August 17, 2009

MEMORANDUM

TO: Unit Leaders

FROM: Millie Ferrer-Chancy, Kirby Barrick, and Mark McLellan

RE: Up-date on Request for Proposals by Provost

We want to thank all of you for your commitment to pursue excellence in research, teaching, and extension. We received a total of 49 proposals from 26 units. The Deans met to review and discuss all of the proposals. Of the 49 proposals, we chose 12 positions to submit to Larry and the Provost. This was a very tough decision considering the compelling needs of each unit. We felt that submitting more than 12 would not be looked at favorably by the committee who will be evaluating all UF unit submissions. However, when Larry meets with the Provost and the other Sr. VPs to discuss the positions, he will take the other 37 with him just in case other UF units submit a position that matches one of ours. We might be able to be included in an interdisciplinary cluster if they choose to take that path.

Attached, please find the 12 positions that were submitted.

Thanks again for your participation.
Proposals to Initiate Tenure –Track Faculty Searches – Fall 2009
Submitted by - Institute of Food Agricultural Sciences (IFAS)

Computational Biologist

New technologies have altered the fundamentals of biological sciences. The advent of high-throughput genomics has brought with it the capacity to generate massive volumes of information that are relevant to critical biological processes in the microbial and horticultural sciences. The drive to produce more information must be coupled with the ability to synthesize these data into coherent outputs. The era has generated unprecedented demand for a new breed of scientific researcher, someone with skills to decipher the glut of raw data and channel it into cogent biological questions. UF-IFAS has a large deficiency in this area. We need to ramp up our computational biology faculty to remain competitive in this fast-moving field, particularly as related to NSF and NIH funding. These agencies require computational biology support to be associated with many grants they award. New talents are required to soften the interface between computational science and other biological sciences, as well as train the next generation of researchers in these cutting-edge areas. A faculty line in computational biology would immediately place the incumbent into a positive funding environment with a huge likelihood of favorable collaboration within UF. It would expand the probability of federal support for other UF-IFAS faculty that would benefit from computational biology support. This position would form a nucleus of bioinformatics talent at UF, bringing us closer to national leadership in this up-and-coming area of biology.

Nematode Molecular Biologist

Addressing critical needs in nematode past management, this position will be a molecular biologist/functional genomics specialist. It will develop novel management approaches to this major soil-based pest and be responsible for core graduate courses in related physiology and molecular genetics. This program will drive the development of environmentally compatible management tools ranging from novel biocides for direct action to unique host plant resistance. A functional basis for success will be the expertise and understanding of molecular systems that mediate interactions between plant parasitic nematodes and their hosts.

Metabolic Engineer/Metabolomics Specialist

Focused in the area of feedstock conversion to biofuels and by-products, this position will be a catalyst to improving the creativity and innovation of our conversion expertise by emphasizing microbial metabolomics and searching for unique cell functions that could springboard us to new technologies. This position in metabolomics will collaborate well with bioinformatics specialists and will build on current expertise. Exploring unique cellular and active protein functions has been shown to yield novel transformative pathways that might well add great value to our biofuels and related research.

Climate Change Ecologist

Climate change and the cascading effects resulting from climate change will likely have a greater influence on natural ecosystems, agriculture, economics and human society than any other factor in the coming century. Climate change is projected to alter patterns of human settlement and
land use, productivity of natural and anthropogenic systems, production of ecological goods and services, distribution of pest species and disease organisms and a myriad of other factors. The scientific community is increasingly united in their consensus that climates are changing globally, but the magnitude and full implications of those anticipated changes are less clear. Moreover, the most appropriate societal responses to climate change to mitigate impacts and capitalize on opportunities are very poorly understood. Academia has a critical role to play in advancing our understanding of climate change, the ramifications of climate change on the environment and its ecosystems, and the development of adaptive strategies for addressing climate change. IFAS is proposing a new faculty position focused on the environmental and ecological consequences of climate change. The position would address topics including the influences of rising sea levels on marine, estuarine, and coastal ecosystems and the species that live in those ecosystems; the impacts of climate-induced changes in the frequency, nature and intensity of disturbance events (e.g., hurricanes, fire) on species and ecosystems; the impact of climate change on habitat suitability of areas and persistence of native species, the ecological consequences of changes in growth and productivity of organisms and the influence climate-induced change on agriculture and society. The new faculty member will serve as a key team member for multidisciplinary programs related to climate change and as a leader in advancing UF’s efforts in climate change. Because climate change is a key area of research, education and extension, it is anticipated that increasing amounts of federal research funding will be devoted to climate change issues. The faculty line will play a critical role in the newly developing Florida Climate Institute and the expansion of the Southeast Climate Consortium to include a broader ecological focus and would be a key resource for UF’s campus-wide sustainability efforts.

