



**Department of Plant Science and Landscape Architecture**

"Growing in Excellence"

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**Dr. William J. Kenworthy, Chair, PSLA**

**SPECIAL GRANTS ISSUE !**

Dear Friends and Colleagues,

Welcome back from a busy summer. It is exciting to start the year with great expectations. One might say these are the best of times and these are the worst of times. In the midst of a growing state financial crisis, our faculty have placed a high priority on gaining outside funding in support of our research programs. I am pleased to report that we have been very successful in our efforts.

Department faculty have received confirmation of significant new funding from NSF, USDA CSREES, and preliminary indication of approval of a pending USDA proposal. Full funding of all grants will amount to over \$ 9.3 million in new funds for the Plant Science and Landscape Architecture Department and the College of Agriculture and Natural Resources. Dr. Gary Coleman is the lead principal investigator for a large multi-million dollar grant from NSF. This grant represents the largest funding received to date by a faculty member in the Department of Plant Science and Landscape Architecture.

The Department acknowledges the efforts of all of our faculty who have succeeded in being awarded grant support. This special issue of our PSLA newsletter recognizes our colleagues and the sponsors supporting their research in 2009.

Congratulations on a great job! We look forward to continued success as we grow in excellence!

Bill



**\$3.2 Million Grant Awarded to PSLA's Dr. Gary Coleman!**

The Department of Plant Science and Landscape Architecture is proud to announce a National Science Foundation grant award for \$3,230,632. The project titled "An Integrated Study of Nitrogen Cycling and Storage in Poplar" is funded through the Plant Genome Program ([http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5338&org=BIO](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5338&org=BIO)) of the National Science Foundation ([www.nsf.gov](http://www.nsf.gov)). This is a 4-year project funded for \$3,230,632 and involves an interdisciplinary research team from the University of Maryland consisting of Dr. Gary Coleman (PI, Department of Plant Science and Landscape Architecture), Dr. Ganesh Sriram (Co-PI, Department of Chemical and Biomolecular Engineering), Dr. Jianhua Zhu (Co-PI, Department of Plant Science and Landscape Architecture) and Dr. George Ude (Co-PI, Bowie State University).

The overall objective of this project is to elucidate the metabolic, regulatory and signaling pathways and networks that regulate nitrogen storage and cycling in poplar. Poplar is a fast-growing, temperate deciduous tree that has potential to be an economically viable, non-food source for biofuels and biomaterials. Nitrogen storage and cycling is an important trait that has been identified to have the potential to enhance sustainable yield and quality of biomass from trees.

This project will provide an unprecedented view of how nitrogen storage and cycling is coordinated in trees and is expected to transform our knowledge towards a genomic understanding of the regulatory pathways and networks that govern poplar nitrogen storage and cycling. This knowledge is expected to advance and accelerate the potential development of trees with improved nitrogen use that will enhance productivity and sustainability, while addressing future energy needs.

The project will also integrate research and education by training graduate students and post-docs, as well as by establishing a genomic training lab and an applied biotechnology course at Bowie State University (BSU). An intensive summer training course will also be established at BSU with participation by both BSU and UMD faculty. Each year, three students, who are graduates from these training programs, will be selected for research internships in one of the PI/Co-PI's labs at the University of Maryland. This will expose undergraduates to the post-graduate program opportunities at University of Maryland.



**\$250,000 Grant Awarded to PSLA's Dr. Jianhua Zhu !**

Dr. Jianhua Zhu's project titled "Molecular Mechanisms of ABA Biosynthesis Under Drought Stress" was selected for funding by NSF. Drought resulting from a soil water deficit is one of the most common abiotic stresses that lead to substantial losses in productivity of crops world-wide. Phytohormone abscisic acid (ABA) is a very important factor in controlling abiotic stress responses in plants. ABA levels increase rapidly upon drought stress to regulate downstream responses including drought stress-responsive gene expression and stomata movements to minimize the cellular damages imposed by drought stress. While ABA accumulation itself is a well known response to drought stress, the molecular factors that control ABA accumulation and connect ABA to down stream responses are largely unknown. Previous study has identified a transcription factor HOS10 which is important for drought stress-induced ABA accumulation and drought tolerance.

In this study, Dr. Zhu aims to dissect the mode of HOS10 function in drought stress and to identify additional molecular components which regulate the increase in ABA content seen after exposure to drought stress through detailed characterization of two newly isolated mutants, ced1 and ced2, which show increased (ced1) or decreased (ced2) ABA accumulation upon drought stress. In Arabidopsis, proteins that control expression of the gene related to the mutations are likely to play an important role in early events of the sensing and signaling pathways that regulate ABA biosynthesis. Results from the proposed work will significantly advance our understanding of how ABA biosynthesis is regulated at the molecular level in order to design and implement new strategies to improve crop performance under drought stress.

**PSLA Faculty Grant Awards**

<u>FACULTY RESEARCHER</u>	<u>\$ AWARD *</u>	<u>SPONSORS</u>
Y. BALCI	82,375.00	USDA-APHIS, FOREST SERVICE
P. CHAVERRI	592,343.00	NSF, USDA-ARS
S. COHAN	35,000.00	MIPS
G. COLEMAN	1,366,936.00	NSF, USDA-CSREES, USDA-ARS
J. COSTA	466,748.00	USDA-ARS, MD GRAIN, USDA-CSREES
P. DERNOEDEN	90,000.00	US GOLF ASSOC.
K. EVERTS	243,385.00	USDA-CREES
A. GRYBAUSKAS	49,576.00	USDA-ARS, MD GRAIN ASSOC., USDA CSREES, MD SOYBEAN BD NORTH CENTRAL SOYBEAN RESEARCH PROGRAM
W. KENWORTHY	242,425.00	USDA-ARS, MD SOYBEAN BD
B. KRATOCHVIL	87,530.00	MD GRAIN, MD SOYBEAN BD, USDA-CSREES, STMD-MDA
J. LEA-COX	59,000.00	HRI, MIPS
M. NEEL	1,152,897.00	STMD-SEAGRANT, NSF, ARMY CORPS OF ENG
R. RITTER	37,920.00	MD GRAIN, MD SOYBEAN BD, PIONEER HI-BRED, MONSANTO
JOS. SULLIVAN	165,575.00	NPS, STMD-CTR OF ENV. SCI., USDA-ARS
T. TURNER	34,625.00	USDA-ARS
C. WALSH	316,819.00	USDA-CSREES, FDA
J. ZHU	250,000.00	NSF

\*Represents total dollars received for currently funded projects as of August 2009 COEUS Reports

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