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B.S. (1977) Biology California State Univ., Northridge  
 M.S. (1980) Biology, California State Univ., Northridge  
 Ph.D. (1986) Zoology, University of Florida

**Areas of Expertise:**

Roles of seed dispersers, seed predators, and physical disturbance in tropical forest dynamics; demography of tropical pioneer plants; roles of 2° chemicals in plant demography.

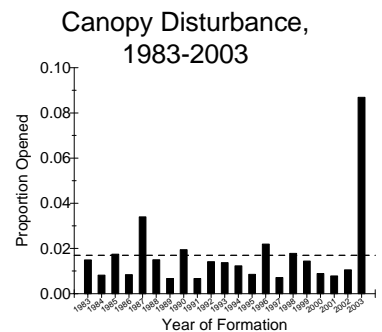
**Grants & Awards**

NSF-DBI: "A Strategic Development Plan for the Hope College Field Station" ('05-'07)  
 NSF-DUE: "Integrating Mathematics and Biology: A Case Studies Approach to linear Algebra." ('00-'02)  
 Hope College/HHMI: "Antifungal Compounds in Seeds of Pioneer Plants: Effects on Community-level Processes in a Costa Rican Cloud Forest" ('04-'05)

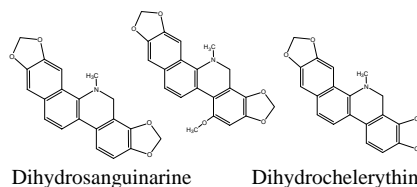
**Key Publications and Presentations:**

Veldman, J.W., K.G. Murray, A.L. Hull, J.M. Garcia-C., W.S. Mungall, G.B. Rotman, M.P. Plosz, and L.K. McNamara. 2006. Chemical Defense and the Persistence of Pioneer Plant Seeds in the Soil of a Tropical Cloud Forest. *Biotropica*: *in press*.  
 Murray, K.G., and J. Mauricio Garcia-C. 2002. Contributions of seed dispersal and demography to recruitment limitation in a Costa Rican cloud forest. Pp. 323-338, *in*: Levey, D. J., W. R. Silva, and M. Galetti. (eds) *Seed dispersal and frugivory: Ecology, evolution, and conservation*. CABI Publishing, Wallingford, UK.

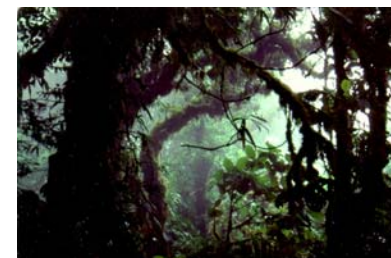
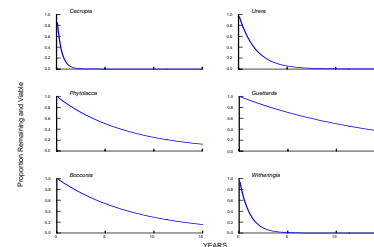
**Acknowledgements: NSF, HHMI**



Toxic Alkaloids from *Bocconia frutescens*  
 Dihydrochelirubine



Seed Survival in Forest Soil



Pioneer Plant Demographic Model

$$A = \begin{bmatrix} a_{1,1} & 0 & 0 & 0 & a_{1,5} \\ a_{2,1} & 0 & 0 & 0 & 0 \\ 0 & a_{3,2} & a_{3,3} & a_{3,4} & a_{3,5} \\ 0 & 0 & a_{4,3} & a_{4,4} & a_{4,5} \\ 0 & 0 & 0 & a_{5,4} & a_{5,5} \end{bmatrix}$$

Toxicity of Seed Extracts to *Artemia salina*

