Memorandum

To: University Senate

From: Brian L. Winer, Chair
Council on Academic Affairs

Date: November 2, 2006

A PROPOSAL FROM THE COUNCIL ON ACADEMIC AFFAIRS TO ESTABLISH THE CENTER FOR MICROBIAL INTERFACE BIOLOGY

WHEREAS the goals of the Center are to promote and coordinate interdisciplinary research in the fields of infectious diseases and microbial pathogenesis; to develop training opportunities (both bench and classroom) for individuals with an interest in these fields; and to discover new diagnostic tools, therapies, and vaccines for infectious diseases, and

WHEREAS these goals cannot be achieved within existing units; and

WHEREAS the Center will serve as the focal point to organize the efforts of many individual investigators across campus and provide the organizational structure to attract highly qualified faculty to the University, and in so doing enhance the national and international reputation of the University; and

WHEREAS the proposal adheres to the Guidelines for the Establishment and Review of Academic Centers; was reviewed by the University Research Committee, and the Council on Research and Graduate Studies; and was then approved by the full Council on Academic Affairs on August 23, 2006.

NOW THEREFORE BE IT RESOLVED that the University Senate approve the proposal to establish the Center for Microbial Interface Biology, and respectfully request concurrence from the Board of Trustees.

Dutta, Lakshmi

From: Smith, Randy
Sent: Wednesday, August 23, 2006 12:54 PM
To: 'Larry Schlesinger'
Cc: Sanfilippo, Fred; 'Robert Bornstein'; 'Brian Winer'; Dutta, Lakshmi; Zacher, Chris; 'conlisk.1 @osu.edu'; McGrath, Bob; Snyder, Barbara; Smith, Randy; Sharkey, Maureen
Subject: Center for Microbial Interface Biology

Larry:

I am pleased to inform you that the proposal to establish the Center for Microbial Interface Biology was approved by the Council on Academic Affairs at its meeting on August 23, 2006. Thank you for attending the meeting to respond to questions/comments. I will work with you over the next few days to submit a revised proposal that addresses the issues that were discussed at the meeting: an updated list of faculty participation in the Center; clarification of the use of the term "appointment"; and an updated budget statement.

The proposal will now be sent to the University Senate for action at an Autumn Quarter 2006 meeting. I will contact you when I know the details. Following Senate action, the proposal will be sent to the Board of Trustees for final approval. All of these steps should be completed by the end of Autumn Quarter 2006.

In the interim, given the overall length of time involved, the Council believes that you should be able to use the term center, noting, when appropriate, that it is pending final action by the Board.

Congratulations on the successful completion of this important stage in the review/approval process!

Randy

W. Randy Smith
Vice Provost

TO: **Council on Academic Affairs**

FROM: **Subcommittee A (Nancy Reynolds, Brian Winer, Harald Vaessin, Chair)**

RE: **Proposal to establish a Center for Microbial Interface Biology, College of Medicine**

DATE: **July 26, 2006**

Subcommittee A reviewed the proposal to establish a Center for Microbial Interface Biology, College of Medicine. Subcommittee A discussed the proposal and submitted a set of questions. Subcommittee A also reviewed the responses to questions raised in the University Research Committee Review of the proposed Center.

Subcommittee A recommends approval of the proposal.

SubCommitte A questions and comments:

1. **What are the different membership classes for members of CMIB?**

CMIB membership is explained in Section II. Membership and Involvement, A. Roles of Faculty, Staff, and Trainees, A1. CMIB Member. We decided against specific classes of membership (e.g. associate members, primary/secondary members), which are difficult to clearly define. Therefore, individuals who fit the criteria outlined in this section and who express an interest will be considered for membership in the CMIB. As written in the proposal, current active faculty participants (section II B1) will be invited to become members when the CMIB becomes an official University Center.

2. **Clarify the reporting lines. The proposal states that "The Center Director reports to the Dean of the College of Medicine and Public Health." However the CMIB Organizational Chart (Appendix G) indicates a reporting line to the Senior VP, Office of Health Sciences.**

The sentence quoted above is in error. The organizational chart is correct. The Center Director will report to the Senior VP, Office of Health Sciences.

3. **The administration appears to be top heavy given the number of faculty (5 positions/4 salaried faculty).**

Current faculty members are now five (the newest member is Dr. Vijay Pancholi, Associate Professor of Pathology who was offered membership in 1/06 as part of his recent hire to OSU). As noted above, 20 additional faculty participants will be offered membership with University Center status. As written in the proposal, 4 additional CMIB members will come from joint hires with Microbiology (the first 2 have just accepted positions; Dr. Chad Rappleye from Washington University and Dr. Stephanie Seveau from the University of Michigan). Additional hires will be considered through the submitted Provost TIE and a CMIB business plan. Thus, we believe the described administration is warranted.

4. **Clarify reviews process. What elements will be included in the quarterly internal review.**

The proposal was not as clear as it should have been on this topic. The criteria spelled out for third year internal review should have also been stated to be the criteria for all internal reviews. This includes: i) Quality and quantity of peer reviewed publications; ii) Extramural funding; iii) Number of Graduate student applicants accepted into and successfully complete their Graduate studies in the laboratories of CMIB members; iv) Number of classes taught, and courses initiated, by CMIB personnel; v) Public Service (service to the University/College and the scientific community); and vi) Participation in local, national, and international meetings.

5. **What is the anticipated membership of the Internal Advisory Committee?**

The composition of the committee is described in V. A2. Based on current activity, we anticipate that it will include the Deans (designees) from the Colleges of Medicine, Biological Sciences, Veterinary Medicine, Food Agricultural and Environmental

Sciences, and Pharmacy; President, Columbus Children's Research Institute, and Director, School of Biomedical Science. Future activities may indeed include other colleges/units.

6. **What is the status of the T32 proposal?**

Scored but not funded this cycle. To be resubmitted September, 2006.

7. **Undergraduate instruction: does this involve only UG research or also classroom instruction?**

We anticipate a role for both types of educational venues for faculty members of the CMIB. For example, Drs. Rappleye and Seveau have joint appointments in the College of Biological Sciences and College of Medicine. These faculty members will be teaching undergraduates in the Department of Microbiology. Current CMIB members are also teaching classes for undergraduates in this Department. Members of the CMIB are also actively involved in the new undergraduate honors program in Biomedical Sciences. Current laboratories of CMIB members have several undergraduate researchers in them (either as a research class for credit or as employees) and students participate in the undergraduate research forum. Finally, because of the close link to the medical center, undergraduate students with an interest will have the opportunity to attend classroom activities in the Division of Infectious Diseases, Department of Internal Medicine (journal clubs, book clubs, etc).

8. **What are examples of educational programs that are presently being developed by members of the CMIB.**

The CMIB originated and currently directs an IBGP Host-pathogen Research Seminar on Mondays: **795 Host-Pathogen Interactions: Research Seminar.** Faculty, students and outside speakers will give research presentations on microbial-host interactions. Su, Au, Wi, Sp Qtrs. 1-hr cl. Prereq: Registration as graduate student or permission of both course director and undergraduate major advisor for undergraduates. Repeatable to a maximum of 12 cr hrs. This course is graded S/U. We have approximately 6 students enrolled each quarter (except summer), and we expect enrollment to continue to rise as more students become involved in pathogenesis research.

Last Autumn, CMIB members organized and taught a successful session of IBGP 851, which was focused this quarter on Host-Pathogen interactions:
851 Advanced Seminar in Integrated Biomedical Science, Molecular Responses at the Host-Pathogen Interface. Interdisciplinary biomedical topics will be reviewed in depth with student participation in analyzing literature, and faculty and outside experts presenting their own original research. Au, Wi, Sp Qtrs. 1 1-hr cl. Prereq: Permission of course director for non-IBGP students. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

CMIB faculty members are currently beginning to design at least two other classes in areas of need: immunology and microbial pathogenesis. In addition to the close relationship with the IBGP, the CMIB will continue to work with other graduate

training programs in developing a curriculum in microbe-host interactions such as those in the Department of Veterinary Biosciences and Department of Microbiology.

9. **How will graduate courses developed by the CMIB be listed. Who will teach these courses and what departments/units will receive credit.**

The majority of new graduate level courses that are developed will be done so within the realm of IBGP, but will also be cross-listed whenever possible with various other departments including Microbiology and Veterinary Biosciences. It is anticipated that CMIB members will provide the majority of instruction in these classes.

10. Budget: How much of the budget is continuous support.

The CMIB currently has $80,000 in continuous support for the administration and operation of the unit.

11. What is the anticipated budget (including source(s) of support)?

The anticipated annual budget for the administration and operation of the CMIB is expected to be $220,000. Sources of support will include the current $80,000 in continuous funding plus anticipated support of $12,000 in unrestricted educational awards and $25,000 from extramural research. A business plan has been submitted to the College of Medicine.

Response to the CMIB review dated May 30, 2006 by the University Research Committee (URC)

1. The Center would seem open to further collaboration from other existing Departments and internationally recognized expertise in microbial pathogenesis (e.g. Departments of Plant Pathology, Plant Cell and Molecular Biology, and the Food Animal Health Research Program).

Response: We appreciate this comment. The CMIB will continue to actively seek involvement from new sectors on the campus that have interest and expertise in infectious diseases and microbial pathogenesis in the broadest context. Our success to date in embracing > 8 colleges and a large number of OSU Centers/Organizations and Graduate Programs (Appendix B) has come from seeking points of commonality and mutual gain and by providing innovative forums where members of these groups can share their work and receive input that will enhance their programs. A number of new partnerships and collaborations have come from this approach as well as new ideas for educational programming. Our relationship with the Food Animal Health Research Program and the College of Food, Agricultural, and Environmental Sciences in general has grown significantly and is evidenced by their involvement in recent applications to the Third Frontier Program, Provost TIE, and NIH roadmap Program (U54 mechanism). Having said this, we realize that there is great potential for new partners and programs. For example, the units you suggest (area of plant biology) provide significant collaborative opportunities to better understand microbe-host symbiotic relationships that have relevance to a number of pathogens, innate resistant mechanisms with homologous proteins and pathways throughout the animal kingdom, and powerful inexpensive approaches to vaccine development that can impact human diseases. In fact, the NIH study section on microbial pathogenesis includes members from Plant Biology programs. Our Faculty Leadership Committee will continue to be actively involved in engaging new units. Discussions in this regard will also take place with the internal and external advisory boards.