Public Opinion Formation and Issues Education

The sustainability of Florida’s economy and way of life, including the food and agricultural enterprise, faces serious threat from state and national demographic trends and policy decisions that are based on uninformed opinion and political persuasion instead of science. Projections from the Sustainable Florida Collins Center estimate that the state’s population will increase by eight million people by 2030 with 2.6 million acres of agricultural land lost to development. Experts have emphasized the need to make scientific principles accessible to citizens and policy makers in the state. Over the years, IFAS has provided many solutions to its broad clientele, but the bases and processes that shape opinions and decisions regarding agriculture and agricultural technologies by clientele, citizens, and policy makers remain largely unknown. A focused research program on opinion formation pertaining to policy development is a critical and missing knowledge link in ensuring Florida’s sustainability as described above. A faculty position is necessary for research and teaching programs focused on public opinion formation and issues, education, and the influence of technology and communication strategies on public opinion. Findings from this research program will inform extension and outreach efforts, media campaigns, and public policy development. In addition, through coursework offered on opinion formation and change processes, undergraduate and graduate students will be better positioned to effectively interface with their constituent groups and with policy makers on issues affecting the food and agricultural industry in the state and nationally.

Arbovirologist

Expertise in Arboviruses and related diseases are key to protecting public health. Studied in
connection with insect vectors, this work will have broad ranging implications for disease-vector-host models, will shed new light on these interactions and lead to specific work on West Nile disease and St. Louis encephalitis viruses that are important to Florida and the U.S. With research collaboration built across other IFAS units, CVM and COM – this new faculty position will contribute broadly to UF capacity and specifically in core multidisciplinary teams involving human and animal health.

**Statistical Genetics/Genomics**

As an essential contributor to core science capacity, this new faculty position will be a key science leader in statistical analysis allowing us to link genetic code to identification and functionality. Exploring and discovering new statistical techniques, this new faculty position will be invaluable as an independent researcher while contributing dramatically through collaboration with life science researchers. As a core science leader, we expect this position to be a cutting edge pace setter and essential element to advances in molecular biology and related efforts as well as an effective researcher in statistical theory.

**Food and Health Economics and Policy**

Two strategies for research exist that will combine the importance of food production and consumption with economics and policy development. In the area of health economics and policy, a research program will investigate issues including the impact of nutritional strategies on consumer and producer behavior, food quality, and food safety policies. Research can shed light on the economic determinants of dietary choice and related health consequences of poor diet (e.g., obesity, heart disease, stroke, Type 2 diabetes, cancer), and on consumer acceptance of public policies encouraging healthful diets. A faculty position in this area has high potential for generating outside funding in collaboration with other departments and schools such as Food Science and Human Nutrition, Family, Youth and Community Sciences, and the UF College of Medicine since many grant programs encourage an economic component. The University of Florida has several health economists working on the delivery of health services and public health programs such as Medicare. However, additional effort is needed in research that focuses primarily on nutritional, dietary, and food safety issues. In the area of food economics and policy, the research program will investigate issues such as biotechnology, food demand analysis, trade and regulated markets, organic and certified food production, and self sufficiency in food production. Research can shed light on consumer food choices and producer response, food quality, food availability, and developing markets for specialty food products produced in Florida. The position has high potential for generating outside funding in collaboration with other departments within IFAS and the University.

**Food Microbiology**

Recent multi-state foodborne outbreaks and nationwide product recalls have increased awareness and funding resources for national and international food safety programs. Global climate change is predicted to greatly impact emerging diseases, particularly in Florida where invasive species and climatic events may be more extreme. Underlying these problems is an urgent need for improved understanding of the environmental conditions, agricultural practices or mitigation protocols that promote or limit the survival, growth, and evolution of pathogens in a variety of
food resources. The University of Florida and the Florida state legislature recognized the need for expanded research in this area by the recent establishment of the Emerging Pathogens Institute and subsequent hiring of faculty with related research. Recent developments of "SOLiD" sequencing technologies, as well as advances in transcriptome, proteome, and metabolome assessment have expanded the capacity for rapid evaluation of hundreds, perhaps thousands of genomes and corresponding gene products. This information has both basic science (pathogen evolution, systems biology, defining metabolic pathways) and practical application (pathogen source tracking, pathogen-specific diagnostics and mitigation, improved risk assessment). The appropriate candidate will bring these cutting-edge technologies to the Food Safety arena at University of Florida.

