Our group explores the regulation of smooth muscle function in diseases of the lung and cardiovascular system. These chronic diseases have serious impacts on quality of life, and can be evident following premature birth (bronchopulmonary dysplasia) or may emerge during childhood (asthma), or develop in adulthood (COPD, pulmonary hypertension. Current therapies are not always effective in managing symptoms or preventing disease progression, and they do not provide a cure.

The goal of our research program is to identify new drug targets for these diseases – to protect against the development of the changes in lung structure and function or to treat symptoms under conditions where current drugs are ineffective. We are currently examining multiple novel dilators targeting small airways and arteries using a novel lung slice technique in which contraction, relaxation and calcium signalling can be visualized. These drugs are being assessed in animal models of chronic lung disease and in human lung tissue to support their future clinical development.

Research Projects

1. Characterising changes in airway and vascular reactivity in chronic lung diseases

2. Identifying novel bronchodilators targeting intrapulmonary airways in asthma and COPD

3. Identifying novel vasodilators targeting intrapulmonary arteries in pulmonary hypertension and bronchopulmonary dysplasia

Selected significant publications:


