Coordination of physiological responses to multiple stresses by abscisic acid in barley: a field focused study

**Director of Studies:** Dr Anne Plessis  
**Second supervisor:** Professor Jerry Roberts  
**Third supervisor:** Dr Michael Hanley

**Project description**

Crop yield losses due to adverse weather and herbivory are among the main threats to global food security and will likely increase under climate change. While the molecular and physiological basis of plant stress responses are well studied in controlled laboratory conditions, it has proved difficult to translate this knowledge into improved crop yield stability under challenging environmental conditions. In particular, little is known about how crop physiological responses to the complex combination of climatic fluctuations and environmental stresses encountered in the field are coordinated. The aim of this PhD project is to understand the role of the hormone abscisic acid (ABA) in coordinating plant water relationships and growth in response to multiple stresses and climatic fluctuations in barley. The student will conduct experiments in both outdoor and greenhouse conditions, using a mutant line deficient for ABA synthesis, to assess the role of ABA in the control of growth and water relationships under drought alone and in combinations with other stresses (soil compaction and herbivore interaction). These data will be used to model physiological responses to stress conditions and fluctuating environmental factors, adapting a method already developed in the Plessis lab.
Eligibility

Applicants should have a minimum of a first class or upper second class bachelor degree. Applications from candidates with a relevant masters qualification will be welcomed. Essential requirements for this position are: strong knowledge of plant stress physiology and molecular biology; the ability to conduct experimental work independently and as part of a team; excellent oral and written communication skills in English. Experience in using R for statistical, graphical and modelling applications would be highly beneficial to the application.

If you wish to discuss this project further informally, please contact Dr Anne Plessis. However, application must be made in accordance with the details below.

Funding

The studentship will have a three year duration and will cover full-time Home/EU tuition fees plus a stipend of £14,777 per annum. The studentship will only fund those applicants who are eligible for Home/EU fees with relevant qualifications. Applicants required to cover overseas fees will have to cover the difference between Home/EU and overseas tuition fee rates (approximately £10,350 per annum).

General information about applying for a research degree at the University is available at: https://www.plymouth.ac.uk/student-life/your-studies/research-degrees/applicants-and-enquirers

You can apply via the online application form which can be found at: https://www.plymouth.ac.uk/study/postgraduate and select ‘Apply’.

Please mark it FAO Miss Aimee McNeillie and clearly state that you are applying for a PhD studentship within the School of Biological and Marine Sciences.

For more information on the admissions process contact Aimee McNeillie.

Closing date for applications: 12 noon, 06 April 2018.

Shortlisted candidates will be invited for interview in early May. We regret that we may not be able to respond to all applications. Applicants who have not received an offer of a place by 30 May 2018 should consider their application has been unsuccessful on this occasion.