



The University of Georgia

Office of the Vice President for Instruction

October 20, 2010

UNIVERSITY CURRICULUM COMMITTEE – 2010-2011

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Undergraduate Student Representative – Mr. Stephen Thompson

Graduate Student Representative – No representative

Dear Colleagues:

The attached proposal for a new Bioenergy Systems Research Institute will be an agenda item for the October 27, 2010, Full University Curriculum Committee meeting.

Sincerely,

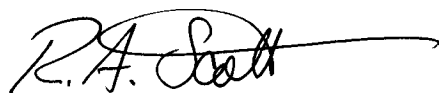
David E. Shipley, Chair
University Curriculum Committee

cc: Professor Jere W. Morehead
Dr. Laura D. Jolly

Proposal for a New Institute

Bioenergy Systems Research Institute

Proposed by:

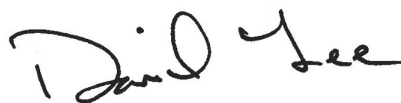


07/30/10

Robert A. Scott, Interim Director
Bioenergy Systems Research Initiative

Date

Approved by:



08/02/10

David C. Lee
Vice President for Research

Date

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Name	Bioenergy Systems Research Institute (BSRI)
Slogan	Harnessing biology for a new energy economy
Vision	The institute supports alternative energy, fuel, and materials production through the use of biomass conversion strategies that are environmentally and economically sustainable.
Mission	The institute encourages and facilitates: (a) integrative, collaborative basic and applied research projects in bioenergy that recognize the entire lifecycle and environmental impact of biomass production, harvesting, transport, treatment, conversion, and recycling; (b) education and training of the next generation of scientists and engineers that will form the 21 st century workforce in the alternative energy field; (c) outreach and communication activities to involve our public and private stakeholders in the development and dissemination of next-generation bioenergy technologies.

1 Opportunity/Purpose

Two closely related global crises help define the human condition at the beginning of the 21st century. First, the recognition that we are close to depleting our natural fossil fuel resources and that increasing competition for the remaining stores incites international conflict requires a major research and development effort to find alternative energy sources. Second, the profligate conversion of these sequestered carbon stores into CO₂ and other "greenhouse gases" has accelerated manmade climate change to the point that our survival depends on transforming our energy economy into a more sustainable system.

Strategies for development of economically viable alternative energy sources abound: solar, wind, geothermal, nuclear, fusion, and wave energy production systems are all being pursued. We believe that UGA and the state of Georgia are best positioned to contribute to biomass-derived alternative energy. Although considerable effort has been expended over the past decade in corn-based ethanol production, it has become clear that the food-fuel competition makes this strategy unsustainable. Technological developments in cellulosic ethanol production, as well as production of other bioproducts derived from biomass (e.g., biodiesel, other fuels, chemical intermediates), will likely be a significant part of future sustainable energy sources.

Economically viable and environmentally sound development of any of these bioenergy alternatives will require attention to the entire system of biomass growth, harvesting, transport, treatment, conversion, and recycling, with emphasis on integrated biorefinery and carbon cycling concepts. The Bioenergy Systems Research Institute is designed to encourage and facilitate all aspects of the basic and applied research efforts of this systems approach.

1.1 Added value

The "Systems Research" portion of the institute name reflects the value added to the UGA mission by this new institute. UGA has many individual strengths in areas that contribute to bioenergy development, but this institute will provide the venue for collaboration and integration of these areas. For example, a combination of plant biology, plant genomics, and carbohydrate chemistry are contributing to the understanding and genetic manipulation of plant characteristics that affect biomass degradation and utilization. Expertise in microbial fermentation and biochemical enzymatic degradation of biomass components contributes to new biological and biochemical processes in utilization of biomass, whereas engineering expertise in thermochemical (pre)treatment provides an alternative degradation pathway. Conversion of the resulting degradation materials to biofuels and bioproducts utilizes expertise in biochemistry and chemistry, as well as engineering. Finally, analyses of resource balance (cost of conversion and market price of product), carbon balance, and overall environmental

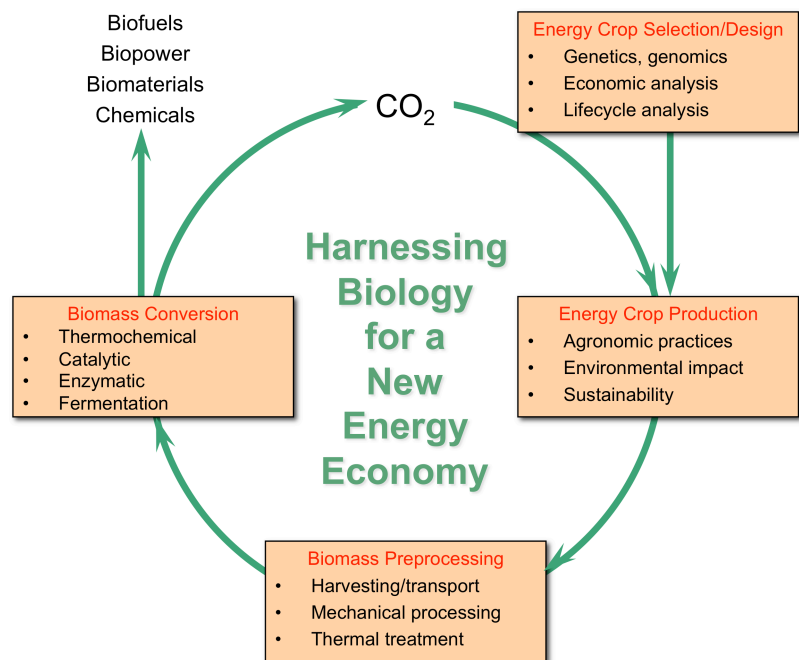
impact take advantage of economists, engineers, and natural resource specialists who are experts in sustainability and lifecycle studies. It is the combination and integration of all these areas that result in the whole being greater than the sum of the parts. *No single existing unit on campus (department, school, college, institute) can accomplish this.*

