



The University of Georgia

University Council
Athens, Georgia 30602

March 21, 2012

UNIVERSITY CURRICULUM COMMITTEE – 2011-2012

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Dear Colleagues:

The attached proposal for a new Center for Molecular Medicine will be an agenda item for the March 28, 2012, Full University Curriculum Committee meeting.

Sincerely,

David E. Shipley, Chair
University Curriculum Committee

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

**A PROPOSAL TO ESTABLISH A
CENTER FOR MOLECULAR MEDICINE
AT THE UNIVERSITY OF GEORGIA**

02/21/2012

Submitted by Stephen Dalton

Professor, Department of Biochemistry and Molecular Biology

GRA Eminent Scholar in Molecular Cell Biology

1. Summary

This is a proposal to establish a 'Center for Molecular Medicine' (CMM) at the University of Georgia. The primary purpose of this Center is to expand, facilitate and coordinate research at UGA that is of immediate or close relevance to human health and disease. Additional goals for the Center will be to provide an effective interface between UGA investigators and researchers and clinicians at GHSU, including those in the GHSU-UGA Medical Partnership, as well as other clinicians in the Athens area that may wish to participate in research related to human health and disease. No such center currently exists at UGA and because the skills and interests required to impact human disease are multi-disciplinary, individual departments and colleges do not fill the desired role. The Center will develop from a dispersed cohort of existing UGA faculty who are currently working on disease processes as well as diagnostic tools, vaccines and therapeutics without benefit of a supporting infrastructure. Working collaboratively with administrative leaders at UGA, we hope to expand the Center over time through the targeted recruitment of faculty researchers with expertise in key areas directly relevant to the proposed Center mission. The Center will not develop formalized degree programs or offer courses although it will serve as a key resource to assist faculty in developing disease-related courses in their respective departments. The Center will be reviewed by and will report directly to the Vice President for Research, who is strongly supportive of this proposal.

2. Background

For UGA to be well positioned in the biomedical arena, and in particular for it to capture a greater share of NIH funding, it must increase the level of research directly relevant to human disease and expand its contribution to the development of new cures, therapies and diagnostics. Importantly, UGA's share of NIH funding has not increased over the past decade and has remained stagnant at around \$32-35 million annually. Now that NIH funding is being increasingly directed towards translational research with emphasis on new treatments and diagnostics, it is important for UGA-based research to be positioned so that it can capitalize on this change in funding landscape. It is also important to do this at the current time given the formation of the GHSU-UGA Medical Partnership, even though the Partnership is almost wholly educationally focused at this time. Development of the CMM will obviously complement UGA's

initiative in medical education in that it would provide a deliberate and timely thrust into relevant research. It would also draw greater attention to UGA's efforts in the health sciences arena.

To achieve maximum impact, UGA must organize its existing human disease-focused researchers, combined with externally recruited experts of similar focus, into an organizational framework that encourages pre-clinical/translational research and accelerates the development of new therapies, cures and diagnostics. Ideally a core group of these researchers will be co-located in order to maximize interactions and synergies, but this proposal is not predicated on having shared space.

3. Vision and Mission

The vision and mission of the 'Center for Molecular Medicine' is to promote positive human health outcomes by emphasizing research of immediate relevance to human disease, seeking to improve our understanding of disease processes and the development of new therapies and diagnostics. No such organized entity currently exists at UGA, even though the number of investigators working in disease related areas has expanded over the last ten years. In particular, this role is not filled by the Biomedical and Health Sciences Institute (BHSI), which – for its dispersed and very broad membership primarily acts as an informational conduit, a promoter of new health-related educational programs and a grant proposal development service. In contrast, the CMM will focus on the building of human disease-related research capacity, including over time and as the opportunity presents, the coalescing of key researchers into contiguous space. The proposed CMM will therefore fill a large void in UGA's research capabilities while complementing current activities on campus. The Center will work closely and synergistically with allied research centers and institutes; these include: the Center for Drug Discovery (CDD), the Center for Tropical and Emerging Global Disease (CTEGD), the UGA Developmental Biology Program and the UGA Cancer Center. Of special note, the CMM would work closely with the Center for Complex Carbohydrate Research (CCRC) to support and enhance the CCRC's efforts in the important area of biomedical glycomics.

