JAMES LLOYD

I first became interested in plant science when I attended the Gatsby summer school in 2006 and I am now exploring the mechanisms and evolution of gene expression pathways within the plant kingdom.

First Degree	BSc Genetics (with a year in industry) University of York Graduated July 2009
	Sainsbury Undergraduate Studentship (2007-2009) Mentor - Professor Ottoline Leyser Conference attended - 19 th IPGSA meeting in Puerto Vallarta, Mexico
	One-year Industrial placement (2007-2008) Project title – Over-expression of proteases in senescing leaves Advanced Technologies (Cambridge) Ltd
PhD	Sainsbury PhD Studentship Characterisation of the nonsense-mediated mRNA decay pathway in moss University of Leeds Supervisor - Professor Brendan Davies Started October 2009

Summary of Research Project

Premature termination codons (PTCs) can arise from mutations or errors in mRNA production and can produce toxic truncated proteins. Nonsense-mediated mRNA decay (NMD) is a pathway conserved in eukaryotes that recognises PTCs during the termination of translation and causes the transcripts to be degraded. NMD also regulates expression of functional genes in animals, fungi and plants. Arabidopsis plants with NMD effectors knocked-down have altered development and a different response to environmental changes. Knocking out NMD effectors in *Arabidopsis* is embryonic lethal.

Moss (*Physcomitrella*) is a model plant, separated from flowering plants by over 450 million years of evolution and the only plant where specific gene knockouts can be made. By knocking out or down NMD effectors in moss we can examine the role of NMD in moss growth. By examining how *Physcomitrella* identifies PTCs and what transcripts are targeted by NMD we can gain a better understanding of the evolution and functions of NMD in plants.

