



**BİLKENT UNIVERSITY**  
**MOLECULAR BIOLOGY AND GENETICS**  
**DEPARTMENTAL SEMINAR**

**"Proteasome inhibition requires metabolic adjustments in plants: implications for improved crop yield and rare Turkish plants"**

**Assoc. Prof. Doug Van Hoewyk**  
**Department of Biology, Coastal Carolina University**

A signature of cellular stress is the accumulation of reactive oxygen species, which can result in oxidized or misfolded proteins. In eukaryotic cells, minimizing the accumulation of damaged proteins is achieved by targeting irreparable proteins for destruction via the ubiquitin-proteasome pathway. In addition to alleviating stress, the proteasome also controls cellular homeostasis by recycling short-lived proteins. In mammalian systems, inhibition of the proteasome is associated with neurodegenerative diseases and an altered cell cycle, i.e. cancer. In contrast, it isn't fully understood how the proteasome coordinates cellular processes plants, and even less is known about how proteasome inhibition alters plant physiology. Data will be presented demonstrating that proteasome inhibition requires adjustments to plant primary metabolism. Additionally, the hypothesis that the proteasome governs plant stress tolerance and ecophysiology will be presented. Lastly, I will discuss my collaborative research project while in Turkey, which seeks to determine if nickel hyper-accumulators that are endemic to Turkey have elevated proteasome activity.

**Date-Time : Wednesday, October 21, 2015 – at 15:40**

**Place : SBZ-14**

**Host : Serkan Göktuna**