The goals of the proposed CMM are to:

- Advance understandings of human disease and disease processes
- Contribute directly to disease prevention and cures
- Develop strategies and tools for early disease detection and monitoring
- Advance research infrastructure required for state-of-the-art human disease-related research
- Accelerate the expansion of human disease related research at UGA, concomitant with expansion of the UGA-GHSU Medical Partnership
- Foster relationships with GHSU researchers and clinicians, as well as other clinicians in Northeast Georgia with relevant interests
- Help recruit to UGA scientists and clinicians with distinguished records in health-related research
- Train future researchers who will make an impact on the development of new preventions, cures, therapies and diagnostics
- Generate intellectual property that will translate into economic benefits for the State of Georgia arising from the eradication of disease and from its commercial benefits through partnership with pharmaceutical and biotechnology companies

The strategy behind this proposal is to leverage UGA's existing expertise in complex carbohydrate science, cancer biology, stem cell and developmental biology, and vaccine development to fill a major gap in the University's research capacity.

Every research program within the CMM will have a clear link to one or more human diseases, with an emphasis on translating research into the discovery of new diagnostics, preventions, and treatments. UGA researchers have had considerable success in developing diagnostics, vaccines and therapeutics, though mostly to date in the animal health arena, but the potential of the growing biomedical research presence on campus has yet to be fully realized. The CMM aims to fully capitalize on existing activities, while enhancing and adding to these over time through targeted external recruitments, so that UGA develops a notable reputation in translational health research. Already, UGA researchers are working on cutting edge diagnostics using nanotechnology, while advances in prevention will benefit from the University's considerable strength in vaccine development. New therapeutics, on the other hand, could be stem cell-based or novel drugs, antibodies or protein pharmaceuticals. We expect that many of these efforts will benefit directly from the UGA's world-class CCRC, which has an international reputation for its exploration of complex carbohydrates on the surface of human cells and the potential role of these molecules in disease processes as well as value as disease targets. Targets of these efforts will include such major diseases such as cancer, cardiovascular disease, diabetes and infectious diseases.

In line with the translational mission of the Center, several GRA Eminent Scholars will be members of the CMM. These include Drs. Ralph Tripp, Stephen Dalton, Roberto Docampo, James Prestegard and Vasu Nair. In conjunction with OVPR, the CMM will work closely with the Georgia Research Alliance (GRA) to develop its core mission of translating scientific discovery into new cures and diagnostics. Interfacing with industry, including through the Georgia BioBusiness Center will be a key component of the CMM's mission.

The CMM will specifically enhance the activities to translational research associated with the following areas:

1. Vaccine Development and Therapeutics: UGA already has world-leaders in this area. This program will link with existing expertise in (vaccine) target elucidation in the CCRC and vaccine know-how in the College of Veterinary Medicine and the Center for Tropical and Emerging Global Diseases (CTEGD). Therapeutics will benefit from the rational drug design expertise in the Center for Drug Discovery (CDD) and for novel methods of drug delivery, the material science advances in the Chemistry Department and in the nanotechnology (NanoSec) program.

2. Stem Cells and Regenerative Medicine: This area will emphasize the development of new cell types that can be used for cell therapy in the clinic. UGA's existing expertise lies in the area of cardiovascular disease, type I diabetes and pediatric disorders such as craniofacial disease, but can be expanded through future hires. This program will link to the CCRC, the Developmental Biology Program, the UGA Cancer Center and the CDD. UGA already has one NIH funded Program Project Grant in this area – it is anticipated that activities of the CMM will increase collaborations and the number of multi-investigator grants in the translational-biomedical research.

3. Biomedical Glycobiology: This area will both advance the CCRC's recent successes in the biomedical arena and leverage it for the success of the CMM. The CCRC has developed a biomedical focus over the past decade that is of great interest to the NIH. Ten current CCRC faculty are working on biomedical problems and their efforts have

secured two major NIH Research Resource grants as well as a major program project grant in pancreatic cancer that is shared with world-leading pancreatic cancer specialists in Arizona. Another measure of success is the world attention that was recently focused on the development of a novel breast cancer vaccine that showed efficacy in an established mouse model. UGA should capitalize on the success and uniqueness of the CCRC program, and establishment of the CMM will allow it to do so.

