

## **The Cornell Club of Germany**

invites you to be part of a special Faculty Speaker evening with

### **Dr. Kraig Adler**

Former Vice Provost for Life Sciences and Professor of Biology in the Department of Neurobiology and Behavior

speaking on

### **“Cornell and the New Life Sciences Revolution”**

**Friday, May 18, 2007**

**IBB Hotel Erfurt,  
Gotthardtstraße 27  
99084 Erfurt  
aprox. at 8.45 pm**

#### **About the Speaker**

My major research program over the last two decades has been the sensory basis of long-distance orientation and navigation. These studies have been conducted both in field situation (Ithaca and Arizona) and in the laboratory (Mudd Hall and Liddell Field Station), depending upon the nature of the questions. Most of our work has focused on amphibians and reptiles as model systems, since these organisms are often locally abundant and easy to manipulate, but we have also conducted experiments with humans. We were the first to discover that amphibians and reptiles can detect and use skylight polarization patterns for orientation (polarotaxis) and that the critical receptors for this cue are extraocular (pineal and related structures). We were also first to show that amphibians can detect and use the earth's magnetic field for orientation, although the critical receptor remains unknown. Other studies have dealt with the influence of slope on orientation, the ability to learn a new homesite, the importance of individual variability, time-dependent orientation mechanisms, the role of environmental stress in orientation, and the function of melatonin in resetting internal clocks which are then used for orientation. Recently, we were able to demonstrate for the first time that amphibians are capable of true navigation. Most of these studies are conducted using the red-spotted newt, an abundant species in the Ithaca area that has both aquatic and terrestrial life stages. Our studies on human orientation have dealt primarily with tests for the possible use of magnetic cues, which we failed to find despite an earlier claim. Recently, I have initiated a comparative study of electroreception in salamanders. In addition to these studies on behavior, I have also been involved in studies on the evolution and systematics of amphibians and reptiles. Most of this work is centered on the herpetofaunas of China and Central America.