

# PUMI PERERA



“ I first became interested in plant science in my second year when I realised just how much is going on under the still exterior of a plant. I am now particularly interested in the role of epigenetics, especially in plant development. ”

**First Degree** BA (Hons) Natural Sciences (Part II Plant Sciences)  
University of Cambridge  
Due to Graduate June 2011

**PhD** **Sainsbury PhD Studentship**  
The role of the proteasome in plant polycomb-group gene action  
University of Edinburgh  
Supervisor - Dr Justin Goodrich  
Starting September 2011

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## Summary of Research Project

Polycomb-group genes are required for the gene repression important in maintaining cellular differentiation patterns. CURLY LEAF (CLF) is a member of the plant Polycomb repressive complex 2 (PRC2) which can catalyse the trimethylation of lysine 27 on histone H3. CLF acts partially redundantly with its homologues SWN (SWINGER) and MEA (MEDEA) and its mutant phenotypes include defects in flowering time and flower and leaf morphogenesis.

During T-DNA insertion mutagenesis in a *clf-50* (null) background to find suppressors of the *clf* phenotype, two unexpected mutants were found. They had mutations in RPN5a and RPN8a, components of the ubiquitin-26S proteasome lid. The proteasome plays a key role in plant development, by regulating degradation of poly-ubiquitinated client proteins. It functions in areas as diverse as hormone signalling, self-recognition, pathogen defence and chromatin structure determination. A direct role for the proteasome in regulating Polycomb activity has not been elucidated so far. Therefore, my project aims to dissect the interaction of the proteasome with the Pc-G pathway. This may help to address how Pc-G activity is regulated or reversed during developmental transitions, and potentially to define novel components of the Pc-G pathway.

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