

**Title: Effects of bitter taste receptors on airway smooth muscle cell function****Application deadline: Applications accepted all year round****Supervisor/s: Dr Yassine Amrani                      email:ya26@le.ac.uk****Funding: Self-funding only**

Recent evidence suggests that manipulation of bitter taste receptors in the lungs may lead to the design of novel therapeutic options in asthma (Deshpande et al., 2010; Robinett et al., 2011; An et al., 2012). Although activation of bitter taste receptors exerts bronchodilator actions via a direct action of airway smooth muscle, studies are still needed to further define their mechanisms of action in this cell type. The aim of this project will be to define the signalling pathways activated by bitter taste receptors in airway smooth muscle. This project will provide additional information about the therapeutic action of bitter taste receptors ion chronic lung diseases.

**Main skills**

Cell culture

Cell and molecular biology

Flow cytometry

Pharmacodynamic studies (bronchoconstriction and bronchodilation)

**References**

Robinett KS et al . Agonist-promoted homologous desensitization of human airway smooth muscle bitter taste receptors. *Am J Respir Cell Mol Biol.* 2011 Nov;45(5):1069-74.

Deshpande DA, et al. Bitter taste receptors on airway smooth muscle bronchodilate by localized calcium signaling and reverse obstruction. *Nat Med.* 2010 Nov;16(11):1299-304.

An et al. TAS2R activation promotes airway smooth muscle relaxation despite  $\beta(2)$ -adrenergic receptor tachyphylaxis. *Am J Physiol Lung Cell Mol Physiol.* 2012 Aug 15;303(4):L304-11)