4. Models of Human Diseases: Advances in human medicine often depend on studies utilizing models of human disease. Such models provide critical insights into the mechanisms and progression of disease, and they provide indispensable systems for tests of new preventions and therapies. Thus, establishing a 'models' program will be a critical step in the creation of a comprehensive CMM. The models program will integrate synergistically with other efforts on campus including the CCRC, the Developmental Biology Program, the UGA Cancer Center, among others, and will benefit greatly from the presence of an on-campus College of Veterinary Medicine. There are strong, existing programs in disease-based research at UGA that would clearly benefit from a cutting-edge animal-models-of-disease program, including those in such areas as diabetes and obesity, cardiovascular disease, muscular dystrophy and neurological disorders such as Parkinson's disease.

5. Biomedical Imaging: Similarly, a crucial part of contemporary animal modeling of human diseases is the ability to image disease processes in live animals; for example, this is essential when assessing the impact of preventions (e.g. vaccines) or therapies (e.g. drugs) on tumor growth. UGA has constructed an exceptional, multi-modal Bio-imaging Research Center (BIRC) in the Coverdell Building; the BIRC can be expanded and further leveraged through the CMM.

Several meetings of potential CMM members have been held over the last year, most notably a retreat in August (2011) during which ongoing research activities were discussed. Potential collaborators from other Southeast institutions were also present (University of Alabama Birmingham, Vanderbilt University, GHSU, University of Florida and Florida State University). Establishing links to leading institutions in the region will be important for development of competitive programs – the CMM will play a major role in catalyzing these activities.

The Center will promote interaction and collaboration, serving as a hub to promote campus-wide biomedical research activities, particularly those engaged in the discovery and translation of medical advances. As previously emphasized, the CMM will collaborate closely with existing units, including departments in several colleges (e.g. Franklin College of Arts and Sciences, Pharmacy, Veterinary Medicine). The CMM will also work closely with existing UGA centers, institutes and programs (e.g. CTEGD, CDD, UGA Cancer Center and Institute of Bioinformatics (IOB)). We expect interactions with the GHSU-UGA Medical Partnership will increase over time and establishment of the Center may prove a positive catalyst to the eventual growth of research in the Partnership.

A diagram illustrating how the CMM will interact with both internal and external entities is found on the last page.

4. Governance and Organization

The CMM and its director will report to OVPR. The CMM will be directed by Dr. Stephen Dalton who will be responsible for the development and implementation of its strategic plan. His performance as director will be reviewed on a regular five-year schedule, as with all other directors reporting to OVPR. A steering committee comprising leaders from across campus will be established including Dr. Michael Pierce (Director, UGA Cancer Center), Dr. Vasu Nair (Director, Center for Drug Discovery), Dr. Alan Darvill (Director, Center for Complex Carbohydrate Research) and Dr. Ralph Tripp (VetMed). In conjunction with the CMM Director, the steering committee will provide guidance for overall strategic direction of the Center.

Members of the CMM will be drawn from the College of Veterinary Medicine, Franklin College of Arts and Sciences, College of Public Health, College of Pharmacy, College of Agriculture and Environmental Sciences, and – particularly in the future, the GHSU-UGA Medical Partnership.

5. Finance

The Vice President for Research, Dr. David Lee, has initially committed to providing \$6,000 annually during the first three-year period of operation for the Center. This funding will support a seminar program and other meetings that will stimulate Center activities. Dr. Lee will consider other forms of support to the Center if approved.