**Translational Genomics of Bioenergy Crops**

The case for research on bioenergy crops is compelling for economic, national security and environmental conservation reasons. The State of Florida is well-positioned to capitalize on the national need for innovating, generating and deploying clean energy. The Florida climate provides unique advantages for bioenergy crop production including a long growing season, generally high rainfall during the warm season, and high temperatures and solar radiation to optimize plant growth. Coupling that with major investments in the development of plant genetic resources that have lead to an advanced understanding of genome organization and function makes it possible to translate that basic knowledge into the creation of new and improved bioenergy crops. A faculty position in translational genomics of bioenergy crops would contribute significantly to building and sustaining excellence in bioenergy research at the University of Florida, as well as continuing high levels of scientific discovery and productivity. The faculty member will also be an integral part of research programs in the newly-established Florida Institute for Sustainable Energy and the University of Florida Genomics Institute. The faculty member will develop an internationally recognized, competitively-funded, multidisciplinary research program utilizing state-of-the-art molecular breeding/quantitative genetics approaches for the exploitation of genomics data in germplasm enhancement and improvement of bioenergy crops. In addition, the faculty member will provide leadership for and interact with a dynamic, interdisciplinary group of scientists with the goal of developing and introducing proprietary germplasm in the southeastern United States. Areas of interest include biomass yield and quality, stress tolerance and low-input characteristics. The faculty member will also teach courses in plant genomics and genetics and will participate actively in undergraduate and graduate student advising and mentoring, supervising thesis and dissertation research, and publishing results with his/her students.

**Landscape Biogeochemistry / Multi-scale Biogeochemical Modeling**

Biogeochemistry is an interdisciplinary science which includes the study of integrated biological, geological and chemical processes regulating the fate and transport of nutrients and contaminants in soil, water and atmospheric components of an ecosystem. The proposed faculty position will address emerging cutting edge topics in Biogeochemical Cycles as related to climate change, carbon sequestration, and water and air quality. This is one of the major research thrust area of NASA, NSF, DoD, DOI, USDA, and EPA. Integrative modeling and synthesis across watershed to global scales is a primary research challenge in long term ecological research, in order to
better understand the consequences of rapidly changing land use and climate change. This position will complement current efforts of interdisciplinary institutes and programs such as the UF-Water Institute, Carbon Resources Science Center, Climate Change program and others related programs in the region. The faculty member in this position will develop a nationally recognized research program on biogeochemical cycles coupled to hydrology and climate change across terrestrial and aquatic ecosystems influenced by anthropogenic and natural stressors. This position will complement programs in various academic departments within IFAS as well as in CLAS and Engineering.

**Community Systems**

Florida employs a complex, hierarchical model of decision-making in the public sphere. As the state’s Economic Development Council points out, Florida’s approach to management and planning places great responsibility at the local level, while decisions are made by local municipalities and counties, the eleven regional planning councils, and the state. The well-being of Florida’s citizens depends on all of the components and actors in this system working together to create successful, sustainable approaches to managing the state’s natural, built, and human resources. Three critical factors add to the complexity of this decision-making model. The first is population growth and distribution. Florida’s population will continue to grow, and much of the growth occurs in peri-urban areas, the rural-urban interface. This creates divisions, conflicting goals, and requirements for multi-level collaboration and decision-making. Even “local” decisions become increasingly dependent on regional collaboration and shared goals and objectives. A second factor is the increasing competition for resources, ranging from natural resources like water to fiscal and human resources. Decisions at many levels will determine the availability, cost, and quality of water available to local communities. The third critical consideration is the diversity of Florida’s community. Disaster preparation, management and mitigation provide a good example of how diversity affects the process and quality of decision-making. Individual communities in Florida have diverse populations, and local and regional authorities must be prepared to meet the specific needs of diverse populations, which may differ from those of the general population in the county or metropolitan area significantly.

This faculty position will focus on applying the analytic techniques of dynamic, hierarchical analysis to understanding the needs, decision-making processes, and potential outcomes in Florida’s communities. Dynamic hierarchical models have been widely employed to understand complex, multi-layered systems in the physical and biological sciences. Contemporary social researchers apply the concepts and techniques of dynamic, multi-dimensional modeling to the study of social systems, including community systems. The approach focuses on a particular level or dimension of interest, and the researcher examines how outcomes at that level derive from both the interactions and outcomes of sub-systems, like individual communities, and those of higher level systems, like the state. The results can generate a wide variety of applications, including models of outcome states given different assumptions, inputs or decisions and development of decision-support tools and generate support from public and private entities for research support.