2. The period of continued funding for the CMIB (annual operating budget of $80,000 from the COM) is not specified and sources of additional funding have not been identified.

Response: The CMIB will receive the $80,000 in continuous committed support from the COM for the administration and operation of the unit. The CMIB also has anticipated support of $12,000 in unrestricted educational awards and $25,000 from extramural research. A business plan has been submitted and reviewed favorably by the College of Medicine. Institutional and extramural sources of support continue to be aggressively pursued.

3. Update the current status of faculty hires.

Response: I am pleased to report that the planned recruitment of two faculty hires this academic year has been completed successfully. As previously described, this

recruitment represented joint hires between the Department of Microbiology in the College of Biological Sciences and the CMIB in conjunction with the Department of Internal Medicine, Division of Infectious Diseases, College of Medicine. We have recruited Dr. Stephanie Seveau from the University of Michigan (uses newly developed highly quantitative live video microscopy to examine microbe-host interactions) and Chad Rappleye (molecular pathogenesis models for studying the fungal pathogen *Histoplasma capsulatum*) as tenure track Assistant Professors. Both of these individuals bring new state-of-the-art innovative programs to the OSU campus and truly represent "interface biologists."

4. While the description of the continued evaluation process for the Center is complete with metrics to be used, there are no specifics of the measurement of success. The consequences for failing to meet expectations are not described, nor is there mention of a mechanism to determine sustainability.

Response: We appreciate these comments and understand their importance in moving forward. One commonly used tool to measure success is rankings from the public media. However, these rankings do not currently target programs such as ours and therefore will not represent a precise measurement (we have recently met with representatives from the University Foundation about developing a document to support adding programs in infectious diseases/microbial pathogenesis to the list in USN&WR). We therefore elected to outline the criteria for evaluation to be used in detail (V.B1.) and will track them on an annual basis to monitor gains and losses. Using these criteria and submitted reports, the CMIB Leadership Board will receive evaluations from the Internal Advisory committee and External Advisory Board to determine whether expectations are being reached, whether the Center's goals are sustainable, and if not, what new sustainability efforts should be focused on. The CMIB's success and sustainability will also be evaluated on an annual basis by the Senior VP Office of Health sciences and the University Office of Academic Affairs. CMIB leadership will remain responsive to all input and recommendations in order to ensure its continued success.

University Research Committee Review of Center for Microbial Interface Biology (CMIB) Proposal.
Prepared by: Brian McSpadden Gardner and Dale Vandre
Reviewed by: A. T. Conlisk, Chair
To: Randy Smith, Vice-Provost
May 30, 2006

The CMIB is a multidisciplinary research center designed to focus research efforts across campus related to infectious diseases and microbial pathogenesis. There are currently 4 faculty appointed directly to the center, and an additional 20 faculty that have an association with the Center. Plans to hire 4 additional faculty with direct appointments to the center are included in the proposal. The CMIB has a strong recognized leader in Dr. Larry Schlesinger. Together with the 3 other existing CMIB faculty, there exists a strong record of scholarship and an existing extramural funding base. The interdisciplinary nature of the CMIB is also well documented; however, the disciplinary and academic scope of the proposed center would seem open to further collaboration from other existing Departments with internationally recognized expertise in microbial pathogenesis. Cursory contact with individuals in the Departments of Plant Pathology, Plant Cell and Molecular Biology, and the Food Animal Health Research Program indicated a mixed level of faculty interest in participating in such a broadly defined endeavor. We recommend that the CMIB faculty cooperatively engage the above-named Departments or revise the Center Rationale to clarify its focus on human pathogens.

The need for creating a Center such as the CMIB at OSU is well justified when considering the many implications of microbial pathogenesis on human health including emerging infectious diseases and bioterrorism related threats. This is an area of great potential importance in the future, and is currently underrepresented at OSU. The formation of the CMIB will serve as a focal point not only to organize the efforts of many individual investigators across campus, but will also provide the necessary organizational structure to attract highly qualified faculty to the University.

The CMIB has an annual operating budget of $80,000 provided by the College of Medicine, and the Center will be housed in new space currently under construction located on the 10th floor of the Biomedical Research Tower. Sources for additional operating expenses as the CMIB grows have not been identified and the period of continued funding is not specified. Support to hire four additional faculty has been indicated in the proposal originating from the Department of Microbiology in the College of Biological Sciences, the Division of Infectious Disease, and the CMIB. It was indicated that two of these positions would be filled by fall of 2005, and the 2 remaining positions by summer of 2006. The current status of these faculty hires is not known, but should be updated to determine whether the continued development of Center is on track. Sustaining the CMIB will be dependent upon sources of extramural funding.

While several mechanisms are indicated in the proposal for the continued evaluation of the CMIB and the metrics to be used in these evaluations, there are no specifics of the measurement of success. The consequences for failing to meet expectations are also not described in the proposal, nor is there mention of a mechanism to determine continued sustainability of the Center. The Center's focus is in an important

research area as noted above and in moving forward, sustainability efforts should play a significant role in future planning.

In summary, the formation of the CMIB will provide a needed focus for infectious disease research across campus, and the existing core CMIB faculty are respected investigators in their fields of study. As such, the CMIB proposal should be supported. An update of the progress in hiring additional faculty to the CMIB would be indicative of how the Center is developing and whether this is on track. Funds for CMIB operating expenses and further growth are dependent upon continued success in obtaining extramural funding. The University Research Committee recommends that the CMIB begin seeking extramural funding as soon as possible. Sustainability issues should play a major role in future planning. While a thorough evaluation of the CMIB is planned the consequences of failing to reach expected goals is not delineated.

THE OHIO STATE UNIVERSITY

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Memorandum

To: Council on Academic Affairs
Subcommittee A

From: W. Randy Smith
Vice Provost

Subject: Proposal to the Center for Microbial Interface Biology
College of Medicine

Date: February 10, 2006

Enclosed is a proposal to establish a **Center for Microbial Interface Biology**, College of Medicine.

The contact for this proposal is **Professor Larry Schlesinger, Department of Internal Medicine, (schlesinger.17@osu.edu or 3-5671).**

Please ensure that this proposal adheres to the Guidelines for the Establishment and Review of Academic Centers found in your Academic Organization and Curriculum Handbook.

Note that this proposal is simultaneously being reviewed by the University Research Committee and once I have its comments, I will submit them to you to supplement your own review. With those two sets of comments, Professor Schlesinger, if needed, can make revisions to the proposal that you can review before submitting the proposal to the full Council on Academic Affairs for action – hopefully before the end of this academic year.

If you have any questions, please contact me.

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Memorandum

To: Professor Terry Conlisk, Chair
University Research Committee

From: W. Randy Smith
Vice Provost

Subject: Proposal to establish the Center for Microbial Interface Biology
College of Medicine

Date: February 1, 2006

Enclosed is a proposal to establish a **Center for Microbial Interface Biology,** College of Medicine.

The contact for this proposal is **Professor Larry Schlesinger, Department of Internal Medicine (schlesinger.17@osu.edu; 3-5671).**

Center/institute proposals are reviewed in detail by the Council on Academic Affairs (CAA) but with input from the University Research Committee.

Please review this proposal and send reactions/suggestions – including suggested revisions – to Professor Schlesinger and me. It is simultaneously being reviewed by Subcommittee A of CAA. When the University Research Committee has completed its review, it should send its recommendations to the Council on Research and Graduate Studies for formal action. With that information Subcommittee A will bring it forward to the full CAA for action – hopefully before the end of this academic year.

If you have any questions please contact me.

THE OHIO STATE UNIVERSITY
UNIVERSITY MEDICAL CENTER

Division of Infectious Diseases
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Center for Microbial Interface Biology

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www.cmib.osu.edu

September 20, 2005

Randy Smith
Vice Provost for Curriculum and Institutional Relations
Office of Academic Affairs
203 Bricker Hall
The Ohio State University

Dear Randy-

I am submitting an application for the Center for Microbial Interface Biology (CMIB) to achieve University Center status. The application is being sent you electronically and by hard copy. We are also submitting by hard copy several internal letters of support and 3 external letters of support (Drs. Greenberg, Schlievert, and Brown). As requested, I am providing additional names and contact information for several additional external reviewers below. I appreciate the consideration given to this application.

Sincerely,

Larry Schlesinger, M.D.
Saslaw Professor of Medicine
Director, Division of Infectious Diseases and
Center for Microbial Interface Biology

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cc: Fred Sanfilippo, M.D., Ph.D.
Dean, College of Medicine and Public Health
Senior Vice President and Executive Dean for Health Sciences
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September 15, 2005

Larry S. Schlesinger, M.D.
Saslaw Professor of Medicine
Director, Division of Infectious Diseases and
Center for Microbial Interface Biology

Dear Dr. Schlesinger:

I want to give strong, unequivocal support for your proposal to develop a new health sciences center for research in infectious diseases and microbial pathogenesis called the "Center for Microbial Interface Biology (CMIB)." As you have described the center, it will be a focus of multidisciplinary research that is strongly inline with the current NIH goals, and it addresses the interests of many faculty in numerous colleges at OSU.

