

JESSICA NEEDHAM



“ I first became interested in plant sciences following a tour of the Botanical Gardens during my first week at university. Learning that kale, broccoli and Brussels sprouts are all the same species made me fascinated by the plasticity of plants and the way that they have been utilised by humans. ”

First Degree

BA Biological Sciences
University of Oxford
Due to graduate June 2012

Sainsbury Undergraduate Studentship (2011-2012)

Vacation Research –Evaluation of cadmium accumulation and tolerance in strains of the freshwater algae *Chlamydomonas*
University of Manchester
Supervisor- Dr Jon Pittman
Mentor- Professor Jane Langdale

Summary of Vacation Project

The high abundance of toxic heavy metals such as cadmium in water supplies poses a significant threat to the environment and human health. The use of algae immobilised in a bioreactor offers a cheap and reliable approach to decontamination. Algae can be modified so that they have heightened accumulation of and tolerance to cadmium. This is through the over expression of cadmium binding proteins and/or cadmium transporters that sequester the metal into an internal compartment such as the vacuole. Such engineered strains have been created in the freshwater green algae *Chlamydomonas reinhardtii*. This project will further evaluate these strains by quantifying cadmium uptake and tolerance characteristics in free swimming and immobilised cells. Some of the physiological and morphological characteristics of the cells will also be assessed in comparison to a wild type strain, including photosynthetic efficiency, growth rate to determine biomass production, and the impact of cadmium stress on the production of storage lipids.
