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Postzygotic hybridization barriers in *Arabidopsis* - making crosses between distant relatives easy ("EzyCross")

Wednesday 18 September 2013 1 – 2pm

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Slatyer seminar room R.N. Robertson Building (Bldg. 46), Linnaeus Way, ANU



I am trying to understand how species remain reproductively isolated, preventing gene flow from other species by the establishment of postzygotic hybridization barriers. The current model for postzygotic incompatibility syndrome in plants is the interspecific cross between *Arabidopsis thaliana* and *A. arenosa*. This cross results in postzygotic lethality when the *A. thaliana* mother is diploid but, surprisingly, I will demonstrate here that mutations in key genes of the Polycomb PCR2 complex (*mea*, *fis2*, *fie*) in *A. thaliana* enable successful hybrid seed formation. Moreover, I tested whether the wider cross of *Boechera pinetorum* and *A. thaliana* could form hybrids, and found that novel hybrids could also be produced between *A. thaliana mea* or *fis2* mothers and *B. pinetorum*. These observations have laid the foundation for producing hybrid plants more easily that could be of potential interest to agriculture, a technology I have termed "EzyCross", where the transfer of superior traits from wild relatives of crop plants (e.g. disease resistance, pod shatter or cold, drought and

heat stress) into agriculturally important crops can be facilitated. This will overcome the common problem that many crops often fail to reproduce when crossed with distantly related wild relatives. I will discuss my progress of using EzyCross technology with respect to generating new varieties of canola, to enable plant breeders to access desirable traits from distant relatives to generate better varieties for the commercial market.

Presented by

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