The success of your program over the past couple of years has been admirable. It has been responsible, in great measure, for the resurgence of interest and research in microbial pathogenesis. Given the current world of emerging pathogens, the development of microbial drug resistance, and the uncertainty of bioterrorism, I find the development of the CMIB at OSU to be of paramount importance. Further, the Center's approach to enlisting the talents of scientists, clinicians, fellows and students from the broad community at OSU is an excellent model that promotes interdisciplinary research and creates educational opportunities for trainees throughout various units across campus.

Faculty members within the College of Dentistry, with interests in microbial pathogenesis and host defense mechanisms, have participated in activities associated with your program. They plan to continue collaborations with CMIB members that lead to the acquisition of extramural funding.

In closing, I want to reiterated my strong support for the CMIB proposal and wish you the best in the continued development of the CMIB.

Sincerely yours,

Jan E. Kronmiller, DDS, PhD
Dean

Proposal to establish a

Center for Microbial Interface Biology

Submitted for Approval to

The Council of Academic Chairs
And
The Council on Research and Graduate Studies

Proposed by the Division of Infectious Diseases, Department of Internal Medicine, and College of Medicine and Public Health

August 2005

Table of Contents

Appendix

Proposal to Establish a

Center for Microbial Interface Biology

Introduction and Overview

The Center for Microbial Interface Biology (CMIB), a multidisciplinary research center at The Ohio State University (OSU), was created in 2002 by Dr. Larry Schlesinger. The CMIB originated in the College of Medicine and Public Health (COMPH) and focuses on research in infectious diseases and microbial pathogenesis. The title of the Center was created to embrace the broad biological sciences applicable to the complex study of microbe-host interactions, *i.e.* the interface between microbes and their hosts. There are currently four faculty members with direct appointments in the CMIB and approximately 20 investigator participants from throughout the OSU campus that are associated with the CMIB. The collective CMIB faculty is involved in and represents the fields of immunology, cell biology, pathology, biochemistry and pharmacology, microbiology, genetics, structural biology, and bioinformatics (http://cmib.osu.edu). Investigation by these researchers includes but is not limited to *in vitro* and *in vivo* models, genomics and proteomics, and population-based studies. Specific emphasis areas of the Center are respiratory infectious diseases, intracellular parasitism, and granulomatous inflammation. These areas build upon current and projected strengths at OSU, have direct relevance to the clinical mission of the OSU Medical Center (opportunistic infections in immunocompromised patients), and directly relate to many of the targeted infectious disease agents of bioterrorism.

I. Rationale

A. Goals and purpose of the CMIB

A1. Goals of the CMIB

- Promote and coordinate interdisciplinary research in the fields of infectious diseases and microbial pathogenesis on the OSU campus.

- Develop training opportunities (both bench and classroom) for individuals with an interest in the fields of infectious diseases and microbial pathogenesis.

- Discover new diagnostic tools, therapies, and vaccines for infectious diseases, including diseases caused by microbes targeted as agents of bioterrorism.

Goals of the CMIB relate to education, research and service. A primary goal is to integrate the existing strengths at OSU and optimize the opportunity for success of individual researchers in order to compete for the increased extramural funds targeted for these areas of research.

The CMIB will also serve to enhance the national and international reputation of the University in these research areas. The Center has been successful in bringing together scientists throughout the OSU campus in different departments, colleges, schools, and institutes.

A2. Benefits to the University

This proposal intends to position Ohio State as an ***international scientific leader*** in microbial pathogenesis.

- The Center will integrate into and substantially augment the existing strengths at Ohio State and will enable OSU to compete for the projected increases in funding related to host pathogen interactions. The Center will also serve to enhance the reputation of OSU as a leader in defense against bioterrorism. The basic theme of microbial pathogenesis will enable Ohio State to become a leader in dealing with emerging pathogen threats to the public health in America. Existing programs, which include investigations in bacterial, fungal, parasitic and viral pathogenesis, will be supplemented by new research programs in areas of emerging pathogens, including areas related to bioterrorism. In addition, research programs will integrate patient-based translational research, experimental therapeutics, vaccine development and epidemiology.

- The CMIB will serve to integrate research efforts in the COMPH from units including the Departments of Internal Medicine, Molecular Virology, Immunology, and Medical Genetics (MVIMG), Pathology; and the School of Biomedical Sciences. Research will also integrate efforts from the School of Public Health, the College of Veterinary Medicine (*e.g.* Department of Veterinary Biosciences), the College of Biological Sciences (*e.g.* Department of Microbiology), the College of Pharmacy, the College of Dentistry, Heart and Lung Research Institute (HLRI), the Columbus Children's Research Institute and the Ohio State University –Ohio Agricultural Research and Development Center (OARDC) on the Wooster campus. These new opportunities will facilitate revenue generation through new academic and clinical programs. Outcome measures include an increase in the number and amount of extramural funding (including program grants), increased volume of clinical research projects, expansion of clinical activities in focused areas of need and an educational agenda to facilitate training in microbial pathogenesis.

- The CMIB intends to serve as the intellectual Center for Ohio State faculty and students who have an interest in microbial pathogenesis. Existing and developing CMIB activities will contribute to a livelier intellectual atmosphere and enhance both trainee experience and retention of high quality faculty. Seminars and conferences that bring OSU faculty together with outstanding visitors will stimulate faculty and students alike, while serving to make better known the quality of the University among our peers. The Center is not envisioned as a degree-granting unit although it will facilitate any relevant academics programs, such as those within the Integrated Biomedical Graduate Program (IBGP). The CMIB activities will span the three University missions of teaching, research, and

service, bringing them together in new ways that make best use of existing University talent.

B. Rationale for the development of a Center focused on microbial pathogenesis on the OSU campus.

Never before in contemporary history has public awareness been as great as it is now regarding the threat of infectious disease agents. Nationally, there has been a significant increase in the attention that infectious diseases research receives. Increased awareness has been associated with the emergence of multi drug resistant organisms and new pathogens such as the West Nile and SARS viruses, a growing concern regarding the potential use of infectious agents in offensive bio-warfare, and an increasing list of opportunistic infections seen in severely immune compromised patients. With the realization of these new infectious disease challenges has come an increased need for creating enriched environments of learning for pre- and post-doctoral trainees in microbial pathogenesis in addition to numerous opportunities for extramural funding.

- We have recently witnessed an explosion of technical and scientific advances throughout the biological sciences. Such advances have relevance to the study of infectious agents in the context of microbe-host interactions. As we move forward with investigation in the post genomics era, it is essential that a multidisciplinary approach be taken to this study in order to most effectively acquire information that is translatable to new diagnostics, therapies, and vaccines. Thus, training environments must emphasize interactive science with the requirement for input from investigators in a variety of scientific disciplines in order to optimally explore critical questions related to microbe-host interactions. This exploration must take into account each side of the equation as well as the unique immunologic compartments in which they occur.

- OSU has a large number of trainees on campus who have an interest in performing research related to infectious diseases and microbial pathogenesis. These include Undergraduate students, Graduate students, medical students, and post-doctoral fellows. There have been limited opportunities for these individuals to pursue research in microbial pathogenesis and a paucity of courses for these trainees. The establishment of a Center with a specific focus on host-pathogen interactions will provide a structure for students and enhance interactive learning in pathogenesis.

- The CMIB would enrich the interdisciplinary environment for students and researchers that have a focus on microbe-host interactions. The environment would facilitate learning, research productivity, and collaborations that lead to increased extra-mural funding. It is anticipated that the CMIB will serve as a hub for microbial-pathogen research on the OSU campus.

- The COMPH has a recognized history of clinical research in infectious diseases. Additionally, OSU is home to a number of individual investigators who have an interest in host-pathogen interactions. From a clinical and educational standpoint, the Division of Infectious Diseases in the Department of Internal Medicine has been outstanding. This Division houses a large patient-based research program called the AIDS Clinical Trial

Unit. However, intra-University collaboration in the area of infectious disease research has been deficient and faculty have had little interaction with scientists across campus that perform basic research prior to the formation of the CMIB.

- Scientists studying microbial pathogenesis are spread throughout the campus, located in different departments, colleges, and schools which creates additional barriers to collaborative science. Infectious diseases research currently exists in several departments within the COMPH and the School of Biomedical Sciences including Medicine, Pathology, Biomedical Informatics, and MVIMG. Investigators are also present in the College of Veterinary Medicine (Department of Veterinary Biosciences), the School of Public Health, the College of Biological Sciences (Department of Microbiology), the College of Pharmacy, the College of Dentistry, HLRI, the Mathematical Biosciences Institute, Columbus Children's Research Institute, the OARDC on the Wooster campus and the Battelle Memorial Research Institute. This is not an exclusive list (see Appendix B for a comprehensive list of Departments and Centers that comprise the CMIB).

- The 10^{th} floor of a new Biomedical Research Tower, due for completion in Spring 2006, will be the future home for many of these investigators. It includes BSL-3 facilities on the same floor as the research labs and an additional animal facility and ABSL-3 in the basement. The completion of this building will coincide with support for several new CMIB faculty hires.

- A major goal of the CMIB is to integrate the existing strengths at OSU and optimize the opportunity of individual infectious disease researchers in order to compete for the increased extramural funds targeted for these areas of research. The CMIB will also serve to enhance the national and international reputation of the University in these research areas. The new opportunities provided by the Center will facilitate additional revenue generation through new academic and clinical programs. Growth of the CMIB is occurring by effectively assembling interested investigators on the OSU campus and through targeted recruitment of researchers whose goals are within the themes of the Center. Outcome measures of success include an increase in the number of submitted and acquired extramural grants, including program grants; increased research and classroom training opportunities; increased recognition at the national and international level, evidenced by an increase in the number of invited lectureships, and by an increase in new programs by CMIB faculty aimed at increasing linkages between the basic and clinical sciences.

