PLANT BIOLOGY SEMINAR SERIES

INVITED SEMINAR: 4th November 2009

CSIRO

THE AUSTRALIAN NATIONAL UNIVERSITY

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ARC CoE in PLANT ENERGY BIOLOGY

plant energy biology
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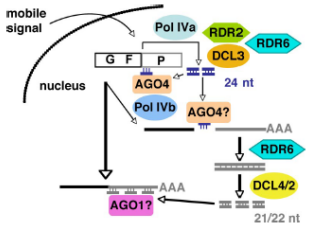
Mechanism of graft-transmissible gene silencing in Arabidopsis

by

Assoc/Prof. BERNIE CARROLL

School of Chemistry and Molecular Biosciences
ARC CoE for Integrative Legume Research
The University of Queensland

http://profiles.bacs.uq.edu.au/Bernard.Carroll.html



We have been using Green Florescent Protein (GFP) as a reporter to study the mechanisms of graft-transmissible gene silencing in Arabidopsis. In our earlier work, silencer rootstocks expressing GFP-specific, double-stranded RNA (dsRNA) from the strong constitutive 35S promoter were grafted onto scions expressing GFP. Using this system and reverse genetics, we identified a collection of genes to be required for receiving the silencing signal in newly formed shoot tissue. With this grafting system, no genes were identified to be required for sending the silencing signal from rootstocks. More recently, we developed a transgenic parent line for use in a forward genetic screen to identify additional genes involved in systemic gene silencing. This parent line carries a transgene expressing GFP-specific dsRNA from a root tip-specific promoter along with a linked GFP transgene. The GFP silencing phenotype of ungrafted plants of this line resembles graft-transmissible gene silencing, and rootstocks of this line transmit silencing to scions expressing GFP. Following mutagenesis, over 40 independent systemic silencing mutants were identified. Many of these mutants are deficient in both receiving the silencing signal in newly formed shoot tissue and in transmission of the mobile silencing signal from grafted rootstocks. The phenotype and molecular genetic characterization of these mutants will be described.

Seminar at 1pm
BAMBI Seminar Room 2.01, Peter Baume Building #42, ANU
Light snacks to follow after the seminar