A large number of existing units on campus (as well as off-campus partners) will experience the value added by this institute and will contribute faculty members to this effort. All of the following have been involved in the planning for this institute and their leaders have provided letters of support:

- Faculty of Engineering
- Complex Carbohydrate Research Center
- Department of Biological and Agricultural Engineering
- Department of Plant Biology
- Department of Genetics
- Department of Microbiology
- Department of Biochemistry and Molecular Biology
- Department of Chemistry
- College of Agriculture and Environmental Sciences
- Franklin College of Arts & Sciences
- Odum School of Ecology
- Warnell School of Forestry and Natural Resources

1.2 Goals

Generally the goal of BSRI is to provide infrastructure, support, and facilitation of integrative multidisciplinary efforts in research, education/training, and public service and outreach in the area of bioenergy across the campus, state, region, country, and world. Our emphases will be (1) facilitating systems-level research in the science and technology of biomass-related alternative energy; (2) education and training focused on work force development to train the new generation of bioenergy leaders; (3) involving the people of Georgia in the delivery of new technologies to the marketplace.



This schematic summarizes the general areas of research in which prospective institute members are involved:

- Genomics studies of potential energy crops to understand genetic characteristics that affect growth, yield, recalcitrance
- Analysis of market economics for particular feedstocks and products
- Full lifecycle analysis of growth, harvesting, transport, treatment, conversion, waste recycling, to determine sustainability
- Agronomic research to select growing regions, soils, varieties, practices
- Environmental impact studies on energy crop growth and conversion, including waste recycling and effects on water usage and quality, as well as impacts on wildlife habitat

- Testing various pretreatments for effect on yield, recalcitrance, product distributions
- Developing conversion technologies including thermochemical, catalytic, enzymatic, or fermentation technologies, each specifically engineered for optimal conversion of specific feedstocks
- CO₂ sequestration and other carbon cycling technology development

Together, these areas will be integrated within the institute framework to develop new systems-level approaches to bioenergy research. For example, we are already pursuing several immediate-term projects in support of our goals:

1.2.1 Communication and Outreach

The web site that currently describes our informal efforts (bioenergy.uga.edu) will become the BSRI web site and already acts as our primary conduit for dissemination of information about bioenergy research at UGA. Other communication channels include a listserv (bioenergy@listserv.uga.edu), news releases, flyers and brochures, presentations, videos, as well as the traditional research publication in scientific literature. BSRI now has a Program Coordinator (hired in April 2010) to work with the OVPR Research Communications office to coordinate these communications for multiple audiences: scientific community, private companies, state and federal offices and legislative staffs, private farmers and growers, and the general public.

We have already expended some effort to develop a healthy outreach program involving researchers and other spokespersons. This involves education and training activities directed at participating academic and corporate partners, farmers and growers through extension efforts, local schools, legislative leaders and their staffs, and the general public. This is synergistic with existing outreach activities within the College of Agriculture and Environmental Sciences, the Institute of the Faculty of Engineering, the Warnell School of Forestry and Natural Resources, and the Office of the Senior Vice President for External Affairs.

1.2.2 Professional Science Masters Graduate Program (Biomanufacturing SMP)

We (E. Tim Davies, Joy Peterson, Allen Amason, co-PIs) have recently received funding from NSF to support a program dedicated to workforce development in biomanufacturing that is led by industry needs. Our goal is to train future leaders in skills and methods that industry demands, while giving them an understanding of business practices that allow them to contribute fully to the development of their companies. A shortage of trained technical managers is a limitation for growth of the biotechnology industry in Georgia, and there is a dearth of biomanufacturing scientists nationally, at a time of unprecedented growth in biomanufacturing capacity in biofuel, biochemical, environmental and biopharmaceutical industries. We argue that UGA, with a number of unique assets, is an ideal site for training a new generation of biomanufacturing leaders.

We will partner with local technical schools and with biotechnology companies to provide professional masters degrees to STEM students who will then be perfectly positioned to enter management roles in companies involved in biomanufacturing.

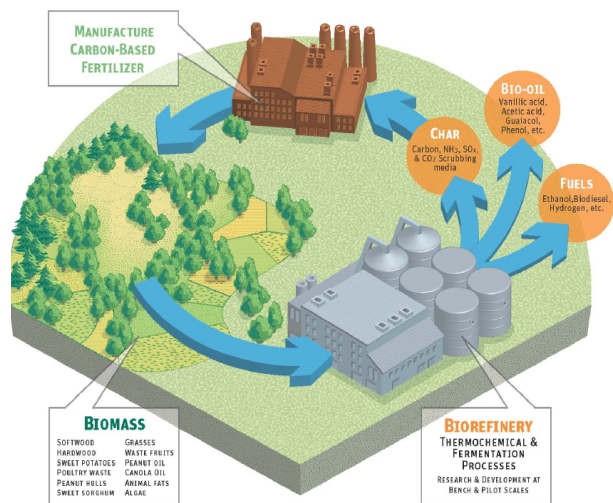
1.2.3 Virtual Analysis Facility (BARnet)

Research and development of new biomass treatment and conversion technologies require the ability to characterize in detail the physical and chemical nature of biomass feedstock, treated feedstock, conversion intermediates, and bioenergy products (fuels, materials, chemicals). A broad spectrum of basic and sophisticated analysis methods and instruments are required to correlate conversion effectiveness (efficiency, yield, purity) with characteristics of (pretreated) feedstocks. Current research projects utilize a variety of analysis methods that may be developed in-house, available through local service centers, or services provided by external suppliers.

A working group has designed and populated a preliminary database of the kinds of analyses used in the biomass arena, the types of information provided by those analyses, and what instrumentation and methods are available (anywhere) to conduct these analyses. We plan to develop this into a web-based database with a user-friendly front end to provide a virtual facility available publicly to connect bioenergy researchers with the analytical techniques they need. We have titled this the Biomass Analysis Resource Network (BARnet).

