

**AGENDA ITEM BRIEFING**

**Submitted by:** Mark A. Hussey, Interim President  
Texas A&M University

**Subject:** Establishment of the Center for Airborne Pathogen Research and Tuberculosis Imaging

**Proposed Board Action:**

Establish the Center for Airborne Pathogen Research and Tuberculosis Imaging (CAPRI) in the Texas A&M Health Science Center College of Medicine at Texas A&M University.

**Background Information:**

Respiratory diseases are the most frequent cause of death in both animals and humans worldwide. Currently, faculty involved in respiratory disease-related research are scattered throughout multiple campuses and colleges. Recently, several funding opportunities have arisen where the presence of a collaborative and interdisciplinary research effort in airborne pathogens has enhanced the ability to obtain funding. These opportunities have resulted in the acquisition of more than \$10 million in funding and represent the foundation for the permanent establishment and maintenance of a collaborative home for respiratory disease researchers throughout The Texas A&M University System (A&M System). The establishment of the CAPRI is proposed as this foundation.

The ultimate goal of the center will be to improve health throughout the state of Texas through the development of novel prevention, treatment and diagnostic strategies for infectious diseases. In particular, it is expected the center will stimulate collaborative research on aerobiology, immunology, pathology, molecular pathogenesis, small animal models and imaging technology for respiratory pathogens. These interactions will result in enhanced educational and research opportunities that span the entire A&M System through solidification of existing strengths in infectious diseases, currently scattered throughout a number of individual units.

**A&M System Funding or Other Financial Implications:**

No new financial support is requested for the establishment or operation of this center. Current funding sources include a Bill & Melinda Gates Foundation Grant; a National Institute of Health contract for Small Animal Models of Infectious Diseases, matching funds of \$50,000 per year from the Health Science Center during CAPRI's development, and a pending Defense Threat Reduction Agency grant. Global BioDiagnostics Inc., an industrial partner that has licensed technology from the center, has recently obtained support from the Wellcome Trust for the development of tuberculosis diagnostics. Future plans are to continue development of interdisciplinary, extramurally funded research and education projects that can be managed through CAPRI, along with aggressively pursuing private investments.

**TEXAS A&M UNIVERSITY**

Office of the President

January 30, 2014

Members, Board of Regents  
The Texas A&M University System

Subject: Establishment of the Center for Airborne Pathogen Research and Tuberculosis Imaging

I recommend adoption of the following minute order:

**“The Center for Airborne Pathogen Research and Tuberculosis Imaging is hereby established as an organizational unit within the Texas A&M Health Science Center College of Medicine at Texas A&M University.”**

Respectfully submitted,

**[ORIGINAL SIGNED BY]**

Mark A. Hussey  
Interim President

**Submission Recommended:**

**[ORIGINAL SIGNED BY]**

Brett P. Giroir  
Executive Vice President and CEO  
Texas A&M Health Science Center

**Approval Recommended:**

**[ORIGINAL SIGNED BY]**

John Sharp  
Chancellor

**Approved for Legal Sufficiency:**

**[ORIGINAL SIGNED BY]**

Ray Bonilla  
General Counsel

**[ORIGINAL SIGNED BY]**

Billy Hamilton  
Executive Vice Chancellor and  
Chief Financial Officer

**[ORIGINAL SIGNED BY]**

James R. Hallmark  
Vice Chancellor for Academic Affairs

**TEXAS A&M UNIVERSITY**  
**Texas A&M Health Science Center – College of Medicine**  
Center for Airborne Pathogen Research and Tuberculosis Imaging

**PROPOSAL**

**1. Rationale for the Creation of the Center or Institute**

Respiratory diseases are the most frequent cause of death in both animals and humans worldwide. Currently, faculty involved in respiratory disease-related research are scattered throughout multiple campuses and colleges. Recently, several funding opportunities have arisen where the presence of a center for airborne pathogens has enhanced the ability to obtain funding. This included the Bill & Melinda Gates Foundation (Gates Foundation) funding for development of tuberculosis imaging technologies, which required establishment of the Center for Airborne Pathogen Research and Tuberculosis Imaging (CAPRI); the Small Animal Model Vaccine and Pathogenesis (SAMVAP) program, a contract from the National Institutes of Health (NIH); a pending Defense Threat Reduction Agency (DTRA) grant for development of vaccines against Q fever; and funding from the Wellcome Trust for development of tuberculosis diagnostics. Together, these opportunities have acquired more than \$10 million in funding and represent the foundation for the permanent establishment and maintenance of CAPRI as a collaborative home for respiratory disease researchers throughout The Texas A&M University System (A&M System).

