

## Dr. Ian T. Baldwin

Max Planck Institute for Chemical Ecology, Jena, Germany

### “Using Forward and Reverse Genetics Approaches to Understand the Remarkable Phenotypic Plasticity of a Native Plant”

Tuesday, January 30, 2018 - 11:00 a.m.

Salle Favard - IBENS - 46 rue d'Ulm - 75005 Paris

We have developed a native tobacco plant, *Nicotiana attenuata*, that grows in the Great Basin Desert of the SW USA, into a model system for the study of all types of plant-ecological interactions, particularly those biotic interactions that dominate the agricultural niche. Plants are rooted in both the ground and at the base of most food chains, but have evolved an impressive repertoire of plastic responses that allow them to solve the ecological challenges that they face. This talk will lightly review three decades of reverse genetics based research and releases of transgenic plants into a nature preserve in the plant's native habitat, that has revealed how the plant recognizes attack from specific herbivore species by the particular chemistry of the herbivore's saliva, and uses this recognition to tailor a complicated 6-layered defense response that requires a remodeling of the plant's transcriptome, metabolome and proteome, as well as some of its life history traits. With the recent sequencing and challenging assembly of the plant's 2.57 Gbp genome that is bloated with LTR repetitive elements, the foundation has been laid for a forward-genetics approach for future field work that will utilize recombinant inbred lines (RILs) and lines silenced in specific components of the plant's smRNA machinery (specifically, RdRs, Dicers, and Argonats) to understand how non-coding RNA mediates the plant's environmental adaptations.

Host: Chris Bowler

Email: [bowler@biologie.ens.fr](mailto:bowler@biologie.ens.fr)