1.2.4 Integrated Biorefinery (www.biorefinery.uga.edu)

As a parallel to the petrochemical refinery, the biorefining industry is looking to produce multiple alternative fuels, such as ethanol, biodiesel, green diesel, heating oil. A number of UGA engineers and scientists have collaboratively launched an innovative Biorefining and Carbon Cycling program centered around the *integrated biorefinery*. This pilot-scale facility processes a myriad of biomass feedstocks, including agricultural waste and forest biomass, to produce a variety of fuels and a diversity of revenue-generating products. The environment is also a winner since the biorefinery uses agricultural waste like peanut hulls and poultry litter, wood waste like forest residues and lumber byproducts, as well as industry byproducts, recycling the solid carbon product (char) as a soil amendment or carbon-based fertilizer. This concept contributes to an environmentally sustainable biomass-based economy.



1.2.5 Fort Stewart Bioenergy Collaboratory

The Army Energy Security Implementation Strategy, which embraces the need for alternative energy options in support of Army operations, was approved by the U.S. Army's Senior Energy Council in January 2009. In alignment with this strategy, Fort Stewart will replace its existing wood-fired boiler with a wood gasification co-generation plant (biomass-based "green" power). The University of Georgia plans to collaborate with Benham, a subsidiary of SAIC Engineering, Inc., to develop and apply alternative, sustainable energy solutions at Fort Stewart. SAIC/Benham is proposing to contract with the Army to design, build and operate a biomass-based power plant at Fort Stewart to provide sustainable and secure thermal power and electricity. UGA scientists will conduct basic and applied research, both on the UGA campus and at Fort Stewart. Researchers will pilot and bring projects to scale at the Fort Stewart Bioenergy Collaboratory, which will comprise laboratories and research facilities on-site at Fort Stewart, in space provided by SAIC/Benham and equipped by UGA. Additional on-site research will take advantage of byproducts of the commercial power plant to develop technologies (e.g., for liquid fuel production) and will advise base commanders on optimal sustainable and environmentally sensitive growth and use of on-site feedstock for energy generation. The Fort Stewart Bioenergy Collaboratory has a mission of developing sustainable energy technologies that lead to energy security and independence.

1.2.6 Mendel Bioenergy Partnership

Our integrated biorefinery concept results in tools and processes that can be used to test new energy crop species as feedstocks, including woody plant varieties and genetically diverse, high-yielding perennial grass varieties. Results are used to help enable industrial scale deployment of these critical technologies to the state's emerging bioeconomy. We are currently expanding our efforts to test Miscanthus as a potential feedstock. We have an opportunity to

work with a private bioenergy company (Mendel Bioenergy Seeds) to involve a team of private growers across the state in testing novel *Miscanthus* varieties as an economic and environmentally sustainable energy crop, which would then be utilized in our integrated biorefinery. In particular,

- We will identify the most efficient biochemical fermentation process to convert *Miscanthus* feedstock into ethanol and other bioproducts;
- We will evaluate the downstream conversion of *Miscanthus* biomass for heat and electrical power generation, and for production of liquid transportation fuel and bioproducts in our biorefinery. Specifically, we will target conversion pathways employing torrefaction, pyrolysis, and gasification;
- We will develop targeted methanogenic bacterial processes for methane production using fresh *Miscanthus* biomass and/or the residue (residual hydrolysates) after *Miscanthus* conversion to ethanol. We will conduct both bench-scale work and pilot-scale demonstrations in rural Georgia where industrial and agricultural businesses can obtain first hand knowledge of the ability to convert *Miscanthus* for localized energy applications.

1.3 Assessment metrics

Research. Institute members will report on an annual basis (possibly through the Faculty Activity Repository, FAR) the number of bioenergy-related publications and presentations, as well as the citation impact of publications. We will track external (sponsored) funding to institute members as PI or co-PI regardless of the budgetary unit that manages the award. Separately, we will track external funding for which the institute acts as the managing budgetary unit. This funding should generate return of facilities & administrative reimbursements (see Funding/budget section) and these income sources will also be tracked.

Education/Training. Should we receive NSF funding for our Biomufacturing Science Masters Program, the number of applicants, students, and graduates of this program will be an important metric to measure our impact on education and training. We also plan to generate a list of existing formal courses related to bioenergy and track institute member contributions to teaching those courses (again through FAR). We will also treat graduate student and postdoc training as valid contributions to education and training and use those numbers as a metric to track our training impact.

Outreach/Public Service. As an institute, we will develop a list of types of outreach and public service activities (e.g., presentations to schools, the public, workshops, etc.) and train each institute member in how to record these activities in FAR, so that we can report on them for tracking purposes.

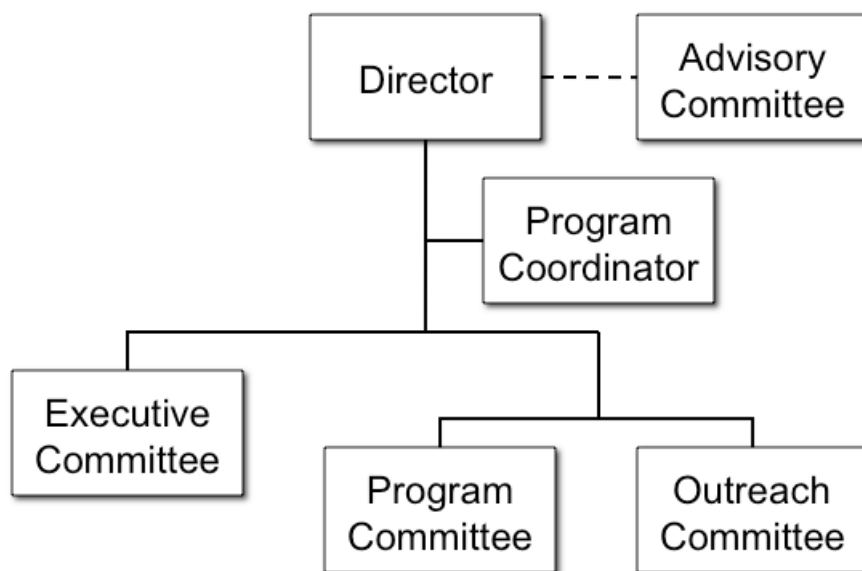
2 Organization and Operation

A well thought out and robust organizational structure with clear reporting lines and explicit job descriptions is essential to successful operation of any academic unit, especially one that crosses so many other "boundaries."

