STEP IN LABS! 2007

Science Teachers Education Partnership IN Legumes And Biotechnology Studies

ARC Centre of Excellence for Integrative Legume Research (CILR)
Teacher Professional Development Program 2007

30th April - 4th May 2007

The CILR is a research network of plant scientists conducting high quality, cutting-edge research into legumes and other plant species. It is headquartered at the University of Queensland and has three nodes at the University of Newcastle, University of Melbourne and the Australian National University. The Centre was established in 2003 with an AU$ 10 million Australian Research Council (ARC) grant, and re-funded in 2007 with a further AU$ 6.9 million over three years, also from the ARC. Together with cash contributions from partner universities and state governments, plus in kind staff contributions, the CILR is a major AU$ 38 million research effort over eight years. The centre aims to understand how plant cells communicate and form new organs. Research into plant physiology, molecular and cell biology is providing fundamental insights into developing enhanced food production, agricultural sustainability, environmental quality and products for human health.

Legumes are major crop plants that are important in human food, animal feed, vegetable oil and nutraceutical production. They add nitrogen to the soil and do not need fertiliser because of their ability to convert atmospheric nitrogen into proteins. Worldwide crop production and fertilizer replacement benefits of legumes exceed AU$ 200 billion per annum (A$2 billion per annum in Australia alone). Pea, chickpea, lupin and soybean are of fundamental importance for agricultural systems, providing sustainable pasture production and cereal rotation capabilities. Legume science is fast becoming a world-wide focus of plant science and agricultural biotechnology because of the increasing cost of fossil fuels used to make fertiliser and the need to farm with less fertiliser to protect the environment. In addition, legumes have many health benefits. They are rich in protein and an important component of a healthy diet. Recently, the CILR has identified legumes as a potential source of therapeutics to treat a range of human diseases. The latter has resulted in the formation of an Australian-first virtual company, called “Meristomics”, in a joint effort to commercialise plant research discoveries.
STEP IN LABS 2007 – www.cilr.uq.edu.au

STEP IN LABS! PROGRAM 2007

Day 1: Monday 30th April

9.00 - 9.30 am   Welcoming address
     Peter Gresshoff
     CILR Director
     Room 324, John Hines (62)

9.30-10.00 am   Safety induction - PC2 training
     Miki Miyagi
     CILR Laboratory Manager
     Room 324, John Hines (62)

10.00-10.30am  Tour of the Centre and
     Glasshouse facilities
     Lisette Pregelj
     Education and Outreach Manager

10.30 - 11.00  Morning Tea
     CILR Tea Room

11.00 am - 11.30am  Program survey - teacher backgrounds and
     expectations
     Room 401B Goddard (8)

11.30 am - 12.30 pm  CILR Plant Genetics and Biotechnology
     Research Overview
     Room 401B Goddard (8)

12.30 - 1.30 pm  Lunch (available at the refectory right next
to the Centre or various cafes around UQ
     campus. Alternatively, CILR staff tea room
     and facilities are available for visitor use)

1.30 - 5.00pm
     (incl. Afternoon Tea)
     CILR Plant Genetics and Biotechnology
     Research Overview (cont.)
     Room 401B Goddard (8)

_CILR Plant Genetics & Biotechnology Research Overview:_

11.30 - 12.00 pm  Dr Brett Ferguson
     Apical control of shoot branching

12.00 - 12.30 pm  Dr Christine Beveridge
     Experimental design: Do’s and don’ts

12.30 - 1.30pm  Lunch

1.30 - 2.00 pm  Dr Phil Brewer
     Topic TBA

2.00 - 2.30pm  Dr Pick-Kuen Chan
     Mutants and their uses
2.30 - 3.00 pm  Dr Attila Kereszt  
*Nutrient from the air: the development of the nitrogen fixing symbiosis.*

3.00 - 3.30 pm  Afternoon Tea/Break

3.30 - 4.00 pm  Dr Mark Kinkema  
*Characterization of over 37,500 genes to identify candidates involved in regulating nodulation in soybean*

4.00 - 4.30 pm  Dr Paul Scott  
*Legumes as a source of vegetable oil for biodiesel production*

**Day 2: Tuesday 1\textsuperscript{st} May**

Techniques to take back to the classroom

9.00 - 12.30 pm  Workshop 1 - Apical Dominance and Shoot Branching Dogma  
Dr Brett Ferguson & Liz Dunn  
Glasshouse Headhouse (89E)

12.30 - 1.30 pm  Lunch

1.30 - 5.00 pm  Workshop 2 - The Role of Gibberellins in Stem Elongation  
Dr Christine Beveridge  
Glasshouse Headhouse (89E)

**Day 3: Wednesday 2\textsuperscript{nd} May**

Techniques to take back to the classroom

9.00 - 12.30 pm  Workshop 3 - Nodulation and Nitrogen Fixation  
Dr Mark Kinkema & Dr Paul Scott  
Glasshouse Headhouse (89E)

12.30 - 1.30 pm  Lunch

1.30 - 5.00 pm  Workshop 4 - DNA Extraction  
Dr Philip Brewer & Dr Attila Kereszt  
Glasshouse Headhouse (89E)
Day 4: Thursday 3rd May
9.00 - 12.30pm Workshop 5 - Staining Technique for Arbuscular-Mycorrhizal
(incl. Morning Tea) Dr Pick Kuen Chan
Room 307 Goddard (8)
12.30 - 1.30pm Lunch
1.30 - 5.00pm From School to the Lab - The life of a PhD student
(incl. Afternoon Tea) CILR John Hines (62)

Day 5: Friday 4th May
9.00 - 10.30 Information Session with Lynne Biltoft (Sandgate District State High School) and Ken Allison (Marsden State High School), STEP IN LABS 2006 Participants
Room 545 John Hines (62)
10.30-11.00 am Morning tea
11.00-1.00pm Workshop 6 - Computational Modelling Dr Jim Hanan
eZone 3, Level 2, Biological and Chemical Sciences Library (94)
1.00-2.00pm Lunch
2.00 - 4.00 pm Feedback survey and discussion session on applying this experience to developing a contextual unit in biology
Room 545 John Hines (62)