP. Before and after each 3-hour exposure, a small amount of blood, urine, nasal wash and lung fluid will be collected for analysis. Changes observed between the 2 exposure conditions (fresh air or DBP) may show the effect of DBP in the blood and lungs.

The results of Maestre-Batlle's study will be disseminated through conferences, journal publications and dialog with partners such as Health Canada and Environment Canada. She hopes her research will increase awareness about the potential damaging effect of phthalate inhalation, and help explore the feasibility of implementing policies to minimize risks to society.

#### **About Danay Maestre-Batlle**

Danay Maestre-Batlle was attracted to the field of asthma because she saw how it impacted so many people globally and how it can have serious effects on the quality of life. She saw how it could be a huge burden for people living with the disease, their families, and the country's healthcare system.

As an undergraduate student in Cuba, Danay Maestre-Batlle worked at the National Center for Genetic Engineering and Biotechnology (CIGB), the most prominent research-production facility in Cuba with a long and distinguished record of producing innovative biotech products for the country's healthcare system. After moving to Canada, she joined STEMCELL Technologies in the Cell Separation - Innate Immunology group to develop products to isolate specific cell types from human whole blood and mice.

In 2015, Maestre-Batlle joined the Center for Occupational and Environmental Respiratory Disease (COERD), directed by Dr. Christopher Carlsten. She hopes that her research findings can make a profound impact on the well-being of people living with asthma.

#### **A Message to the Asthma Community – From: Danay Maestre-Batlle**

"We're working to improve the well-being of people living with asthma. We want them to know they're not being forgotten, we care about them, and we're doing everything we can to improve their lives."