6. Partial List of Interested Faculty and their Respective Colleges

College of Agriculture and Environmental Science

- Clifton Baile, Professor, Animal & Dairy Sciences; GRA Eminent Scholar

College of Family and Consumer Sciences

- Clifton Baile, Professor, Foods & Nutrition; GRA Eminent Scholar

College of Pharmacy

- Aaron Beedle, Assistant Professor, Pharmaceutical & Biomedical Sciences
- Vasu Nair, Professor of Pharmaceutical & Biomedical Sciences; Associate Dean, College of Pharmacy; Director, Center for Drug Discovery
- Shelley Hooks, Associate Professor, Pharmaceutical & Biomedical Sciences

College of Public Health

- Travis Glenn, Associate Professor, Environmental Health Sciences
- JS Wang, Professor and Head, Environmental Health Sciences

College of Veterinary Medicine

- Ralph Tripp, Professor, Infectious Diseases; GRA Eminent Scholar
- Mark Tompkins, Associate Professor, Infectious Diseases

- **Fred Quinn, Professor and Head, Infectious Diseases**
- **Donald Harn, Professor, Infectious Diseases; GRA Distinguished Investigator**

Franklin College of Arts and Sciences

- **Stephen Hajduk, Professor and Head, Biochemistry & Molecular Biology; Member, Center for Tropical & Emerging Diseases**
- **Shaying Zhao, Associate Professor, Biochemistry & Molecular Biology; Member, Institute of Bioinformatics**
- **Ying Xu, Professor, Biochemistry & Molecular Biology; GRA Eminent Scholar; Member, Institute of Bioinformatics**
- **Jessica Kissinger, Associate Professor, Genetics; Director, Institute of Bioinformatics**
- **Michael Pierce, Distinguished Research Professor, Biochemistry & Molecular Biology; Director, UGA Cancer Center; Member, Complex Carbohydrate Research Center**
- **Michael Tiemeyer, Professor, Biochemistry & Molecular Biology; Member, Complex Carbohydrate Research Center**
- **Lance Wells, Associate Professor of Biochemistry & Molecular Biology; Member, Complex Carbohydrate Research Center**
- **Richard Steet, Assistant Professor, Biochemistry & Molecular Biology; Member, Complex Carbohydrate Research Center**
- **Lianchun Wang, Assistant Professor, Biochemistry & Molecular Biology; Member, Complex Carbohydrate Research Center**
- **Kelley Moremen, Professor, Biochemistry & Molecular Biology; Member, Complex Carbohydrate Research Center**
- **Alan Davill, Regents Professor, Biochemistry & Molecular Biology; Director, Complex Carbohydrate Research Center**
- **Nancy Manley, Professor, Genetics; Chair, Developmental Biology Program**
- **Scott Dougan, Associate Professor, Cellular Biology**
- **Jim Lauderdale, Associate Professor, Cellular Biology**
- **Stephen Dalton, Professor, Biochemistry & Molecular Biology; GRA Eminent Scholar**
- **Jim Prestegard, Professor of Chemistry; Member, Complex Carbohydrate Research Center**
- **Roberto Docampo, Professor, Cellular Biology; GRA Eminent Scholar; Member, Center for Tropical & Emerging Diseases**
- **Rick Tarleton, Distinguished Research Professor, Cellular Biology; Member, Center for Tropical & Emerging Diseases**

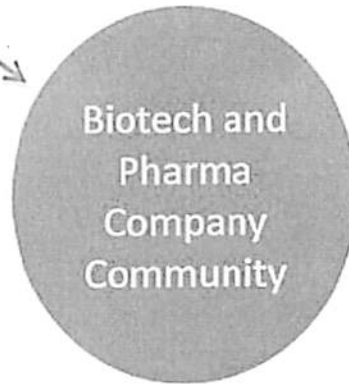
GHSU-UGA Medical Partnership

- **Jonathan Murrow, Assistant Professor, GHSU–UGA Medical Partnership**
- **Ramiah Subramanian, Professor, GHSU-UGA Medical Partnership**



CMM

Athens
Area
Healthcare
Community





The University of Georgia

Office of the Senior Vice President for Academic Affairs and Provost

March 13, 2012

Dr. David Lee
Vice President for Research
609 Boyd Graduate Studies Research Center
CAMPUS

Dear David,

Pursuant to your request, I am pleased to support the establishment of the Center for Molecular Medicine at the University of Georgia.

I agree with the concept that the University should develop an organized and cooperative cohort of faculty who are advancing important research on problems related to human disease. I look forward to the Center bringing together faculty from multiple colleges and departments in order to encourage interdisciplinary collaborations.

You may proceed forward with a review of the Center proposal by the University Curriculum Committee.