CAPRI will provide the necessary foundation and framework to strengthen existing, and enhance the possibilities for future, research and education in airborne infectious diseases within the A&M System. Since respiratory infections are one of the most important causes of death in humans nationally and worldwide, the ultimate goal of the center will be to improve health throughout the state of Texas by the development of novel prevention, treatment and diagnostic strategies for infectious diseases. In particular, it is expected the center will stimulate collaborative research on aerobiology, immunology, pathology, molecular pathogenesis, small animal models and imaging technology for respiratory pathogens. These interactions will result in enhanced educational and research opportunities that span the entire A&M System through solidification of existing strengths in infectious diseases, currently scattered throughout a number of individual units.

As federal and private scientific funding organizations continue to focus on larger, team scientific efforts, it is essential that institutions are well-positioned to respond to Requests for Applications (RFAs) that often have a short turnaround time. With the necessary structure and facilities in place, the A&M System will be able to rapidly respond to these opportunities in a professional and competitive manner, and are more likely to succeed than in the current ad hoc model for generating a response.

In addition, there are two interdisciplinary projects that are currently funded and will be managed within CAPRI since the collaborating researchers span several different components of the A&M System. These research projects are:

Gates Foundation Grant, “Real-time optical imaging solutions for tuberculosis infections” with total costs of \$5,036,666, and

NIH contract for Small Animal Models of Infectious Diseases, “Small Animal Model Vaccines and Pathogenesis,” with a potential contract value of \$50,000-\$20,000,000 over the next seven years.

Most of the proposed CAPRI members were selected due to their involvement in one or both of these projects.

## **Objectives**

The following are current objectives for CAPRI:

- 1) Establish a core structure for the center within the Texas A&M Health Science Center (TAMHSC) College of Medicine (COM). This core resource will have available facilities including animal housing, aerosol delivery and major equipment resources such as flow cytometry, microarray, imaging and microscopy. Technical support for equipment will be part of the core resource.
- 2) Provide a platform of faculty, expertise and resources for infectious disease investigators to manage existing and initiate new large interdisciplinary projects and educational opportunities that span the entire A&M System. These interactions are expected to initiate new program project and center grant applications from the A&M System to various federal agencies and private foundations. In particular, this platform will be important for the management of two interdisciplinary projects that are already funded – the Gates Foundation Grant and the NIH contract for Small Animal Models of Infectious Diseases.
- 3) Continue and stimulate collaboration between faculty throughout the A&M System by sponsoring group meetings and initiating collaborative grant proposals and projects, as well as key symposia that are of interest to all members.
- 4) Create a framework within CAPRI to enhance infectious disease education throughout the A&M System through support and maintenance of the existing structure for the Host-Pathogen Interface Training Grant Program that was funded by the NIH with the expectation of reconfiguring the program into a vigorous new training grant that will allow continued funding. Financial support for the creation of an Endowed Chair in Airborne Pathogen Research will be an important goal in CAPRI’s expansion that will significantly add to the capabilities of training and research and lead to national prominence.
- 5) Seek private investment to further the goals of improving health throughout the state of Texas through research toward novel prevention and treatment strategies for infectious diseases – respiratory infections, in particular.

Potential activities of the center include research project development, research project management, facilities development, facilities management, educational program development, training grant preparation, training grant management, symposium planning, research group meetings and establishment of collaborative networks within the A&M System. Research projects will be oriented toward airborne infectious diseases-related vaccines, therapeutics and diagnostics with the following goals:

- Enhanced research activities in airborne respiratory infectious diseases:
  - Improve communication, provide contact point and coordinate RFA responses.
  - Develop program projects, collaborative center grants and coordinate facilities.
  - Identify needed equipment and facilities and establish acquisition strategies.
  