2.1 Administrative unit/reporting to what leadership position

The Bioenergy Systems Research Institute will report to the Vice President for Research in the Office of the VPR and funding will come from the OVPR (see section 3).

2.2 Organizational chart



2.3 Job descriptions

The Director of BSRI will report directly to the Vice President for Research and will be responsible for all initiatives, operations, and budgets associated with the institute. S/he will be a tenured faculty member, will be responsible for the strategic plan, and will be the point of contact for all relationships and partnerships with other entities. The Director's position is currently vacant; our hope is to conduct an external search to fill this position, in collaboration with one of the participating colleges/schools. As of FY2010, Associate Vice President for Research Robert Scott has taken over as Interim Director.

The Director may choose to appoint an Associate Director, also a tenured faculty member, who helps with day-to-day management and operation of the institute. S/he could be responsible for the management plan and organizational structure of the institute and handle personnel issues, membership, minor budget issues, and other planning efforts delegated by the Director. We have not mandated such a position, which will be created at the discretion of the Director, subject to appropriate levels of support.

The Director will work with a Program Coordinator, a staff position, who is responsible for all operational details of institute business. S/he is involved in proposal preparation, grant management, budgeting, procurement, as well as outreach activities, web site content management, and day-to-day office management. This position is occupied by Ms. Youyou Cheng as of 1 April 2010. As institute activities ramp up, other staff will be supervised by the Program Coordinator. The major tasks performed by this coordinator include:

- Assist in grant applications, including budget development, collecting/helping to prepare current and pending forms, biosketches in the correct/uniform format; populating the grant software with correct information in the correct format; checking all parts of the grant document for accuracy and compliance with guidelines.
- Assist in grant administration, budget tracking, reporting to funding agencies, processing paperwork for hiring personnel, tracking jobs created, acting as a liaison to other departments on campus related to personnel/human resources.
- Serve as the web site administrator for the institute, in conjunction with OVPR research communications staff.

- Compile summary data and documents including: (a) developing a database or archive of member publications grouped by topic area, year, and linked to funding (e.g., seed grants); (b) compiling accurate funding obtained by topic area, year, etc.; (c) assessing support facilities, equipment on campus, especially as related to biomass analysis; (d) listing, compiling relevant courses related to bioenergy offered on campus; (e) compiling additional data/documentation related to reports, grant applications, etc.
- Answer phone calls, email inquiries, and facilitate visits to campus. Assist the Director with identifying and obtaining experts to represent the institute at different functions including scientific meetings, dinners, visits from dignitaries, etc. Assist in reserving rooms, ordering lunches, obtaining transportation, arranging itineraries, etc., for visitors to campus.
- Coordinate with the various Development Officers and Industry Liaisons to strengthen our ties with Industry and Planned Giving. Track patent applications/awards related to bioenergy that should be presented to industry and/or showcased.
- Organize Retreat by making reservations, getting cost estimates, arranging food, drafting letters asking for funding support or donations from industry, etc.
- Coordinate a seminar series, arranging speaker travel, managing budget, arranging itinerary and meetings with individuals, tours, etc.
- Coordinate travel for Director, including travel authorities, reimbursement, documentation, etc.

2.4 Standing committees

Several standing committees are envisioned to coordinate institute operations. The Director will appoint members to all committees and the Program Coordinator will attend all committee meetings for the purposes of providing information and generating minutes.

The Director will depend on a high-level Advisory Committee, comprising UGA faculty and staff and external members who are not members of the institute. The purpose of this committee is to provide unbiased and objective advice about initiatives and strategic directions of the institute, for example in reviewing and evaluating the institute strategic plan on a regular basis. UGA members will normally be at the level of Head, Associate Dean, Associate Vice President, or Associate Provost, chosen for their knowledge of UGA policies and procedures and interest in promoting bioenergy. Other UGA members would be from external affairs, technology transfer, or business/economic development offices. Non-UGA members would include representatives of state or federal government (e.g., congressional staff), industry representatives (e.g., from local or regional bioenergy companies), or representatives of academic partners.

Experienced institute members will be appointed by the Director on a rotating basis for multi-year terms to an Executive or Steering Committee, the purpose of which will be to help design and coordinate institute activities in carrying out the strategic goals of the institute. The Executive Committee will help formulate the institute strategic plan, make recommendations to the Director on institute policy and procedures including membership policies, nominate institute members for service on other standing committees, and advise the Director. The Director will serve as the Chair of the Executive Committee. A steering committee that operates currently for the informal group B3i will form the initial membership of the Executive Committee:

- Ryan Adolphson, Director, Engineering Outreach Service, Faculty of Engineering
- Carl Bergmann, Assistant Vice President for Research (Facilities), Complex Carbohydrate Research Center
- C. Ronald Carroll, Professor, Odum School of Ecology
- K C Das, Associate Professor, Department of Biological and Agricultural Engineering and Faculty of Engineering

- E Tim Davies, Director, Bioexpression and Fermentation Facility, Department of Biochemistry and Molecular Biology
- Jeff Dean, Professor, Department of Biochemistry and Molecular Biology and Warnell School of Forestry and Natural Resources
- W Dale Greene, Professor, Warnell School of Forestry and Natural Resources
- Terry Hastings, Director, Research Communications, OVPR
- Joy Doran Peterson, Associate Professor, Department of Microbiology
- Robert A Scott, Associate Vice President for Research, Acting Executive Director
- Robert Shulstad, Associate Dean, College of Agricultural and Environmental Sciences
- Jan Westpheling, Professor, Department of Genetics

In addition to the Advisory and Executive Committees, two standing committees are envisioned at this point, but the Director and Executive Committee can change institute bylaws (by vote of membership) to create additional standing or ad hoc committees at any time. There will be a Program Committee with institute members appointed by the Director for staggered multi-year terms. This committee will design and coordinate all internal programs, including seminar series and retreats, as well as the Biomanufacturing SMP, should that be funded. In the future, if degree programs are created and approved, it is likely that this committee would have to split into, e.g., a Program Committee and an Educational Affairs Committee. The second standing committee envisioned at this point is an Outreach Committee, whose job is the coordination of outreach and public service efforts, including a speakers' forum, by institute members. The chairs of these two standing committees will serve ex officio on the Executive Committee for efficient communications.

