

Short-term Visit: Tony Jhwueng  
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## Summary Report

*Nicotiana* is a relatively large genus that has been used widely in plant breeding and genetic study. One major use of *Nicotiana* species has been as a resource of genetic diversity for improvement of the species of greatest economic importance, tobacco (*N. tabacum* L.), which is cultivated for its cured leaf used in the manufacture of tobacco products consumed by more than one billion persons globally. Several classic research papers on gene introgression have been based on *Nicotiana* species. Some members of *Nicotiana* offer a number of research advantages including extensive phenotypic diversity, amenability to controlled hybridizations (Kole 2011). However, hybridization may influence evolution in a variety ways. If hybrids are less fit, the geographical range of ecologically divergent populations may be limited. If some hybrid genotypes are fitter than both parents, at least in some environments, then hybridization could make a positive contribution (Barton 2001). In addition, many quantitative traits show substantial heritable variation and yet appear to be subject to stabilizing selection. This is a paradox because stabilizing selection expected to eliminate variation (Johnson and Barton 2005). Conceiving this, we intend to investigate the paradox through developing models of the trait evolution where the stabilizing selection and hybridization are under consideration.