

## 101 學年度新生座談會流程及演講者簡介

時間	內容	主持人
13:30~13:45	報到	
13:45~14:00	院長致詞	夏院長禹九
14:00~14:30	專題演講 Professor Craig Martin (Duke University) 題目: Strange Plants in Strange Places: Questions (and Some Answers) of Plant Structural and Functional Adaptations to Stress Worldwide	
14:30~14:40	討論	夏院長禹九
14:40~15:00	選課資訊說明	吳主任海音
15:00~15:15	休息	
15:15~16:00	師長介紹	自資系全體教師
16:00~16:30	師生交流	自資系全體教師、學生

### 演講者簡介

"Strange Plants in Strange Places: Questions (and Some Answers) of Plant Structural and Functional Adaptations to Stress Worldwide"

Craig Martin

Professor

Ecological Plant Physiology

Ph.D., Duke University

### Area of Interest and Research

Research in my lab revolves around understanding how plants adapt to stressful environments. Adaptations of interest include biochemical, physiological, anatomical, and morphological responses to such stresses. Much of our effort is focussed on the ecophysiology of plants having different photosynthetic pathways, e.g., Crassulacean acid metabolism (CAM), C<sub>4</sub>, and C<sub>3</sub>. In addition, we are interested in the potential ecophysiological significance of variations or intermediacy in these pathways, including CAM-cycling, C<sub>3</sub>-CAM intermediacy, and C<sub>4</sub>-CAM intermediacy. Recent projects receiving attention in the lab include the following: ecophysiological consequences of soil burial in species of Lithops, or "living stones," potential water conservation associated with CAM-cycling in succulents growing on rock outcrops in the Midwest, the multiple mechanisms underlying high water-use efficiency in CAM

plants, the potential effect of nocturnal malic acid accumulation on the water relations of CAM plants, the importance of C4 taxa during old-field succession in the Midwest, ecophysiology of several C4 prairie grasses relative to their microclimate, and the evolution of CAM in a diverse array of vascular plants.

Another emphasis of our research efforts centers on an elucidation of the physiological and morphological adaptations of plants to the epiphytic habitat in the tropics and subtropics. Most of this research features epiphytic bromeliads, especially members of the genus *Tillandsia*, many of which are CAM plants. We are interested in learning how such plants survive the aerial or arboreal environment while lacking functional roots, often lacking an ability to store substantial amounts of water, and facing scarce elemental nutrient availability. Specific research projects have included studies of shade adaptations in epiphytic bromeliads, adaptations and responses to drought stress in these plants, the impact of CAM on the water relations of such epiphytes, and the effects of dense epidermal trichome cover on gas exchange in atmospheric species of *Tillandsia*.

Not all the research in my lab is limited to CAM plants and epiphytic bromeliads. We pursue any questions about the ecological aspects of physiological and morphological adaptations of plants to stress. Such studies include comparisons of the water relations of different types of prairie plants, investigations of the degree of competitive interactions among weeds and prairie plants, sun/shade adaptations in mosses and grasses, effects of leaf age on photosynthesis and transpiration in tropical trees, the potential importance of water movement between leaves during drought stress, effects of space exposure on seed and seedling vigor, and effects of atmospheric pollutants on the ecophysiology of trees and crop plants.

#### Teaching Honors

Center for Teaching Excellence Award for Teaching Excellence, 2004

(one award per department per year at KU; selected by undergraduates)

H.O.P.E. Award Recipient, 2001

(one such award among the KU faculty yearly selected by Senior class of 2001; acronym stands for "Honor to Outstanding, Progressive Educator")

Chancellor's Club Teaching Professor, 2001

(only 14 such awards to KU faculty since 1981)