- Enhance education in airborne respiratory infectious diseases:
  - Identify needs, evaluate courses, seminars, symposia, journal clubs and meetings.
  - Coordinate the establishment of faculty teams and structure for training programs.
  - Evaluate training grant opportunities, coordinate proposal preparation and assist with program administrative support.

The timeline for establishing these objectives is as follows:

### Year 1

- **Objective 1** – Establishment of a core structure expected to be complete, though all facilities may not yet be available within the core.
- **Objective 2** – The components of the center currently exist throughout the A&M System but, by creating CAPRI, improved communication and establishment of a point of contact for interactions will be established. Management of existing contracts and grants will be coordinated within the center. Plans for program projects or center grants will be initiated based on available RFAs.
- **Objective 3** – Continued collaboration will be stimulated by CAPRI and meetings will be initiated at least biannually within the group.
- **Objective 4** – Efforts will be focused on the development of a new training grant (T32) proposal to the NIH for graduate education in infectious diseases.
- **Objective 5** – Queries will be made regarding how best to publicize the center and ties will be established to obtain continued private investment support for its goals.
- **Objective 6** – A strategy will be developed to recruit financial support for the creation of an endowed chair in airborne pathogen research.

### Year 2

- **Objective 1** – The center will be utilized to determine the critical facilities necessary for infectious diseases research throughout the A&M System.
- **Objective 2** – The external executive committee (experts in the field) will convene to provide input on CAPRI's development. At least one collaborative project will be initiated and progress on interdisciplinary projects evaluated.
- **Objective 3** – Continued collaboration will be stimulated by the presence of the center and meetings will be continued at least biannually within the group, as well as initiating at least one symposium involving outside experts.
- **Objective 4** – Progress toward obtaining training grant funds (T32, NIH) for graduate education in infectious diseases will be evaluated and other potential training grant opportunities investigated.
- **Objective 5** – Efforts will be continued to publicize CAPRI and strategies to establish external partnerships.

### Year 3

- **Objective 1** – Efforts will focus on establishing the priority facilities and ensuring continued smooth operations in support of infectious disease research.

- **Objective 2** – Recommendations of the external executive committee will be implemented. At least one collaborative project will be initiated and the progress of interdisciplinary projects evaluated.
- **Objective 3** – Meetings will be continued at least biannually within the group. The success of meetings will be evaluated.
- **Objective 4** – Issues within the graduate training program that impact potential to obtain training grants will be evaluated and addressed.
- **Objective 5** – At least one source of private funding for CAPRI will be established and additional sources to allow center evolution will be investigated.

#### **Year 4**

- Objectives will be reevaluated to determine whether CAPRI's goals and missions need adjustment and whether center members' needs are being met. Adjustments to the objectives will be made and appropriate changes in the organizational structure implemented.

#### **Year 5**

- A comprehensive review of CAPRI will be performed both internally by the members and directors and in conjunction with the external executive committee. Recommendations and new concepts will be implemented as members judge the fit within the goals and mission of the center.

### **2. Impact on Education and Training of Students (Benefits to the Citizenry of the State)**

The education of undergraduate, graduate and medical students in respiratory diseases will be enhanced by centralized coordination of course offerings, development of high-quality seminars, journal clubs and research meetings. Training grant opportunities will be identified and proposals will be developed that take advantage of the existing programs and focus on respiratory diseases. In these cases, CAPRI will assist with proposal preparation and provide administrative support, as well as the framework for the training programs as they are developed.

### **3. Sources and Future Expectations of Financial Support**

Current sources of funding for the center include:

- Gates Foundation Grant, "Real-time optical imaging solutions for tuberculosis infections," with total costs of \$5,036,666;
- NIH Contract for Small Animal Models of Infectious Diseases, "Small Animal Model Vaccines and Pathogenesis," with a potential contract value of \$50,000 - \$20,000,000 over the next seven years;
- matching funds from the TAMHSC of \$50,000 per year to provide maintenance support for SAMVAP during the development of CAPRI; and
- pending DTRA grant of approximately \$4,000,000 that has been selected for funding, pending decisions on the government budget for vaccine candidates for Q fever; and

Additionally, Global BioDiagnostics, Inc., an industrial partner that has licensed technology from the center, has recently obtained \$3,500,000 in support from the Wellcome Trust, a major portion of which supports the center's administrative and research goals. See Figure 1.