- The goals of the proposed Center cannot be achieved within existing academic units. The current model of diffuse individual research funding is to be augmented by deeper and more focused funding of targeted research areas and interdisciplinary teams. The Center will encourage faculty to channel their effort into interdisciplinary collaborations.

C. Interdisciplinary nature of the Center in the areas of research, education and service

The CMIB has been highly successful in developing new academic programs and in forming new interdisciplinary efforts in science on the OSU campus since its creation in 2002. The following section summarizes accomplishments of the CMIB and ongoing projects/proposals which demonstrate the interdisciplinary nature of the Center.

C1. Cooperative research efforts among Colleges and Units and accomplishments of the CMIB

- Planning RCE. The successful competition for a Planning Regional Centers of Excellence (P-RCE) grant for infectious diseases research in biodefense represented a collaborative effort among investigators at OSU in the Colleges of Medicine, Biological Sciences, Pharmacy, and Veterinary Medicine as well as Children's Research Institute and the Battelle Memorial Institute. Several other Universities were also involved in this effort. A full RCE application (65 million dollars) was submitted in September 2004 in conjunction with the Universities of Minnesota and Iowa. 24 OSU faculty and staff were included in the RCE application and the CMIB played a leadership role in the development of this program on the OSU campus. Although it was recently announced that the RCE would not receive funding, the process of RCE preparation served a valuable purpose of uniting CMIB researchers across campus on common projects related to infectious diseases. New PPGs are being planned as a result of this established research group.

- A Program Project Grant on polymicrobic infections is currently in development as collaboration between faculty members of the CMIB/ Infectious Diseases, Medical Microbiology, and the OARDC.

- CMIB publications, abstracts, and invited lectureships (see Appendix C).
  Drs. Gunn, McGwire, Schlesinger, and Turner have published extensively in peer-reviewed journals with a collective total of 43 papers since the creation of the Center and 10 additional manuscripts currently submitted for review. Members of the CMIB have contributed to 6 books/book chapters and have participated in numerous lectures and poster presentations.

- CMIB funding (see Appendix D).
  Drs. Gunn, McGwire, Schlesinger, and Turner all bring funded research programs to OSU and these programs continue to grow as the Center develops. CMIB faculty generated $870,686 in research funds in 2003/04, $1,488,591 in 2004/05, and $2,794,385 in 2005/06. A further $3,158,016 is currently in review.

C2. Interdisciplinary programs in Education

In addition to their research focus, members of the CMIB are currently both participating in and developing educational programs. Further development of CMIB educational activities will contribute to an intellectual atmosphere that will enhance both trainee experiences and retention

of high quality faculty. Seminars and conferences that bring OSU faculty together with outstanding visitors will stimulate faculty and students alike, while serving to make better known the quality of the University among our peers. Although the Center will not be a degree-granting unit, it will facilitate relevant academics in this area. The courses developed by the CMIB will be formed in conjunction with the relevant graduate training programs, such as the IBGP.

Optimal training for PhD, MD/PhD, and MD pre- and post-doctoral researchers requires rigorous education in the basic sciences. It can be argued that this training should also provide for exposure to the broader context of research, *i.e.* the human disease state. This can be provided by the environment of an academic health sciences center and biomedical research community where the clinical and basic sciences can be integrated. In these environments, pre-and post-doctoral trainees can gain exposure to the clinical manifestations of diseases and their treatment and prevention. They can learn the importance of finding solutions to research questions by using patient materials and clinical data. Furthermore, they will be in the best position to direct their work to areas that could have a major impact on treating human disease.

- **Weekly CMIB Work in Progress Discussion Group**
  A weekly CMIB Work in Progress Discussion Group Meeting was established in March 2003. The discussion group enables scientists and trainees to present preliminary data to their peers. The Work in Progress medium serves as a sounding board for scientists to obtain critique of their work from colleagues while often still at preliminary stages of concept development. The Work in Progress environment facilitates the development of new research strategies, pools knowledge, and fosters collaboration amongst infectious disease investigators at OSU. All levels of trainees including Graduate students, post-doctoral researchers, and research scientists are encouraged to participate. The CMIB Work in Progress is well attended by faculty, students, and staff from across the campus including the Colleges of Medicine, Biological Sciences, Veterinary Medicine, Dentistry, College of Food, Agriculture, and Environmental Sciences and Pharmacy, as well as HLRI and the Children's Research Institute. The average weekly attendance has been between 25-50 individuals. See Appendix E for a list of presenters and topics.

  The weekly CMIB Work in Progress Discussion Group meeting has been converted to a 1 credit hour course for Graduate students as part of the IBGP program (IBGP 795: Microbial-Host Interactions Research Seminar). The Research Seminar was first offered in the winter quarter of 2003-04. It is cross-listed in the Department of Microbiology and Department of Veterinary Bioscience. Drs. Gunn and Schlesinger are co-Directors of this course.

- **IBPG Microbial Pathogenesis Track**
  The IBGP at OSU is a doctorate degree-granting program of The School of Biomedical Sciences. The theme of the IBGP is "The Biology of Human Disease," and this is reflected in the topics of the Core Curriculum. These topics range from biochemistry and molecular biology through cell, tissue and organ biology, to integrated organ systems. The CMIB is assuming a leadership role in the new Microbial Pathogenesis Emphasis area in the IBGP, allowing Graduate students to further explore host-pathogen

interactions by selecting specific courses that focus on infectious diseases. Dr. Schlesinger is the faculty liaison to the IBGP in this emphasis area.

- **Advanced Seminar in Integrated Biomedical Science**
  Drs. Gunn, Schlesinger, Turner, and McGwire lead a course entitled Molecular Responses at the Host-Pathogen interface (IBGP 851) as part of the Advanced Seminars series in the IBGP. This course covers both basic science and technical aspects of host-pathogen interactions at the molecular level. The course includes didactic teaching, journal club, and a guest seminar speaker in an area of host-pathogen interactions. The course was offered in Spring 2005 as a 1 quarter course.

- **Microbial Pathogenesis Journal Club**
  Dr. John Gunn directs a journal club course for The Department of Molecular Virology, Immunology and Medical Genetics (MVIMG). The course entitled Current Topics in Microbial Pathogenesis (MVIMG 814) began spring quarter of 2004 and is offered once per year.

- **CMIB faculty leadership and/or participation in education**
  CMIB faculty participates in a broad spectrum of teaching opportunities in Microbial Pathogenesis throughout campus.

  Members of the CMIB faculty serve as Course Director for;
  IBGP 795: Microbial-Host Interactions Research Seminar
  IBGP 851: Advanced seminars in Integrated Biomedical Science
  IBGP 814: Current Topics in Microbial Pathogenesis Journal Club

  Members of the CMIB faculty lecture for the following courses;
  Micro/MVIMG 701: Molecular and Cellular Immunology
  IBGP 797: Integrated Biomedical Science Graduate Seminar
  Micro 724: Molecular Biology of Bacterial Pathogens
  MVIMG 833/IBGP 703: Host defense: Immunology
  Med 1 Integrated Pathway: Host Defense Block

- **CMIB Host-Pathogen Seminar Series**
  A Host-Pathogen Seminar Series was established in the 2004-2005 academic year. The goal of the Seminar Series is to bring world renowned scientists to campus to enhance visibility and scientific discourse in the area of microbe-host interactions at OSU. In addition to presenting research data, visitors meet with faculty, students, and trainees from different programs across campus. The scheduled seminars are hosted by the CMIB in conjunction with other Departments across campus that participate in the CMIB vision. Dr. Turner directs this program. See Appendix F for a list of presenters from 2004-2005, and the schedule for 2005-2006.

- **Infectious Diseases Clinical Case Conference and Journal Club**
  The interdisciplinary nature of the Infectious Diseases Journal club and Clinical Case conference offered by the Division of Infectious Diseases in the Department of Internal

Medicine fosters a relationship between basic research and clinical science. A weekly case conference and biweekly journal club are in place which offers a forum for the discussion of both clinical and basic science topics within infectious diseases. Dr. Schlesinger is in a unique position to serve in both basic research and clinical leadership roles, further strengthening the collaborative nature of the CMIB with the clinical sciences.

- **Educational Goals in Development**

  - **T32 Training Grant**

This proposal seeks new funding for a training program in Infectious Diseases at the Ohio State University. This program will be the primary mechanism for a coordinated and integrated training experience in all aspects of microbial pathogenesis and infectious disease research for pre- and post-doctoral MD and PhD trainees. The training program faculty includes representatives from 13 departments (10 basic sciences and 5 clinical) and 3 PhD degree granting programs. It will work side by side primarily with the IBGP in the COMPH.

The Infectious Diseases training program will enrich existing training programs at OSU in several ways by emphasizing 1) a highly interactive scientific community, 2) a multidisciplinary approach to science, 3) exposure to the biomedical research community of a large academic health sciences center, 4) integration of the clinical and basic sciences, 5) the link between basic science discovery and the application to human disease, and 5) exposure to experienced and talented PhD, MD, and MD/PhD scientist educators and mentors.

The **GOALS** of this training program are:

1. To make available state of the art laboratory-based training in studies of microbe-host interactions for four pre-doctoral and 2 post-doctoral trainees while increasing their familiarity with the clinical aspects of infectious diseases by facilitating regular interactions between PhD and MD scientists and trainees.

2. To provide post- doctoral trainees, including physicians wishing to pursue careers in laboratory-based investigation, with a strong foundation in basic sciences as well as the direct laboratory experience needed to conduct state of the art basic science research in infectious diseases. This will be done in part through joint course work, presentations, and conferences.

3. To optimize interactions among investigators in studies of microbe-host interactions at OSU in order to create the ideal environment for research and education of trainees.

A revised T32 grant is being prepared for submission September, 2005.