2.5 Operating procedures and policies (including membership procedures)

Operation of the institute will be guided by a set of bylaws to be created immediately upon approval of creation of the institute. As described above a Director will work with an internal Executive Committee to draft bylaws, the first purpose of which will be to approve membership criteria and procedures for application. As the institute builds its membership ranks, a vote on acceptance of bylaws by the entire membership will be held, no later than six months from approval of creation. Future changes to bylaws will be subject to membership vote as well. The bylaws will constitute a set of policies for institute operation and will be used to develop procedures.

We expect institute members to commit to contributing attention, time, and effort to the goals of the institute. The Director will have actual EFT assigned to the institute while still being a member of a department or school that acts as the promotion/tenure unit (PTU). Other institute members may have EFT assigned to the institute, but this is not mandated. However, each application for membership must contain a written commitment from the PTU head, dean, or director that the member will be allowed to devote a minimum amount of effort (at least 5%, 0.05 EFT, 2 hours per week on average) to institute initiatives. This effort will consist of serving on committees and working groups, collaborating on joint research initiatives and research proposals, instructional effort in the SMP or other bioenergy-related coursework, and participating in outreach and public service activities. As the Institute grows, other internal programs will likely develop and members will be asked to participate. For example, we envision an internal proposal peer review system, whereby members pre-review proposals as a mutual quality improvement effort. This program would constitute both a benefit to our members, as well as a commitment by our members.

2.6 Expected faculty participation

Detailed membership policies will be drafted as described in the Operations section. Initially, full membership will be by invitation; Appendix A contains the list of faculty members who will be invited to be members of the institute. *Benefits* of institute membership will include access to all supported activities (initially, the retreat) and the assistance of the Program Coordinator

in proposal preparation and award management (for bioenergy-related research). *Responsibilities* of institute membership include formal agreement to devote a portion of effort to institute activities (see Operating procedures above), and willingness to identify the institute for additional F&A sharing (below). All institute members will also be required to provide information about their research programs for our web site and expertise database.

Beyond the initial founding membership, a simple web-based process of application for membership consideration will be developed and implemented. After the initial third-year review of the institute, it is expected that a formal evaluation procedure will be established (pending bylaw revision by vote of the membership) for renewal of institute memberships, based on contributions made by the member.

3 Funding/budget

An initial budget for the institute will include partial salary for the Director (three months), salary for the Program Coordinator, and an operating budget. Details of these budget pieces are provided below.

Starting in FY2006, the university has benefited from Congressionally Directed Project funding through the US Department of Energy (DOE) for bioenergy activities, most recently focusing a portion of the \$1M+ annual appropriation toward the general support of bioenergy research and administration. Starting in FY2010, this appropriation has provided the support for a Program Coordinator and an operating budget. We expect this support to continue at least for the next few years, while we acquire sustained funding through a sharing arrangement for facilities and administrative reimbursement (F&A) return (see below). We also plan fundraising and development efforts to obtain support from private donors and industry affiliates. Should DOE funding expire, if the institute cannot raise sufficient support through this combination of efforts, the OVPR will take the financial responsibility for continued operation while conducting a review and making a decision on institute viability.

3.1 Administrative staff salary

Initially, the institute will operate with a single staff position at the classified staff level of Program Coordinator III. Using DOE funding, we have successfully recruited Ms. Youyou Cheng to this position with a start date 1 April 2010 and a starting annual salary of \$44,000 (plus \$18,480 fringe benefits). This funding is expected to stay intact for at least two more years, but we expect to request that this salary be gradually moved into the *existing* OVPR state budget; we cannot expect to retain quality staff if this high-level position continues to be supported by "soft" money. We expect that over the first few years of institute operations, activities will escalate and additional staff will be needed to work with the Program Coordinator to support institute activities. These positions will be paid for from income, either through F&A return or from fundraising activities.

3.2 Operating budget

We estimate the following annual expenses for institute operations in the first few years. These are currently built into the DOE appropriations and will be gradually moved to funding from income:

- \$30,000 office expenses including equipment, supplies, minor travel, meeting space fees, etc.
- \$15,000 annual two-day retreat at Unicoi State Park
- \$10,000 seminar program, travel, lodging, honoraria for 6-8 speakers per year

3.3 Shared F&A return

UGA policy returns 20% of the facilities and administrative (F&A) reimbursement from every sponsored project to the "generating" unit. By default, this is the unit indicated as the

administrative unit on the proposal transmittal form. However, current practice allows PIs and co-PIs to specify (with unit leader approval) on the transmittal form how the 20% return should be distributed to multiple units with which the investigator is associated. A task force has developed a set of guidelines and a worksheet to help investigators and their unit leaders direct F&A return based on which units bear which indirect costs of the research (<http://www.ovpr.uga.edu/osp/docs/FA-Return-Report.pdf>). The institute will strongly recommend but not mandate that a "reasonable" (as defined in these guidelines) share of F&A return come to the institute for all members' research awards.