Figure 1

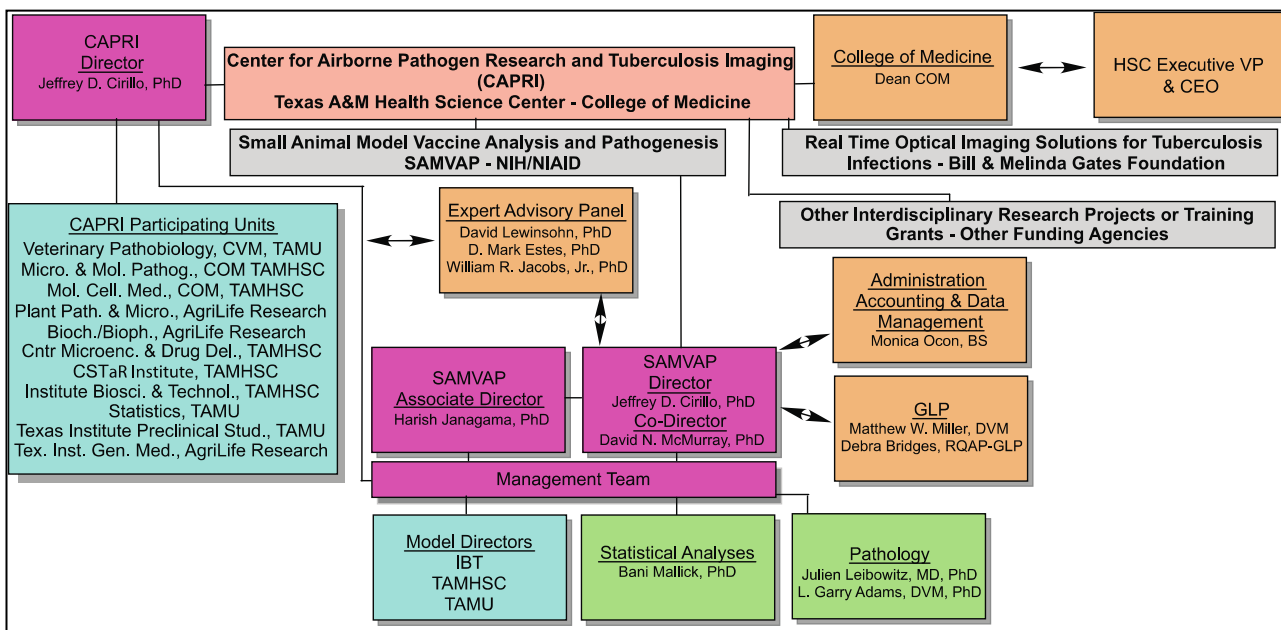
Current Funding.		
Source	Amount	Purpose
HSC	\$50,000	Administrative Support
Gates Foundation	\$5,036,666	Research & Admin.
GBD Wellcome Trust	\$3,500,000	Research & Admin.
DTRA (Pending)	\$4,000,000	Research & Admin.
NIH/NIAD	\$50,000 - \$20,000,000	SAMVAP Contracts

Current administrative support includes: (1) one staff member located in the Department of Microbial and Molecular Pathogenesis, and (2) any materials or related costs, all of which are currently supported by funds from the TAMHSC, the Gates Foundation Grant, and the Wellcome Trust funds. Along with these resources, current space and facilities available to CAPRI members throughout the A&M System will be used to establish the center.

#### 4. Governance and Advisory Structure

CAPRI is a COM-level organizational unit. CAPRI’s director will be Dr. Jeffrey D. Cirillo, Professor in the Department of Microbial and Molecular Pathogenesis. CAPRI members will interact directly with the director. The SAMVAP structure will be incorporated within CAPRI and provide an expert advisory panel, an external group of experts that will provide input on the management, progress toward goals and organization of the center. The SAMVAP structure will also provide much of the management structure with the account administration and management teams participating in the organization and management of the CAPRI. See Figure 2.

