

Bernhard Rensch Vorlesung

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How a native plant solves life's challenges with a sophisticated use of chemistry

Plants are rooted at the base of most food chains on this planet, but being passive food for the rest of planet's heterotrophs is not the role they have chosen. This talk will describe two decades of research into how a native tobacco plant, *Nicotiana attenuata*, that lives in the Great Basin Desert of the SW USA has been developed into a model system for the study of all types of plant-ecological interactions, particularly those biotic interactions that dominate the agricultural niche. This plant recognizes attack from specific herbivore species by the particular chemistry of the herbivore's saliva, and uses this recognition to tailor a complicated 5-layered defense response that requires a remodeling of the plant's transcriptome, metabolome and proteome, as well as some of its life history traits. The science writer, Michael Pollan, inverted the relationship between humans and their domesticated plants to argue that it was plants that domesticated humans, and not vice versa. *Nicotiana attenuata* has had designs more Machiavellian than domestication for the heterotrophs that feed on it.

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