The institute Program Coordinator is available to help prepare, submit, and administer research proposals and awards associated with bioenergy research (broadly defined). Taking advantage of this requires the assignment of the institute as the administrative unit on the transmittal form and this mandates as an institute policy that at least 5% (i.e., one quarter of the 20%) F&A is returned to the institute from that research award. This helps offset the cost of the human resource investment in preparing the proposal and managing the grant. If the institute received 6 such awards in a year (one every two months), with an average annual direct cost of \$250,000, and average F&A of 40%, then we estimate the annual income from this policy to be \$30,000.

Only time will tell whether this estimate is realistic. Also, any F&A return does not appear until two years after an award is made since this is based on calculations of the previous year's *expenditures*. Thus, it will be some time before we are able to generate the necessary income to support our operations. As part of our self-study for the third-year review, the Executive Committee will work with the Director to review institute income and design adjustments to these policies for bylaw revisions approved by the membership.

3.4 Physical resources

OVPR has agreed to provide office space for the Program Coordinator on the sixth floor of Boyd Graduate Studies Research Center. At this point, beyond that office, the institute does not control any physical resources. Depending on the success of the institute over the first three years of operation and on the success of development activities, it is conceivable that a new building proposal would be considered.

4 Review process

Academic Affairs Policy Statement 7 requires any new center or institute proposal to choose the review mechanism to be used in formal review. BSRI will be reviewed according to selection (c) in this policy, i.e., by the administrative unit. OVPR has arranged with the Program Assessment office within the Office of Academic Planning to conduct the regularly scheduled reviews of all centers and institutes reporting to OVPR. We choose to have our third-year and all subsequent regularly scheduled reviews occur in the same manner.

Appendix A. List of initial invitees for institute membership

Mike Adams, Biochemistry and Molecular Biology
Ryan Adolphson, Faculty of Engineering
Elliot Altman, Biological and Agricultural Engineering
Parastoo Azadi, Complex Carbohydrate Research Center
Clifton Baile, College of Agricultural and Environmental Sciences
Maor Bar-Peled, Complex Carbohydrate Research Center
Amy Batal, Poultry Science
Jeff Bennetzen, Genetics
Carl Bergmann, Complex Carbohydrate Research Center
Roger Boerma, Center for Applied Genetic Technology
Gary Barrett, Odum School of Ecology
Brad Buchanan, Tifton/NESPAL
Russell Carlson, Complex Carbohydrate Research Center
Ron Carroll, Odum School of Ecology
Steven Castleberry, Warnell School of Forestry and Natural Resources
Chris Cieszewski, Warnell School of Forestry and Natural Resources
Mike Clutter, Warnell School of Forestry and Natural Resources
Alan Darvill, Complex Carbohydrate Research Center
KC Das, Biological and Agricultural Engineering
Tim Davies, Biochemistry and Molecular Biology
Jeff Dean, Warnell School of Forestry and Natural Resources
Katrien Devos, Crop and Soil Sciences
Mark Eiteman, Biological and Agricultural Engineering
Daniel Geller, Faculty of Engineering
Harry Gilbert, Complex Carbohydrate Research Center
Roderick Gilbert, Tifton/NESPAL
John Gittleman, Odum School of Ecology
John Goodrum, Biological and Agricultural Engineering
Dale Greene, Warnell School of Forestry and Natural Resources
Michael Hahn, Complex Carbohydrate Research Center
Dennis Hancock, Crop and Soil Sciences
Ian Hardin, Textiles, Merchandising, and Interiors
Qingguo Huang, Crop and Soil Sciences
Bob Izlar, Warnell School of Forestry and Natural Resources
Rhett Jackson, Warnell School of Forestry and Natural Resources
J.R. Kastner, Biological and Agricultural Engineering
Craig Kvien, Crop and Soil Sciences
William Lanzilotta, Biochemistry and Molecular Biology
Marcus Lay, Chemistry
Dewey Lee, Crop and Soil Sciences
Lars Ljungdahl, Biochemistry and Molecular Biology
Jason Locklin, Faculty of Engineering
Russell Malmberg, Franklin College of Arts & Sciences
Sudhagar Mani, Biological and Agricultural Engineering
Daniel Markewitz, Warnell School of Forestry and Natural Resources
Leidong Mao, Faculty of Engineering
Al McGraw, Physiology and Pharmacology, College of Veterinary Medicine
Scott Merkle, Warnell School of Forestry and Natural Resources
Chris Moder, Fanning Institute
Debra Mohnen, Complex Carbohydrate Research Center
Michelle Momany, Plant Biology

Joe Nairn, Warnell School of Forestry and Natural Resources
Malcolm O'Neill, Complex Carbohydrate Research Center
Zhengwei Pan, Faculty of Engineering
Wayne Parrott, Crop and Soil Sciences
Andy Paterson, Crop and Soil Sciences
Joy Doran Peterson, Microbiology
Robert Phillips, Chemistry
Paul Raymer, Crop and Soil Sciences
Susan Reinhardt, NESPAL, College of Agricultural and Environmental Sciences, Tifton
John Ruter, Horticulture, Tifton
Suraj Sharma, Textiles, Merchandising, and Interiors
Harald Scherm, College of Agricultural and Environmental Sciences
Laurie Schimleck, Warnell School of Forestry and Natural Resources
Robert Scott, OVPR
Robert Shulstad, College of Agricultural and Environmental Sciences
George Shumaker, Agricultural and Applied Economics, CES
Shavannor Smith, Plant Pathology
John Stickney, Chemistry
Dale Threadgill, Faculty of Engineering
CJ Tsai, Warnell School of Forestry and Natural Resources
Susan Varlamoff, College of Agriculture and Environmental Sciences
Brahm Verma, Faculty of Engineering
Juergen Wiegel, Microbiology
Jan Westpheling, Genetics
Michael Wetzstein, Agricultural and Applied Economics
William B. Whitman, Microbiology
Bingqian Xu, Faculty of Engineering
Ying Xu, Institute of Bioinformatics
Yajun Yan, Faculty of Engineering
Zheng-hua Ye, Plant Biology
Will York, Complex Carbohydrate Research Center
Yiping Zhao, Physics
Fengfeng Zhou, Biochemistry and Molecular Biology

