

**Wednesday, September 24, 3:15-3:45 p.m.**

*“RNA silencing, epigenetics and plant defense”*

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Plant systems provided some of the first and best evidence that RNA silencing pathways involving small interfering RNAs can influence heritable epigenetic marks. Genetic analysis identified a variant RNA silencing pathway leading to this epigenetic modification in which there are variant Dicer and RNA dependent RNA polymerases that are distinct from those involved in posttranscriptional gene silencing at the RNA level. Key proteins in the epigenetic RNA silencing pathways include variant forms of pol II – pol IV and pol V that generate respectively the precursor of siRNAs and chromatin-associated scaffold transcripts that are the direct siRNA targets. The siRNAs in this pathway are typically 24nt rather than 21nt or 22nt associated with posttranscriptional silencing.

In my talk I will describe how viruses have been used to dissect the RNA-mediated epigenetic silencing pathways and how heritable epigenetic marks may arise and contribute to heritable variation within species. I will also discuss the role of RNA silencing as a system that accommodates the trade off between defense and fitness and how it can be fine tuned to the ecological niche of the plant.