Gene flow, geographic mosaics and moth pollination mediated by floral scent

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Some of the world's most iconic flowers (Jasmine, Gardenia, Easter lily, Darwin's Star Orchid) belong to night-blooming plants pollinated by moths. The characteristic perfumes of these flowers have a demonstrated (and logical) function of attracting nocturnal moths from a distance. However, like any sexual display, they are subject to conflicting selective pressures exerted by natural enemies, eavesdroppers and parasites. Verne Grant's concept of pre-zygotic floral isolation was inspired by his intensive survey of western North American plant lineages (*Aquilegia*, *Ipomopsis*, *Mimulus*, *Oenothera* and *Mirabilis*) in which repeated transitions to and from hawkmoth pollination have played a major role in diversification. My presentation will highlight three moth-pollinated model systems (*Ipomopsis*, *Oenothera* and *Lithophragma*) in which floral scent plays direct roles in gene flow, the maintenance of species boundaries and, in turn, is shaped as a phenotype by the behavior of pollinators and florivores.