10th Annual Research Town Meeting
April 16, 2013
(Draft)

10 a.m. – 4:30 p.m.	SIU Showcase Ballrooms A, B, C, D, Corker Lounge, International Lounge
10:15 a.m.	Resumé and CV Writing Workshop Graduate Professional Student Council International Lounge
10:30 a.m.	Research Presentation, "Discovery of a New Species" Dr. Susan Ford, Presenter Student Center Auditorium
11:00 a.m.	Research Presentation, "A Soybean Cyst Nematode Resistance Gene Points to a New Mechanism of Plant Resistance to Pathogens" Dr. Khalid Meksem, Presenter Principal Investigators: Shiming Liu, Pramod K. Kandoth, Samantha D. Warren, Greg Yeckel, Robert Heinz, John Alden, Chunling Yang, Aziz Jamai, Tarik El-Mellouki, Parijat S. Juvale, John Hill, Thomas J. Baum, Silvia Cianzio, Steven A. Whitham, Dmitry Korkin, Melissa G. Mitchum, Khalid Meksem Student Center Auditorium
11:00 a.m.	Disseminating Your Research Workshop Graduate Professional Student Council International Lounge
11:45 a.m.	Film, *Vera*. A REACH student project using cutting edge RED Scarlet technology. Austen Wood, et al. Student Center Auditorium
12:30 p.m.	**Welcome Address** **Rita Cheng, Chancellor** **Student Center Auditorium** **Keynote Speaker** **The Honorable Sheila Simon** **Illinois Lieutenant Governor** **Student Center Auditorium**
1:00 p.m.	Preparing for Graduate School Workshop Graduate Professional Student Council International Lounge
2:00 p.m.	Research Lecture, "Enhancing NMR and MRI with Hyperpolarization" Dr. Boyd Goodson Student Center Auditorium

3:30 p.m.	Award Presentations Ballroom D
3:30 p.m.	Wine and Cheese Reception Ballroom C, D

Susan Ford, Anthropology, College of Liberal Arts
TBA (Discovery of a New Species)

Khalid Meksem, Plant, Soil, and Agricultural Sciences, College of Agriculture

"A Soybean Cyst Nematode Resistance Gene Points to a New Mechanism of Plant Resistance to Pathogens"

Soybean cyst nematode (SCN), Heterodera glycines Ichinohe, causes more than a billion dollar in yield losses annually in the United States, it is indeed the most economically important pathogen on soybean. Moreover, virulent populations are overcoming most known resistance sources, therefore, the urgent need to identify, isolate and deploy new genes for resistance to SCN. Genes for resistance to SCN has been identified and mapped to several regions of the soybean genome by both, classical and molecular genetics using a variety of soybean germplasm. The Rhg1 locus on chromosomes 18 and the Rhg4 locus on chromosome 8 were identified by several research teams as two major resistances QTL to SCN. An integrated approach, combining positional cloning with newly developed functional genomics tools in soybean (VIGS, RNAi, Hairy root complementation and TILLING), allowed the isolation and confirmation of a metabolic gene called Serine Hydroxymethyl Transferase at the Rhg4 locus in resistance to SCN. The discovery is a major breakthrough in the field of plant disease resistance that will impact greatly our understanding of soybean's resistance against SCN and will allow the development of soybean lines with durable resistance to soybean cyst nematode.

Boyd M. Goodson, Chemistry and Biochemistry, College of Science

"Enhancing NMR and MRI with Hyperpolarization"

Nuclear magnetic resonance (NMR) spectroscopy, and its more-famous sister technique, magnetic resonance imaging (MRI), embody some of the most powerful methods available to scientists, engineers, and physicians. NMR allows the structure and dynamics of molecules and materials to be studied with atomic resolution; MRI provides exquisite images of healthy and diseased tissues in the body without the need for ionizing radiation like x-rays. Nevertheless, NMR and MRI are limited by a serious drawback—low detection sensitivity. Research at SIUC, Vanderbilt, and other institutions in our Collaboration are investigating the use of hyperpolarization techniques to combat this sensitivity problem. In hyperpolarization, the detected magnetization of nuclear spins is increased by several orders of magnitude, potentially allowing new kinds of experiments and imaging modalities. Two approaches we are pursuing respectively use laser-polarized xenon and parahydrogen (a 'spin-isomer' or ordinary hydrogen gas) as the sources of the enhanced NMR/MRI signals. Biomedical applications of interest include lung space imaging to study pulmonary diseases, and metabolic imaging of cancer.