

NRES / CSAM RESEARCH COLLOQUIUM SERIES

FRIDAY

NOV. 18, 2005

3:30 - 4:30 pm

**LECTURE
THEATRE
9-200
(Medical Building)**

**LIGHT
REFRESHMENTS
SERVED AT 3:15 PM**

******NOTE***
NO FOOD OR DRINK
ALLOWED
IN LECTURE THEATRE***

Dr. Dezene Huber

**Canada Research Chair in
Forest Entomology and Chemical Ecology
& Assistant Professor
UNBC**



Exploring the “P450-ome” of a California Bark Beetle

Cytochromes P450 (P450s) comprise a large gene family, individuals of which play many important roles in organisms ranging from bacteria to plants to mammals to insects. In insects, P450s are often involved in detoxification of plant secondary metabolites as well as in pheromone and hormone biosynthesis and degradation. We have identified, and characterized the expression of, fourteen novel P450s of potential importance in host colonization and reproduction by a pine bark beetle, the California fivespined ips, *Ips paraconfusus*. Twelve of the P450s are of the Cyp4 family, one is of the Cyp9 family, and one is of the Cyp31 family. At two time points after feeding on host phloem, many of the novel P450s exhibited variable transcript accumulation in male and female insects compared to unfed controls. The Cyp9 gene was of particular interest as its transcript levels in males were >85,000x greater at 8h and >25,000x greater at 24h after feeding compared to non-fed controls. The Cyp9 also showed significant, but lower, transcript accumulation in fed females at 24h (151x over 0h control) but not at 8h. The differential transcript accumulation patterns of these first P450s to be described in any bark beetle provide insight into the complex interaction of *Ips paraconfusus* with its host pines and will allow for further functional characterization of specific P450 enzymes in this, and other, forest insects.

Dezene P.W. Huber^{a,b,e}, Melissa L. Erickson^b, Christian M. Leutenegger^c, Jörg Bohlmann^d, and Steven J. Seybold^b

^a University of California, Davis, Department of Entomology

^b United States Department of Agriculture Forest Service, Pacific Southwest Research Station

^c University of California, Davis, Lucy Whittier Molecular Core Facility

^d University of British Columbia, Michael Smith Laboratories

^e Current address: Ecosystem Science and Management, University of Northern British Columbia