Figure 2



#### Advisory Board

The CAPRI advisory board will be composed initially of the existing expert advisory panel for SAMVAP. Members of the advisory board will have terms of between 3-5 years to allow offset of timing for coming off of the board. Members’ terms will be six years, with the option for one renewal of another term, after which another member will be selected based on similar criteria.

The current members of the advisory board were chosen for their internationally recognized expertise in infectious diseases (in particular, respiratory infections) and their desire to contribute to the development of infectious disease research at the A&M System. Current members are Dr. David Lewinsohn, Oregon Health Sciences University; Dr. D. Mark Estes, University of Georgia; and Dr. William R. Jacobs, Jr., Albert Einstein College of Medicine and the Howard Hughes Medical Institute.

In addition to the advisory board, there are numerous existing interactions between groups, including several funded NIH and private grants. The expectation is that once CAPRI is active, interactions between these collaborative units will increase, resulting in increased chances of funding and an improved track record in respiratory diseases. The current group of collaborating units within the A&M System, along with individual collaborators and the support team within CAPRI, are described below. Letters of support are included and detailed curriculum vitae are available, if needed.

#### Intrasystem Collaborations:

- Department of Biochemistry and Biophysics, Texas A&M AgriLife (AgriLife)
- Center for Microencapsulation and Drug Delivery, TAMHSC
- CST×R Institute, TAMHSC
- Institute of Biosciences and Technology, TAMHSC
- Department of Microbial and Molecular Pathogenesis, COM, TAMHSC
- Department of Molecular and Cellular Medicine, COM, TAMHSC
- Department of Plant Pathology and Microbiology, AgriLife
- Department of Statistics, College of Science (COS), Texas A&M
- Texas Institute for Preclinical Studies, College of Veterinary Medicine & Biomedical Sciences (CVM), Texas A&M
- Texas Institute for Genomic Medicine, AgriLife
- Department of Veterinary Pathobiology, CVM, Texas A&M

#### Expected Number and Range of Faculty – Role in Center:

- L. Garry Adams, DVM, PhD, Department of Veterinary Pathobiology, CVM, Texas A&M – Pathology Support/Collaborator.
- Robert C. Alaniz, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- H. Andrews-Polymenis, DVM, PhD, Department of Microbial & Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Jeffrey D. Cirillo, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Director
- Paul de Figureido, PhD, Department of Plant Pathology and Microbiology, Texas A&M – Collaborator
- Thomas Ficht, PhD, Department of Veterinary Pathobiology, CVM, Texas A&M – Collaborator
- Magnus Hööke, PhD, Institute of Biosciences and Technology, TAMHSC – Collaborator
- David P. Huston, MD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Amminikutty Jeevan, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator



- Julian Leibowitz, MD, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Blanca Lupiani, PhD, Department of Veterinary Pathobiology, CVM, Texas A&M – Collaborator
- Bani K. Mallick, PhD, Department of Statistics, Texas A&M – Statistical Support, Collaborator
- M. Martinez-Moczygemba, PhD, Department of Microbial & Molecular Pathogenesis, COM, TAMHSC – Collaborator
- David McMurray, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Matthew W. Miller, DVM, MS, DACVIM, Texas Institute for Preclinical Studies, CVM, Texas A&M – GMP/GLP Support
- Waithaka Mwangi, PhD, Department of Veterinary Pathobiology, CVM, Texas A&M – Collaborator
- John Quarles, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Alison Rice-Ficht, PhD, Department of Molecular and Cellular Medicine, COM, TAMHSC – Collaborator
- James Sacchettini, PhD, Department of Biochemistry and Biophysics, Texas A&M – Collaborator
- James Samuel, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Andrei Golovko, PhD, Texas Institute for Genomic Medicine, AgriLife – Collaborator
- Jon T. Skare, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Vernon L. Tesh, PhD, Department of Microbial and Molecular Pathogenesis, COM, TAMHSC – Collaborator
- Yi Xu, PhD, Institute of Biosciences and Technology, TAMHSC – Collaborator

##### **5. Mechanisms for Periodic Review**

The CAPRI advisory board will review the center every two years and the director will oversee internal review and reorganization by the fourth year after creation. Comprehensive internal and external reviews will occur continuously every five years.