- **CMIB Research Day and Retreat**

In the next academic year, the CMIB will develop a research day and retreat. The research retreat will allow further dissemination of scientific ideas through talks, posters and small group discussion. OSU faculty and guest speakers (distinguished faculty) will be invited to give a seminar. Undergraduate students, MD/PhD students, medical students, postdoctoral trainees, clinical residents and fellows would be encouraged to present posters or brief talks. This will give trainees additional experience at presenting their work at a local meeting. Members of an External Advisory Board will be invited to the retreat and will be asked to evaluate the CMIB as part of the 4 year review.

C3. Joint efforts in faculty recruitment

- A creative joint faculty recruitment plan between the Department of Microbiology (College of Biological Sciences) and the CMIB is in development for four new faculty members with joint appointments. This will happen in phases with the search for the first 2 positions to be completed by the Fall of 2005 followed by the addition of 2 more faculty by the summer of 2006 to coincide with the completion of the new Biomedical Research Tower (BRT). It is anticipated that John Gunn will serve as Chair of the search committee.

- Collaborations between the School of Public Health (SPH) and the Division of Infectious Diseases/CMIB are being formed. This has been further facilitated by the recruitment of Kurt Stevenson MD MPH, a senior investigator in the epidemiology of infectious diseases. This is an integral step in this process.

C4. Service commitment of CMIB faculty members

Members of the CMIB participate in the following service activities.

- Search Committee, Henry G. Cramblett Chair in Medicine, Department of Pediatrics, Columbus Children's Research Institute
- Microbial pathogenesis search committee for the Department of Veterinary Biosciences
- Chair of the search committee for the Operations Manager of the BSL3 facilities
- Chair and membership of the campus-wide BSL3 Advisory committee
- Development committee for the Department of Veterinary Biosciences Mucosal Immunity Conference to be held in Fall, 2005
- Chair and membership of the MVIMG graduate committee
- Faculty liaison for the pathogenesis track of the IBGP
- 1st year student advisors for the IBGP
- Thesis advisory committee members for Veterinary Biosciences, Microbiology, and IBGP graduate programs

II. Membership and Involvement

A. Roles of Faculty, Staff, and Trainees

A1. CMIB Member

Faculty will be recognized on the basis of their notable interests in microbial pathogenesis/microbe-host interactions, and their research interests should be focused on the goals of the Center. All are OSU faculty. Faculty may request CMIB membership in writing to the Director. CMIB member appointments will be made by the Director with approval by the Leadership Committee. Criteria for membership, as well as for active members to maintain membership, are: (1) involvement in teaching activities related to the goals of the Center, (2) participate in the Work-in-Progress Discussion Group (attending and presenting), (3) attending other Center activities including seminars and retreats, (4) service to the University (e.g. student committees, department/division and OSU-wide committees), (5) maintain an active, collaborative, funded research program closely aligned with the goals of the Center, and (6) participate in the training of PhD, MD, MD/PhD students and post-doctoral fellows. The CMIB will not serve as a Tenure-initiating unit.

A2. Staff/Research personnel

Staff and research personnel in CMIB member laboratories will be expected to provide research and/or administrative support to further the mission of the Center. CMIB staff involved in research will be expected to participate in progressing the science of a CMIB faculty member. Research staff will be expected to present their research at Work-in-Progress Discussion Group, attend seminars and present at the CMIB Research Day and Retreat.

A3. Trainees

OSU has a large number of trainees on campus who have an interest in performing research related to infectious diseases and microbial pathogenesis. These include Undergraduate students, Graduate students, medical students, and post-doctoral fellows. The CMIB will offer training opportunities (both bench and classroom) for individuals with interest in the fields of infectious diseases, microbial pathogenesis and host-pathogen interactions. Trainees will be expected to participate in research in a laboratory of a CMIB faculty member and to present their research at the Work in Progress Discussion Group, attend seminars and present at the CMIB Research Day and Retreat. Although the Center is not envisioned as a degree-granting unit, it will facilitate relevant academics in this area. Trainees will be supported by their sponsoring CMIB faculty member or by extramural or intramural training grants.

B. Current CMIB Faculty and Staff

B1. Participants in the CMIB

Other than the current four primary faculty listed in section B.2 below (Gunn, McGwire, Schlesinger, Turner), there are 20 faculty in various departments across the OSU campus that have established themselves as regular participants in the CMIB. Such individuals are potential CMIB Members. These faculty play an active role in the CMIB by

attending weekly discussion group meetings, collaborating on projects and grants, and otherwise acting in a positive role in all Center activities.

Ahmer, Brian: Microbiology
Bakaletz, Lauren: Columbus Children's Hospital
Burkhard, Mary Jo: Vet Biosciences
Bryant, Paula: Microbiology
Durbin, Joan: Columbus Children's Hospital
Edwards, Jennifer: Columbus Children's Hospital
Knoell, Daren: Pharmacy
Lafuse, William: MVIMG
Munson, Robert: Columbus Children's Hospital
Niewiesk, Stefan: Vet Biosciences
Para, Michael: Internal Medicine
Partida-Sanchez, Santiago: Columbus Children's Hospital
Phipps, Andrew: Vet Biosciences
Satoskar, Abhay: Microbiology
Tjarks, Werner: Medicinal Chemistry
Trgovcich, Joanne: Pathology
Tridandapani, Susheela: Pulmonary and Critical Care Medicine/HLRI
Waldman, James: Pathology
Wewers, Mark: Pulmonary and Critical Care Medicine/HLRI
Zwilling, Bruce: Microbiology

Once the CMIB is established as an official University Center, the Director and the Leadership Committee will convene to discuss and vote on membership for those on the above list as well as other faculty on campus that request membership in the CMIB. A majority vote is required for membership.

B2. CMIB Personnel

At this time, the CMIB personnel consists of those individuals working in the labs of the four primary CMIB appointees (Drs. Gunn, McGwire, Schlesinger, Turner). There are currently 25 laboratory personnel in these four labs: 9 post-doctoral fellows (1 MD and 1 MD/PhD, both on institutional NRSA training grants), 7 Graduate students (1 in Immunology and 1 in microbiology completing studies from the University of Iowa; 3 in IBGP, 1 in the MD/PhD training Program, and 1 in the Veterinary Biosciences training program supported by a T32 training grant), 4 research assistants, and 5 Undergraduate students. Interactions among the group are fostered by open laboratories, cores, shared equipment and resources, Work in Progress Discussion Groups, and twice monthly CMIB Laboratory meetings.

B3. Recruitment

Major recruitment efforts began in 02-03 with the development of a search committee comprised of faculty in Medicine, MVIMG, Microbiology, and Children's Hospital. A

national search was implemented. New members that have arrived at OSU as a result of this search:

a. Larry Schlesinger, MD, Professor of Medicine in the ID and MVIMG. Dr. Schlesinger serves as Director of the CMIB and the ID Division and is the faculty liaison to the IBGP in the emphasis area of microbial pathogenesis. This places Dr. Schlesinger in a unique position to build programs that bridge the basic and clinical sciences on the OSU campus. His recruitment brought to OSU an established research program in tuberculosis pathogenesis and lung innate immune mechanisms that is recognized nationally and internationally.

b. John Gunn, PhD, Associate Professor in MVIMG and ID. Dr. Gunn arrived in July 2003 and brings an established and widely recognized research program in *Salmonella* and *Francisella* pathogenesis and innate immune resistance.

c. Joanne Turner, PhD, Assistant Professor in ID and MVIMG. Dr. Turner, who arrived in July 2003, is rapidly developing a national and international reputation for her work in mycobacterial pathogenesis, lung acquired immune mechanisms, and the mouse aerosol model of infection.

d. Bradford McGwire, MD, Ph.D, Assistant Professor in ID and MVIMG. Dr. McGwire arrived in July 2004 bringing a program in protozoan parasite pathogenesis (leishmania and trypanosome).

These faculty all have funded scientific programs at OSU as outlined in Appendix D. As previously discussed, the CMIB will begin recruiting for four additional faculty in conjunction with the Department of Microbiology. The first 2 hires will be at the Assistant Professor level, housed in Microbiology space, and receive a 70%-30% split in appointment (Microbiology to Infectious Diseases/CMIB, respectively). The second 2 hires will be at the Assistant/Associate Professor level, housed in CMIB space, and receive a 70%-30% split in appointment (Infectious Diseases/CMIB to Microbiology, respectively). These collaborative agreements between the Medical School and the School of Biological Sciences will be contained in an MOU. It is expected that all four new faculty will be in place by the beginning of 2007. A new business plan initiated in the School of Biomedical Sciences will bring an additional four hires to the CMIB by 2009-2010.

III. Administration

A. Hierarchy of Administration

A1. Center Director

The Center Director will lead the CMIB and serve on the Oversight Committee. This individual will have a nationally recognized reputation with an active, funded research program. He/She will be an expert in microbial pathogenesis/microbe-host interactions and have the capability and motivation to run an internationally competitive program in microbial pathogenesis at Ohio State. He/She will continue to shape the mission and policies of the CMIB, initiate and monitor interdisciplinary research and teaching efforts, identify funding sources and facilitate research. The Director will encourage collaborative activities to fulfill the Center's mandate and may form committees of

members to advise and assist on any CMIB matter deemed appropriate, including programs, development, and resources. The Director will develop day-to-day policies in consultation with the Center Members and the CMIB Leadership Committee. The CMIB Oversight Committee will work with the Center Director in establishing policies for the Center. The Center Director reports to the Dean of the College of Medicine and Public Health. As research is the primary goal of the Center, the Vice President for Research will be regularly informed by the Dean of the College of Medicine and Public Health of the progress of the CMIB. The term will be 4 years, whereby the individual will be re-evaluated by the CMIB Leadership Committee and the External Advisory Committee.

