SFI-funded PhD position

Identification and characterisation of lung selective microRNAs that contribute to the pathophysiology of chronic lung disease

BACKGROUND: Chronic lung diseases including asthma, cystic fibrosis and occupational lung diseases are amongst the commonest causes of death and disability worldwide. In Ireland, respiratory diseases impose a particularly heavy burden; Ireland has the highest death rate from respiratory disease in western Europe; death rates are over twice the EU average and nearly twice the European average. Pulmonary hypoxia is a common complication of these chronic lung diseases leading to the development of pulmonary hypertension (PH). The underlying sustained increase in vascular resistance in hypoxia is a response unique to the lung circulation, suggesting that there are proteins whose expression is selectively altered in the lung in response to alveolar hypoxia while remaining unchanged in other organs. We have previously identified hypoxic responsive genes (i.e. gremlin, CXCR7) that are functionally relevant to lung disease pathogenesis (Costello CM et al, Am J Physiol Lung Cell Mol Physiol. 2008; 295(2):L272-84).

The question that then arises is, what are the molecular mechanisms underlying this organ-selective hypoxic regulation of protein expression? A growing understanding of the role of microRNAs (miRNAs), a recently identified family of small non-coding RNAs, in the regulation of post-transcriptional protein expression suggests that this may be an important regulatory mechanism in the lung. The aim of this proposal is to identify novel miRNAs that are selectively regulated in response to hypoxia in the lung vasculature and establish their contribution to the pathophysiology of lung disease.

Candidate Profile: EU Citizen with minimum 2:1 in relevant primary degree
Research Group Profile: Vascular Biology Group (SMMS Conway Institute)
Group Leader: Professor Paul McLoughlin
Principle Investigators: Dr Christine Costello and Professor Paul McLoughlin

Funding Offered: €18,000 per year (tax exempt) for 4 years
               €5,500 per annum for registration fees (4 years)

To apply: Applicants are requested to submit their curriculum vitae (two pages maximum) and the contact details for two scientific referees to christine.costello@ucd.ie. Informal enquiries to christine.costello@ucd.ie or +353 (0)1 7166818.

Start Date: September 2010