A fully funded BBSRC DTP studentship, University of Manchester, Faculty of biology, Medicine and Health.  
This is a fully funded studentship open to UK and EU students. Deadline : January 15th, Any queries: Dr. Minsung Kim (Minsung.kim@manchester.ac.uk).

Title: The role of TARGET OF RAPAMYCIN in nutrition sensing and plantlet development in Kalanchoë (BBSRC DTP studentship)

Project abstract:
How a cell determines its fate is a fundamental question in Biology. A differentiated somatic plant cell can be triggered to regain its pluripotency. Kalanchoë (Mother of thousands) species propagate asexually by forming ectopic plantlets. During plantlet formation, somatic cells in the leaf margin change their cell fate and regain pluripotency to form plantlets. However, many of the underlying molecular and genetic mechanism(s) and cues triggering such a cell fate change during plantlet initiation remain a mystery. 

The main aim of this project is to unravel the molecular genetic mechanisms involved in the plantlet initiation. Specifically, you will investigate the role of the nutrition sensing master regulator, TARGET OF RAPAMYCIN (TOR) during this process. First, you will determine when and where the initiation occurs using a combination of state of the art technologies. Then you will investigate the role of TOR during plantlet formation by inhibiting the TOR pathway. You will also perform laser capture microdissection (LCM) and RNA-Seq to identify key regulators and pathways and to build an integrated model of this process. Furthermore, you will investigate how nutrient supply, primarily sugars as the products of photosynthesis, is sensed by TOR and affects plantlet formation. The multidisciplinary approaches used in this project will deliver novel insights into how biochemical, biophysical and specific molecular components cooperate to trigger pluripotency and initiate plantlet development, which can be used to explain broader developmental processes. As such this project will provide a broad training in cutting edge techniques in plant molecular sciences and allow you to make a substantive contribution to important developmental processes underlying food security.