Current Leadership: Dr. Schlesinger was recruited to OSU in October 2002 and serves as the Director of the CMIB. His extensive record as a researcher and mentor as well as his experience in administration and as a program Director makes him particularly well-suited for this role. Dr. Schlesinger is in the unique position of serving as the Director of both the CMIB and Division of Infectious Diseases within the Department of Medicine, allowing him to foster the integration of clinical and basic sciences. He received his BA in Biology from Cornell University in 1978 and his MD from Rutgers Medical School in 1982. He completed his residency and chief medical residency at the University of Michigan in 1986 and a clinical fellowship in infectious diseases followed by an extended research fellowship (> 4 years) at UCLA in 1991. In 1991, he became an Assistant Professor of Medicine at the University of Iowa. He was promoted to Associate Professor with Tenure in 1996 and to Professor in 2002.

Dr. Schlesinger is internationally known in the areas of tuberculosis pathogenesis and lung innate immunity, has been consistently funded by the NIH and other agencies such as the Department of Veterans Affairs, DOD, and CDC since 1988, is the co-author of a textbook on tuberculosis, has been chair and participant on several NIH and other national panels, and is a frequently invited national and international speaker. He is Co-PI of the Planning Regional Centers of Excellence Grant in Biodefense. He has mentored 12 Undergraduate students, 2 clinical fellows, one MD fellow, one MD/PhD fellow, six PhD scientists, 4 PhD students, and one MD PhD student and has served on several institutional training grants.

A2. Vice Director

The Vice Director of the CMIB will aid the Director in day-to-day activities of the Center and will chair the Leadership Committee. In addition to close consultation with the Center Director, the Vice-Director will perform administrative and other duties of the Director in his/her absence from campus. This Vice Director will be appointed by the Director and confirmed by the CMIB Leadership Committee. The term will be 4 years, whereby the individual will be re-evaluated by the CMIB Leadership Committee and the External Advisory Board.

Current Leadership: Dr. John Gunn has been named as the CMIB Vice Director. He has worked closely with Dr. Schlesinger since his arrival in 2003 on the development of the CMIB. Dr. Gunn has studied Gram-negative bacterial pathogens and their interaction with hosts/host cells for the last 16 years. He is currently the PI, co-investigator or

consultant for 5 NIH grants and 2-non-NIH grants. His work is very collaborative, as he has research ties with numerous scientists, seven of which are members/potential members of the CMIB (Schlesinger, Turner, Sheridan, Wewers, McGwire, and Munson). In addition, he will act as the Chair of the search committee for the upcoming joint Microbiology/CMIB hires.

Dr. Gunn's career began as a Graduate student at The University of Maryland and followed with post-doctoral studies at Harvard Medical School (Massachusetts General Hospital) and The University of Washington. In 1997, he began his independent research career at The University of Texas Health Science Center at San Antonio (UTHSCSA), where he rose to Associate Professor with Tenure in 2002. In the laboratory, Dr. Gunn has mentored four PhD students, four post-doctoral fellows, one MD/PhD student, and eight summer students (Undergraduates/high school students).

A3. CMIB Leadership Committee

The Center will have a Leadership Committee, whose members will be nominated and approved according to Faculty Rule 3335-3-36 D. The committee will monitor the activities of the CMIB, its Director, Vice Director, associated Faculty and programs; and initiate and coordinate major reviews in four-year cycles. This committee will meet monthly.

Associate Directors listed below, the Director and the Vice Director, Fiscal Officer, and Operations Manager will constitute the CMIB Leadership committee (N=7). The Leadership Committee will work closely with the Director to develop the goals of the Center. The activities of the Leadership Committee will be broad and encompass all aspects of the CMIB function including education, CMIB membership, potential joint equipment purchases, progress of the Host-Pathogen Seminar Series and the Work-in-Progress seminar series, and all administrative aspects of the Center. The Leadership committee will inform/discuss pertinent aspects of the Center with the CMIB members in a quarterly CMIB member meeting. An acting CMIB Leadership Committee has been in place since 2004 and consists of Drs., Gunn, McGwire, Schlesinger and Turner, Sue Knorr (Fiscal Officer), and Amanda MacFarlane (Operations Manager).

A4. External Advisory Board

The External Advisory Board shall be composed of three experienced nationally recognized researchers in Microbial Pathogenesis outside of Ohio State University. The External Advisory Board will evaluate the Center and its Directors/Associate Directors every four years.

A5. Academic Leadership

The leadership Committee will include 3 Associate Directors that will each be responsible for specific focus areas of the CMIB mission. The role of each Associate Director is currently being fulfilled by individual members of the CMIB (Gunn, McGwire, Schlesinger and Turner). Associate Directors will be appointed with the establishment of Center status.

- **Associate Director for CMIB Programming**
  The individual filling this position will be a CMIB member in good standing. The Associate Director will be appointed by the Director from the CMIB membership and be confirmed by the CMIB Leadership Committee. The term will be 4 years, whereby the individual can step down or petition to be re-instated for an additional 4 years. Responsibilities will include the Host-Pathogen Seminar Series and the Work-in-Progress seminar series, as well as the CMIB retreat. Other group CMIB activities that may occur will also fall under the jurisdiction of the Associate Director for CMIB Programming.

- **Associate Director for CMIB Education**
  The Associate Director will be responsible for creating and maintaining the educational aspects of the CMIB. This will involve the establishment of new classes pertaining to host-pathogen interactions, arranging for faculty to teach in the various CMIB lead classes, and to be a general advocate/sounding board for CMIB students. The Associate Director for CMIB Education will work closely with the current academic programs in which the CMIB members are involved. The Associate Director will be appointed by the Director from the CMIB membership and confirmed by the CMIB Leadership Committee. The term will be 4 years, whereby the individual can step down or petition to be re-instated for an additional 4 years.

- **Associate Director for CMIB Operations**
  The Associate Director will aid the day-to-day operations of the Center and work closely with the CMIB Operations Manager. Responsibilities will involve guidance and leadership of the maintenance and ordering of group equipment, facilitating the likely logistical issues of CMIB activities that will occur in laboratories in various locations on campus, and certain aspects of space allocation. In addition, this individual will attend the meetings of the Administrative group within the CMIB and report pertinent information from these meetings to the CMIB Leadership Committee. The Associate Director will be appointed by the Director from the CMIB membership and confirmed by the CMIB Leadership Committee. The term will be 4 years, whereby the individual can step down or petition to be re-instated for an additional 4 years.

A6. **Administration**

- **CMIB Operations Manager**
  The Operations Manager is responsible for operation of the research and laboratory aspects of the Center in conjunction with the Associate Director for CMIB Operations, as well as the supervision of the CMIB clerical staff. The Operations Manager will provide administrative continuity for the CMIB as faculty/Associate Directors cycle through their appointments. This individual will chair a CMIB administration meeting to be held quarterly. Those in attendance at this meeting will be the Fiscal Officer, the CMIB secretary and the Associate Director for CMIB Operations. This position will be chosen from the Ohio State faculty or staff (rank open). The goal is that such a colleague would be funded 100% from the Center.

Amanda MacFarlane, PhD was hired as a Research Associate 2-B/H by Dr. Schlesinger in September 2002. She has been serving in this role for the last 2 years and continues to serve in the role of the CMIB Operations Manager. Her responsibilities continue to grow as the number of personnel in the CMIB is expected to exceed 25 by July 2005. It is anticipated that 2 student aids will be needed to help Dr. MacFarlane complete the day-to-day duties of this position, and that the cost of such students would be funded 100% from the Center.

- **Fiscal Officer/Grants Management**
  It is anticipated that a dedicated Fiscal Officer will be necessary to enhance the Center's ability to run a fiscally sound operation (including the development of a shared fiscal plan where physical location of laboratories permits the purchase of equipment and equipment maintenance contracts, and core supplies for the CMIB) and enhance the Center's ability to compete for research funds. In this regard, the Fiscal Officer will provide pre and post award grant management for CMIB personnel.

  Sue Knorr, Fiscal Officer for the Division of Infectious Diseases, currently serves in this role part-time. However, as the CMIB grows, we anticipate the need for a full-time Fiscal Officer that would be funded 100% from the Center.

- **CMIB Secretary**

  The CMIB will require a secretary to provide clerical support for faculty, students and staff involved in the CMIB.

  Cynthia Coles, a secretary for the Division of Infectious Diseases, currently serves in the role part-time. However, as the CMIB grows, we anticipate the need for a full-time secretary that would be funded 100% from the Center.

B. Reporting Line.

See Appendix G. CMIB Organizational Chart

Evaluation and meeting timetable:

- CMIB Leadership Committee meeting: Monthly
- CMIB Operations meeting: Quarterly
- CMIB faculty member meeting: Semi-annual
- Formal evaluations of Director, Vice Director, Associate Directors, and CMIB progress by the External Advisory Board and the CMIB Leadership Committee: every 4 years

IV. Budget

A. Timetable for establishing the CMIB

A multidisciplinary research Center at OSU focusing on research in infectious diseases and microbial pathogenesis was the concept of Dr. Larry Schlesinger. Upon Dr. Schlesinger's arrival at OSU he began working to bring his concept to fruition. Progress to date has been noted previously in this application and includes faculty recruitment, sponsored research awards, and the development of educational programming and an initial organizational/administrative structure. The establishment of the CMIB will represent the culmination of this initial phase and enhance the work already in progress to continue the growth and expansion of the program.

B. Initial budget

The COMPH has provided an annual budget of $80,000 to cover initial operating costs including office equipment and personnel. Additional funding will be required as the program grows. It will be the responsibility of the Center Director to pursue funding opportunities. The time and effort of Center leadership is a cost-sharing with home departments. (Appendix H).

Research activities for the program are housed in the Tzagournis Medical Research Facility. Additional space is required and Dr. Schlesinger has been working with the COMPH to meet these needs, including space in the new BRT.