Appendix B. Letters of support

- I Jonathan Amster, Department of Chemistry
- J Scott Angle, College of Agriculture and Environmental Sciences
- Jeff Bennetzen, Department of Genetics
- Mike Clutter, Warnell School of Forestry and Natural Resources
- Alan Darvill, Complex Carbohydrate Research Center
- Stephen Hajduk, Department of Biochemistry and Molecular Biology
- Laura Jolly, College of Family and Consumer Sciences
- Garnett Stokes, Franklin College of Arts & Sciences
- E. Dale Threadgill, Faculty of Engineering & Department of Biological and Agricultural Engineering
- William B. Whitman, Department of Microbiology



1785

The University of Georgia

Department of Chemistry
I. J. Amster, Head
Phone: (706) 542-2726
FAX: (706) 542-9454
email: jamster@uga.edu

July 1, 2010

Professor Robert Scott
Associate Vice President for Research
Office of the Vice President for Research
Boyd GSRC
UGA - CAMPUS

Dear Bob:

I am writing to express my enthusiastic support for your proposal to establish a Bioenergy Systems Research Institute. Such an institute would help to establish strong interdisciplinary ties between faculty from all across campus, including members of the Department of Chemistry, to address a problem of great significance to our national welfare. Several Chemistry faculty have research programs which would make them valuable members of such a research institute, and they would benefit from participation in a multidisciplinary program. I am glad to give my support to your proposal.

Sincerely,

Jonathan Amster
Professor of Chemistry

June 30, 2010

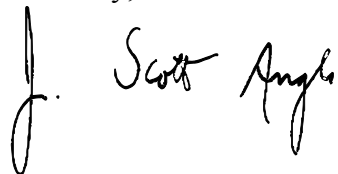
Robert Scott
604 A Boyd
CAMPUS

Dear Robert:

The College of Agricultural and Environmental Sciences strongly supports the proposal to establish the Bioenergy Systems Research Institute. This college has significant resources and expertise that we will make available to the project. In addition, faculty time will be provided to address the specific objectives noted in the proposal. We also have significant land and farming capability to address the field components of the work.

We are excited about the opportunity to promote the National Bioenergy initiative. We appreciate the opportunity to be a part of this proposal and please let me know if anything else is needed.

Sincerely,

A handwritten signature in black ink that reads "J. Scott Angle". The signature is written in a cursive style with a large initial "J" and a long, sweeping underline.

J. Scott Angle
Dean and Director

JSA/cks



The University of Georgia

The Department of Genetics

July 12, 2010

Dr. Robert Scott
Associate Vice President for Research
University of Georgia
Athens, GA 30602

Dear Bob,

Thank you for sharing the completed proposal for a Bioenergy Systems Research Institute here at the University of Georgia. This research area provides an outstanding opportunity for UGA and for Georgia. We are very well positioned, both scientifically and geographically, to become the national leader in the production of biomass and conversion processes that can help the US become energy self-sufficient. All or nearly all of the pieces are present to pursue bioenergy development at the highest level here in Georgia, and I can think of no other state (except California) where this is also true. What we do not have is a particularly organized, multi-institutional program, and your proposed Institute will help accomplish this coordination.

In my opinion, you have involved the appropriate folks on campus in this planning activity and in the proposed management, science and development structures. The Department of Genetics has many faculty, students and staff who are currently pursuing bioenergy research, so the proposed Institute would provide a tremendous assistance and elevation to their efforts. For these reasons, I can guarantee that the Department of Genetics will be happy to be an active advocate and associate of the Institute when it is established. I wish your proposal well, and please be sure to contact me if I or my Department can be of any further assistance.

Sincerely,

Jeff Bennetzen
Professor and Head, Department of Genetics



The University of Georgia

Daniel B. Warnell School of Forestry and Natural Resources
Office of the Dean

June 15, 2010

Dr. David Lee
Vice President for Research
609 Boyd Graduate Research Center
200 D. W. Brooks Drive
The University of Georgia
Athens, Georgia 30602

Dear David:

This letter is to provide support for the formation of a Bioenergy Systems Research Institute here at the University of Georgia. As you are aware, the collaborative research opportunities and funding possibilities for this area of research are substantial. Additionally, UGA is well-poised to contribute across many of our Schools and Colleges including the Warnell School of Forest Resources. We are excited about the collaborative successes that have already been generated in this area and believe that, at least in concept, the formation of a group to further advance these collaborative efforts will be an important component in future funding initiatives.

There are some issues that need to be further clarified in the proposal relative to the structure and funding based upon my reading of the proposal. First, I find it startling that given all of the feedstock opportunities available here in Georgia that the proposal focuses more on Miscanthus varieties relative to other specific feedstocks. It appears that one of the important questions might be the relative efficiency of a wide variety of feedstocks – particularly those that are readily available here in Georgia. Second, the discussion of F&A return and program funding does not support, in an equitable way, those Schools and Colleges that have already invested in the infrastructure and intellectual capital to make such a project a success. Any discussion of funding models and F&A return should recognize these contributions.

In closing, We here in the Warnell School of Forestry and Natural Resources are excited about the possibilities that a developing bioenergy industry present from a research and implementation perspective. Similarly, we are supportive of developing a collaborative research environment to support bioenergy opportunities.

Best Regards,

Mike Clutter

Mike Clutter, Dean
Warnell School of Forestry
and Natural Resources



The University of Georgia®

Complex Carbohydrate Research Center

Alan Darvill, Regents Professor and Director
adarvill@ccrc.uga.edu
706.542.4411

June 28, 2010

Dr. Robert A. Scott
Associate Vice President for Research
Office of the Vice President for Research
University of Georgia
604A Boyd GSRC
Athens, GA 30602-7411

Dear Bob:

This letter is written to demonstrate my enthusiastic support for the formation of the Bioenergy System Research Institute. I look forward to working with you to make this Institute a reality.

