



## INVITED SEMINAR

### “Transcriptional reprogramming underlying cell fate determination in plants”

**Dr Milos Tanurdzic**

School of Biological Sciences  
University of Queensland, Australia

11:00am - 12:00 Friday 7th March 2014

Room S11, Faculty of Agriculture  
Hokkaido University, Sapporo Japan.

**Abstract:**

Ferns represent the youngest lineage of land plants that still undergoes alteration of generations between the diploid sporophyte and the haploid gametophytes. In the fern *Ceratopteris richardii*, single celled spores develop into multicellular male or female gametophytes. Sex determination happens early in the gametophyte development, whereby genetically identical spores develop into either male or hermaphrodite gametophytes depending on the presence of a sex hormone. Next generation RNA sequencing identified >82,000 genes expressed in 1-4 cell gametophytes in the early stages of sex determination. Massive transcriptional reprogramming occurs early in the male gametophytes, well before any morphological differences can be observed, with up-regulation of more than 1200 genes, many of which encode transcription factors and chromatin regulators. We discovered dozens novel microRNA, some of which were also shown be differentially regulated between the two sexes, contributing to complex transcriptional and post-transcriptional regulation of the early stages of cell fate determination.

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