Staff from the Division of Infectious Diseases has provided fiscal, grant and clerical support. These individuals are housed in the administrative offices of the division.

C. External funding

Center leadership will continue to pursue and expand the extramural research program already established (Section C1, Appendix D). Additional funding for operating costs will be pursued.

D. Facilities and administrative (IDC) costs credit

The CMIB intends to position OSU as an international scientific leader in microbial pathogenesis. Many of the research efforts within the CMIB will represent shared activities between various colleges and departments. It is the Center's intent to equitably recognize the contribution of all participating units.

Facilities and administrative costs credit will be shared between the Center and the home units of collaborating faculty. The allocation of credit will be based on:

- Unit providing research space 60-80%
- Unit providing pre- and post-grant administration (excluding OSURF) 10-30%
- TIU for faculty (or salary support unit) 10-30%

V. Evaluation

A Short-term review

A1. Quarterly internal review by the Faculty Leadership Committee
The Faculty Leadership Committee will review the progress of the Center on a quarterly basis. The quarterly review will be incorporated into monthly Leadership meetings.

A2. Annual Report
The Director will submit an annual report to the Leadership Committee, Senior Vice President Office of Health Sciences, and the Office of Academic Affairs as part of the annual budget during the University review process. The goals for the Center elaborated in Section II of this proposal will provide the criteria for ongoing evaluation of the Center's performance in research and training. Criteria for evaluation of the Center will include success in top quality peer reviewed research publications that result from Center supported research, extramural funding, and success in providing formal and informal education to trainees. The annual report will be submitted to the External Advisory Board and the Internal Advisory Committee.

A3. Internal Advisory Committee.
Because members of the CMIB will come from different colleges, schools, and divisions/departments from around the OSU campus, the deans (or representatives of the deans) of the various involved colleges will be informed of the Center's progress and provide input toward key decisions on an annual basis. Also included will be leadership from Columbus Children's Hospital and the Director of the School of Biomedical Science. This advisory committee will consult with the Director and the Fiscal Officer on potential monetary issues, and will be informed on all major changes within the CMIB.

B Long-term evaluation

B1. Third year internal review
At the end of the third year the Center Director will prepare and submit an internal report to the Faculty Leadership Committee. This self-study will form the basis for potential adjustments to the Center policy and structure according to the recommendations of the Leadership Committee. The third year review will provide a frame-work for the submission of an extensive review in year four which will be submitted to the Office of Academic Affairs. The level and quality of annual scholarly and research activity of the CMIB and its faculty will be measured against levels achieved in the years preceding its establishment.

Specific criteria for evaluation are;
i) Quality and quantity of peer reviewed publications
ii) Extramural funding
iii) Number of Graduate student applicants accepted into and successfully complete their Graduate studies in the laboratories of CMIB members
iv) Number of classes taught, and courses initiated, by CMIB personnel
v) Public Service (service to the University/College and the scientific community)
vi) Participation in local, national, and international meetings

B2. Four year External evaluation

Every four years the Office of Academic Affairs will request from the Director, the Leadership Committee, and the Dean, recommendations concerning reporting lines, governance, performance and effectiveness, and the continuation of the Center. The purpose of this review will be to assure that Center programs and activities are not only consistent with the Center mission but also with research in microbial pathogenesis. The criteria to be considered in an external review of the Center will be The Ohio State University's land-grant mission, the goals of a research-orientated Center, and the specific goals and mission of the CMIB. A formal review will be orchestrated by the CMIB Leadership Committee and conducted by the External Advisory Board.

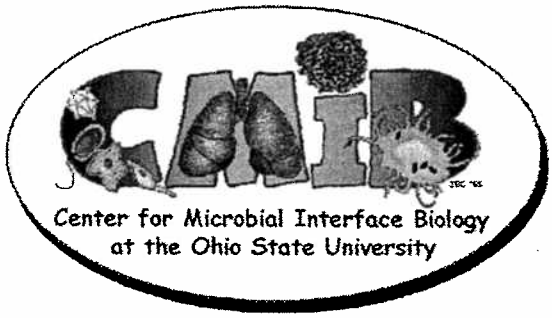
The External Advisory Board will perform the review of the Center. Reviewers will be invited to a site visit at OSU six months preceding the submission of the fourth year report. The site visit will coincide with the CMIB Retreat to facilitate the awareness of scientific progress within the Center. The external review board will evaluate the proficiency of the CMIB Director, members of the Faculty Leadership Committee, and progress of the Center based upon interviews with Faculty and staff and observations of scientific collaboration and progress. Evaluation criteria will include those listed above.

C Continued evaluation

An external review of the CMIB and submission of a progress report will be executed every four years. Progress will be measured against the proceeding three year evaluation period.

APPENDIX A

CMIB Logo



CMIB webpage

The CMIB website was developed (www.cmib.osu.edu) and went online Fall of 2004. The website provides information on faculty participants, individual research activities and laboratories as well as educational and employment opportunities.

APPENDIX B

Organizations/Units Currently Involved In CMIB Activities*

College of Biological Sciences

- Department of Biochemistry
- Department of Molecular Genetics
- Department of Microbiology

College of Food, Agricultural, and Environmental Sciences

- Food Science and Technology

College of Mathematical and Physical Sciences

- Department of Mathematics
- Mathematical Biosciences Institute

College of Medicine

- School of Biomedical Science
    - Biomedical Informatics
    - Molecular and Cellular Biochemistry
    - Molecular Virology, Immunology and Medical Genetics
    - Physiology and Cell Biology
    - Pharmacology
        - Program in Pharmacogenomics

- Department of Internal Medicine
    - Division of Human Genetics
    - Division of Infectious Diseases
    - Division of Pulmonary and Critical Care Medicine
    - Division of Nephrology
    - Division of Immunology
- Department of Pathology
- Department of Pediatrics
- Department of Ophthalmology

College of Veterinary Medicine

- Veterinary Biosciences
- Veterinary Clinical Sciences
- Veterinary Preventive Medicine

College of Public Health

- Biostatistics
- Environmental Health Sciences
- Epidemiology

College of Dentistry

College of Pharmacy

University Medical Center
- Hospital Epidemiology

Dorothy M. Davis Heart & Lung Research Institute

Battelle Memorial Institute

Office of Environmental Health and Safety
- Campus Biosafety Officer

Columbus Children's Hospital
- Columbus Children's Research Institute
    - Center for Microbial Pathogenesis
    - Center for Vaccines and Immunity

OSU Centers/Organizations
- Center for Biostatistics
- Center for Knowledge Management
- Comprehensive Cancer Center
- Ohio Agricultural Research and Development Center
- Human Cancer Genetics
- Center for Retrovirus Research
- Campus Microscopy & Imaging Facility
- Center for Stress and Wound Healing
- Infectious Disease Signature Program (College of Veterinary Medicine)

Graduate Programs
- Integrated Biomedical Science Graduate Program (School of Biomedical Science)
- Medical Scientist Program (School of Biomedical Science)
- Ohio State Biochemistry Program
- Molecular Cellular and Developmental Biology (School of Biomedical Science)
- Masters of Public Health
- Masters of Clinical Investigation
    - Veterinary Pathology Residency/PhD Graduate Program

APPENDIX C

CMIB Publications & Lectureships

2002-present

Peer-reviewed Publications

Larry Schlesinger

Ferguson J.S., Voelker D.R., Ufnar J.A., and **Schlesinger L.S.** 2002. Surfactant protein D inhibition of human macrophage uptake of *Mycobacterium tuberculosis* is independent of bacterial agglutination. J. Immunol., 168:1309-1314.

Razavi B., Lund B., Allen B.L., **Schlesinger L.** 2002. Failure of Trimethoprim/sulfamethoxazole prophylaxis for *Pneumocystis carinii* pneumonia with concurrent leucovorin use. Infection. 30:41-42.

Mansour M.K., **Schlesinger L.S.,** and Levitz S.M.. 2002. Optimal T-cell responses to *Cryptococcus neoformans* mannoprotein are dependent on recognition of conjugated carbohydrates by mannose receptors. J. Immunol., 168:2872-2879.

Beharka A.A., Gaynor C.D., Kang, B.K., McCormack F.X., Voelker D.R., **Schlesinger L.S.** 2002. Pulmonary surfactant protein A upregulates activity of the mannose receptor, a pattern recognition receptor expressed on human macrophages. J. Immunol., 169:3565-3573.

DesJardin L.E., Kaufman T.M., Potts B., Kutzbach B., Yi H., **Schlesinger L.S.** 2002. *M. tuberculosis*-infected human macrophages exhibit enhanced cellular adhesion with increased expression of LFA-1 and ICAM-1 and reduced expression and/or function of complement receptors, FcγRII and the mannose receptor. Microbiology. 148:3161-3171.

Olakanmi O., **Schlesinger L.S.**, Ahmed A., Britigan B.E. 2002. Intraphagosomal *Mycobacterium tuberculosis* acquires iron from both extracellular transferrin and intracellular iron pools: impact of interferon-γ and hemochromatosis J. Biol. Chem. 277:49727-49734.

Brown R.M., Cruz O., Brennan M., Gennaro M., **Schlesinger L.**, Yasir A., Skeiky W., Hoft D.F. 2003. Lipoarabinomannan-reactive human secretory immunoglobulin a responses induced by mucosal bacille calmette-guerin vaccination. J. Infect. Dis., 187:513-517.

Olakanmi O., **Schlesinger L.S.**, Ahmed A., Britigan B.E.. 2004. The nature of extracellular iron influences iron acquisition by *Mycobacterium tuberculosis* residing within human macrophages. Infect. Immun. 72:2022-2028.

Ferguson J.S., Weis J.J., Martin J.L., **Schlesinger L.S.** 2004. Complement protein C3 binding to *Mycobacterium tuberculosis* is initiated by the classical pathway in human bronchoalveolar lavage fluid. Infect. Immun. 72:2564-2573.