Best wishes,

Alan Darvill
Director and Regents Professor



The University of Georgia

Department of Biochemistry and Molecular Biology

Stephen L. Hajduk
Professor & Head

Fred C. Davison
Life Sciences Building, B129
120 Green Street
Athens, Georgia 30602-7229

July 18, 2010

Memorandum

To: Dr. Robert A. Scott
Interim Director, Bioenergy Systems Research Institute

From: Dr. Stephen L. Hajduk
Professor and Head, Department of Biochemistry and Molecular Biology

Thank you for the opportunity to review your recent proposal for the development of a Bioenergy Systems Research Institute at the University of Georgia. The proposed Institute capitalizes on new funding initiatives and already existing research strengths at the institution. Importantly, it strategically places UGA in a position to have a major impact on this growing area both in terms of basic and applied research.

Several members of the Department of Biochemistry and Molecular Biology, Drs. Michael Adams, William Lanzilotta, Tim Davies and Ying Xu are currently listed as initial invitees to join the Institute. These are all well funded and valuable members of the department.

The Department of Biochemistry and Molecular Biology uses a flexible policy in dealing with the distribution of the indirect costs (IDC). Since IDC derived from grants held by Biochemistry and Molecular Biology faculty are used to support a variety of research related operations within the department including graduate and postdoctoral studies, grant submissions and administration, facilities, renovations, matching for grant submissions and bridge funding for faculty we are cautious in committing these funds. In the past, IDC funds were designated for transfer to Institutes and Centers when there is a clear need for services and resources outside the Department. Thus, distribution of IDC to affiliated institutes and centers, either on new or currently funded projects is reviewed on a case-by-case basis, by the head of department, for each grant. Rest assured, the Department will carefully consider redistribution of IDC based on research performance site, administrative support for grant preparation and management and academic programs.

I wish you much success in the development of the Bioenergy Systems Research Institute and I look forward to working with you on this important initiative.

cc. Dr. David Lee, Michael Adams, Bill Lanzilotta, Ying Xu and Tim Davies;
Ms. LeGail Tudor



The University of Georgia

College of Family & Consumer Sciences
Office of the Dean

June 21, 2010

Dawson Hall
Athens, Georgia 30602-2622
Telephone 706-542-4879
Fax 706-542-4862

Laura D. Jolly
Dean

Dr. Robert A. Scott
Associate Vice President for Research
604A Boyd GSRC
Office of the Vice President for Research
University of Georgia
Athens, GA 30602

Dear Dr. Scott,

I would like to convey my enthusiastic support for the creation of the "Bioenergy Systems Research Institute (BSRI)." As you know, the College of Family and Consumer Sciences has a strong history of supporting interdisciplinary efforts and we are particularly interested in supporting work on alternate energy, fuel, and materials production through the use of biomass conversion strategies that are environmentally and economically sustainable.

I look forward to working with you on ways to include the college and its faculty as your center expands and develops. We believe the Institute will provide benefits to those who participate in our programs and it will also provide new opportunities for cooperation and collaboration across campus.

Sincerely,

Laura D. Jolly, Ph.D.
Dean, College of Family and Consumer Sciences



The University of Georgia

Franklin College of Arts and Sciences
Office of the Dean

June 22, 2010

Dr. David Lee
Vice President for Research
Boyd GSRC
Campus Mail

Dear Dr. Lee:

I write in support of the establishment of the Bioenergy Systems Research Institute proposed by Dr. Robert Scott. The Institute promises to support alternative energy, fuel, and materials production through the use of biomass conversion strategies that are environmentally and economically sustainable.

The University has many individual strengths that contribute to bioenergy development. This institute will provide a venue for collaboration and facilitate interdisciplinary efforts by combining the expertise of faculty and researchers. It will allow the University of Georgia to have a major influence on bioenergy in the coming decades.

As the flagship university in Georgia and the premier public research university in the South, BSRI can help UGA become a leader in the field of bioenergy. I am in full support of the proposal.

Sincerely,

Garnett S. Stokes
Dean



The University of Georgia

Faculty of Engineering

June 22, 2010

Dr. Robert Scott
Associate Vice President for Research
604A Graduate Studies Building
CAMPUS

Dear Dr. Scott:

I am very pleased to provide this letter in support of the proposal to establish the Bioenergy Systems Research Institute (BSRI) at the University of Georgia. The BSRI will provide an excellent focal point for the diverse bioenergy-related research, outreach and instructional programs that are distributed among numerous UGA units and it will provide a long needed platform for advancing the university's reputation in bioenergy systems and its competitiveness in obtaining external funding for UGA's bioenergy systems programs.

The engineering faculty in both the Department of Biological and Agricultural Engineering and The Faculty of Engineering have had substantive and diverse projects and programs in bioenergy systems research, teaching and outreach for many years. These faculty and their programs will be very supportive and provide key input to the BSRI. These faculty and I will work diligently to assure the success of the BSRI and the continued development of strong multidisciplinary bioenergy systems programs at UGA.

Sincerely,

E. Dale Threadgill, Director
Faculty of Engineering and
Head, Department of Biological & Agricultural Engineering

EDT:pa



The University of Georgia®

Franklin College of Arts and Sciences

William B. Whitman, Professor and Head
Department of Microbiology
527 Biological Sciences Building
Athens, Georgia 30602-2605
whitman@uga.edu

Tel 706 542-1434
Fax 706 542-2674

Robert A. Scott
Associate Vice President for Research
Office of the Vice President for Research
University of Georgia
Athens, GA 30602

July 6, 2010

Dear Prof. Scott,

The Department of Microbiology is pleased to support the formation of the Bioenergy Systems Research Institute. We view this as a great opportunity to bring together researchers across campus to address a critical national need. We also appreciate the lead you have taken on this issue.

Sincerely yours,

William B. Whitman
Professor and Head of Microbiology