Sincerely,

Jere W. Morehead
Senior Vice President for Academic Affairs and Provost

C: Dr. Libby Morris, Vice Provost for Academic Affairs
Ms. Fiona Liken, Director of Curriculum Management



The University of Georgia

Office of Vice President for Research

February 29, 2012

Professor Jere Morehead
Senior VP for Academic Affairs
and Provost
University of Georgia
Athens, GA 30602

Dear Provost ~~Morehead~~,

I write to express my enthusiastic support for the attached proposal, submitted by GRA Eminent Scholar Dr. Steve Dalton, to establish a Center for Molecular Medicine at the University of Georgia.

I believe this to be an appropriate time for the University to develop an organized and cooperative cohort of faculty who are performing cutting-edge research on problems of direct relevance to human disease. The scope of interest would include research programs designed to better understand disease processes and to develop better diagnostic tools, vaccines and therapeutics. Currently the University has scattered faculty members who are working in these areas, but we are lacking an overarching organization to encourage interactions and to promote synergies, and there are concerns about whether we have a critical mass of researchers. The proposed center will provide the desired organization and will also address the critical mass issue by partnering with deans and department heads to encourage the hiring of appropriate faculty. It will also advocate for the establishment of appropriate research core facilities. The proposal is timely in that it coincides with the outgrowth of medical education via the GHSU-UGA Medical Partnership.

The proposed Center will add value to the current enterprise, since the proposed clinical-translational research must be cross-disciplinary in nature in order to have major impact and be competitive. The Center will bring together faculty from multiple colleges and departments in order to ensure that appropriate disciplines are represented and to encourage interdisciplinary approaches. The Center will also work to ensure that the appropriate infrastructure is available for these efforts.

In sum, I view this proposal as most timely and of great significance to the further development of UGA's research enterprise and impact as a land grant institution. I recommend the proposal with great enthusiasm.

Sincerely,

David Lee, Ph.D.
Vice President for Research

April 5th, 2012

Addendum to the proposal for a 'Center for Molecular Medicine' at the University of Georgia

The initial membership of the Center for Molecular Medicine (CMM) would be small and focused although it would interact with a broad range of investigators across campus (see original document). These investigators would not be formal members of the Center, at least in the first instance. The initial membership would consist of Drs. Stephen Dalton (BMB), Ralph Tripp (Infectious Diseases), Mark Tompkins (Infectious Diseases), Jim Prestegard (CCRC), Vasu Nair (Pharmaceutical and Biomedical Sciences) and Roberto Docampo (Cellular Biology). Additional hires and expansion of the Center would be anticipated in conjunction with interested and appropriate units and OVPR.

The focus of the CMM will be **translational in focus** and will have a specific emphasis on **biomedical glycobiology**. This defines unique activities, not currently represented in an organized form at UGA. The Center's specific interests in biomedical glycobiology will encompass stem cells, human disease models and vaccine development- all with a translational emphasis.

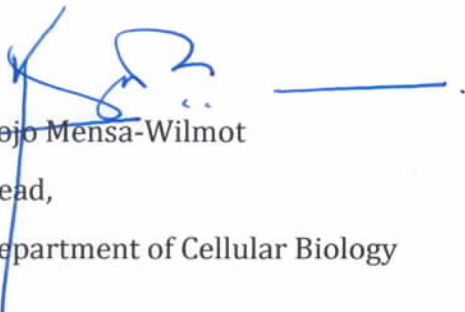
The signatures below are indicative of support for the proposed Center and for the participation of their Faculty members in the CMM.



Alan Darvill
Director,
Center for Complex Carbohydrate Research



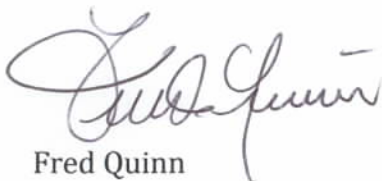
Stephen Hajduk
Head,
Department of Biochemistry and Molecular Biology



Kojo Mensa-Wilmot
Head,
Department of Cellular Biology



Michael Pierce
Director,
UGA Cancer Center



Fred Quinn
Head,
Department of Infectious Diseases



Dexi Liu
Head,
Pharmaceutical and Biomedical Sciences