

**O-08: THE EFFECT OF BLEACHING ON THE TERPENE CHEMISTRY  
OF *PLEXAURELLA FUSIFERA*: EVIDENCE THAT ZOOXANTHELLAE ARE NOT  
RESPONSIBLE FOR SESQUITERPENE PRODUCTION**

Jamie L. Frenz and Russell G. Kerr\*

*Florida Atlantic University, Department of Chemistry and Biochemistry & Center of Excellence  
in Biomedical and Marine Biotechnology, 777 Glades Road, Boca Raton, FL 33431*

The close association between marine invertebrates, zooxanthellae and numerous bacteria gives rise to the question of the identity of the actual producer of secondary metabolites. In the fall of 2005, a widespread bleaching event occurred throughout the Caribbean Sea in which some colonies of the soft coral *Plexaurella fusifera* bleached. This study investigated whether zooxanthellae play a key role in the biosynthesis of secondary metabolite terpenes from *P. fusifera*. The extent of bleaching was examined by chlorophyll A analysis and also by zooxanthellae isolation and cell counting. The bleached and unbleached colonies were found to contain similar concentrations of eremophilene as the major terpene and both exhibited similar biosynthetic capability as evaluated by the transformation of [C1-<sup>3</sup>H]-farnesyl diphosphate to the sesquiterpenes. It therefore appears that terpene biosynthesis can proceed independently of the zooxanthellae in *P. fusifera*, suggesting that the coral or a bacterium is the true biosynthetic source.

**Graduate Student Travel Grant Award Winner**