Crowther J.E., Kutala V.K., Kuppusamy P., Ferguson J.S., Beharka A.A., Zweier J.L., McCormack F.X., **Schlesinger L.S.** 2004. Pulmonary surfactant protein A inhibits

macrophage reactive intermediate production in response to stimuli by reducing NADPH oxidase activity. J. Immunol. 172:6866-6874.

Beharka AA, Crowther JE, McCormack FX, Denning G, Lees J, Tibesar E, **Schlesinger LS**. 2005. Pulmonary surfactant protein A activates a PI_3 kinase/calcium signal transduction pathway in human macrophages: Participation in the up-regulation of mannose receptor activity. J Immunol. In Press.

John Gunn

Prouty, A.M., J.C.VanVelkinburgh, and **J.S. Gunn**. 2002. *Salmonella enterica* Serovar Typhimurium resistance to bile: identification and characterization of the *tolQRA* cluster. J. Bacteriol. 184:1270-1276.

Prouty, A.M. and **J.S. Gunn.** 2002. Biofilm Formation and Interaction with the Surfaces of Gallstones by *Salmonella* spp. Infect. Immun. 70:2640-2649.

Tamayo, R., S.S. Ryan, A.J. McCoy, and **J.S. Gunn**. 2002. Identification and genetic characterization of PmrA-regulated genes and genes involved in polymyxin B resistance in *Salmonella enterica* Serovar Typhimurium. Infect. Immun. 70:6770-6678.

Prouty A.M. and **J.S. Gunn**. 2003. Comparative analysis of *Salmonella enterica* Serovar Typhimurium biofilm formation on gallstones versus glass. Infect. Immun. 71:7154-7158.

Vinogradov E, Conlan WJ, **Gunn JS**, Perry MB. 2004. Characterization of the lipopolysaccharide O-antigen of *Francisella novicida* (U112). Carbohydr Res 339:649-654.

Prouty, A,M., I.E. Brodsky, S. Falkow, and **J.S. Gunn**. 2004. Bile salt-mediated induction of antimicrobial and bile resistance in *Salmonella typhimurium*. Microbiology. **150**:775-83.

Prouty A.M., I.E. Brodsky, J.Manos, R. Belas, S. Falkow, and **J.S. Gunn**. 2004. Transcriptional Regulation of *Salmonella enterica* serovar Typhimurium genes by bile. FEMS Immunol. Med. Microbiol. **41**:177-85.

Maier, R.J., A. Olczak, S. Maier, S. Soni, and **J. Gunn**. 2004. Hydrogen Use by Enteropathogenic Bacteria is Critical for Virulence. Infect. Immun. **72**:6294-9.

Tamayo, R., A.M. Prouty and **J.S. Gunn**. 2005. Identification and functional analysis of *Salmonella enterica* serovar Typhimurium PmrA-regulated genes. FEMS Immunol. Med. Microbiol. **43**: 249-258.

Navarre, W.W., T. A. Halsey, D. Walthers, J. Frye, M. McClellend, J. L. Potter, L. Kenney, **J. S. Gunn**, F. C. Fang, and S.J. Libby. 2005. Co-Regulation of *Salmonella enterica* Genes Required for Virulence and Resistance to Antimicrobial Peptides by SlyA and PhoP/PhoQ. Mol. Microbiol. **56:**492-508.

Tamayo, R., B. Choudhury, A. Septer, M. Merighi, R. Carlson and **J. S. Gunn**. 2005. Identification of *cptA*, a PmrA-Regulated Locus Required for Phosphoethanolamine Modification of the *Salmonella enterica* serovar Typhimurium Lipopolysaccharide Core. J. Bacteriol. **187:**3391-3399.

Joanne Turner

A. Cooper, A. Kipnis, **J. Turner**, J. Meagram, J. Ferrante, I. M. Orme. 2002. Mice lacking bioactive IL-12 can generate protective, antigen-specific cellular responses to mycobacterial infection only if the IL-12 p40 subunit is present. J Immunol. 168: 1322-1327.

J. Turner and I. M. Orme. 2002. Transient early resistance to pulmonary tuberculosis in aged mice is associated with IFN-γ secreting CD8 T lymphocytes. Infect. Immun. 70 (8): 4628-4637.

J. Turner and I. M. Orme. 2002. Identification of altered integrin α/βchain expression on T cells from old mice infected with *M. tuberculosis*. Exp Gerontol. 37 (7): 907-916.

V. Gruppo, O. C. Turner, I. M. Orme, **J. Turner**. 2002. Reduced up-regulation of memory and adhesion/integrin molecules in susceptible mice and poor expression of immunity to pulmonary tuberculosis. Microbiol. 148: 2959-2966.

J. Turner, M. Gonzalez-Juarrero, D. L. Ellis, R. J. Basaraba, A. Kipnis, I. M. Orme, A. M. Cooper. 2002. In vivo IL-10 production reactivates chronic pulmonary tuberculosis in C57BL/6 mice. J Immunol. 169 (11): 6343-6351.

M. Gonzalez-Juarrero, **J. Turner**, R. J. Basaraba, J. T. Belisle, and I. M. Orme. 2003. Florid pulmonary inflammatory responses in mice vaccinated with antigen-85 pulsed dendritic cells and challenged by aerosol with *Mycobacterium tuberculosis.* Cell Immunol. 220 (1):13-19.

B. Vesosky, O. C. Turner, **J. Turner**, and I. M. Orme. 2003. Activation marker expression on bovine peripheral blood gamma delta T cells during post-natal development and following vaccination with a commercial polyvalent viral vaccine. Dev Comp Immunol. 27 (5):439-47.

J. Turner, O. C. Turner, N. Baird, I. M. Orme, C. L. Wilcox, and S. L. Baldwin. 2003. Influence of increased age on the development of Herpes Stromal Keratitis. Exp Gerontol. 38:1205-1212.

A. P. Junqueira-Kipnis, A. Kipnis, A. Jamieson, M. Gonzalez-Juarrero, A. Diefenbach, D. H. Raulet, **J. Turner** and I. M. Orme. 2003. NK cells respond to pulmonary infection with *Mycobacterium tuberculosis* but play a minimal role in protection. J Immunol. 171 (11): 6039-6045.

A. Kipnis, R. J. Basaraba, **J. Turner**, and I. M. Orme. 2003. Increased neutrophil influx but no impairment of protective immunity to tuberculosis in mice lacking the CD44 molecule. J Leuk Biol. 74 (6): 1-6.

Junqueira-Kipnis AP, **Turner J**, Gonzalez-Juarrero M, Turner OC, Orme IM. 2003. A stable T cell population expressing an effector cell surface phenotype in the lungs of mice chronically infected with *Mycobacterium tuberculosis*. Infect Immun 72(10):570-575.

Turner J, Orme IM. 2004. The expression of early resistance to an infection with *Mycobacterium tuberculosis* by old mice is dependent on IFN type II (IFN-γ) but not IFN type I. Mech Ag Dev 125(1):1-9.

Turner J, Dobos KM, Keen MA, Frank AA, Ehlers S, Orme IM, Belisle JT, Cooper AM. 2004. A limited antigen-specific cellular response is sufficient for the early control of *M.*

tuberculosis in the lung but is insufficient for long-term survival. Infect Immun 72(7):3759-3768.

Vesosky B, Turner OC, **Turner J**, Orme IM. 2004. Gamma interferon production by bovine γδ T cells following stimulation with mycobacterial mycolylarabinogalactan peptidoglycan. Infect Immun 72(8):4612-4618.

B. Vesosky, **J. Turner**. 2005. The influence of age on immunity to infection with *Mycobacterium tuberculosis*. Immunol Rev. 205: 229-243.

Brad McGwire

McGwire, B. S., O'Connell, W. A., Chang, K.-P., Engman, D. M. 2002. Extracellular release of the glycosylphosphatidylinositol (GPI)-linked Leishmania surface metalloprotease, gp63, is independent of GPI phospholipolysis: implications for parasite virulence. J Biol Chem. 277(11):8802-9.
Chang, K.-P. and **McGwire, B. S**. 2002. Molecular determinants and regulation of Leishmania virulence. Kinetoplastid Biol Dis. 1(1):1.
McGwire, B. S., Olson, C. L., Tack, B. F. and Engman, D. M. 2003. Killing of African trypanosomes by antimicrobial peptides. J Infect Dis.188(1):146-52.
McGwire, B. S., Chang, K.-P. and Engman, D. M. 2003. Migration through the extracellular matrix by the parasitic protozoan Leishmania is enhanced by surface metalloprotease gp63. Infect Immun. 71(2):1008-10.
Chang K.-P, Reed S. G., **McGwire B. S**, Soong L. 2003. Leishmania model for microbial virulence: the relevance of parasite multiplication and pathoantigenicity. Acta Trop. 85(3):375-90.
Young, J. and **B. McGwire**. 2005. Reactivation Cerebral Toxoplasmosis During Infliximab Therapy. (New England J. Med. In Press).

In Revision or Submitted

Larry Schlesinger

McCarthy TR, Torrelles JB, MacFarlane A, Katawczik M, Kutzbach B, Clegg S, DesJardin LE, Goldberg JB, **Schlesinger LS**. *Mycobacterium tuberculosis manB*, a phosphomannomutase that increases phosphatidylinositol mannoside biosynthesis in *M. smegmatis* and mycobacterial association with Human Macrophages (Submitted).

Kang PB, Azad AK, Torrelles JB, Kaufman TM, Beharka A, Tibesar E, **Schlesinger LS**. The Human Macrophage Mannose Receptor Directs *Mycobacterium tuberculosis* Lipoarabinomannan-mediated Phagosome Biogenesis (Submitted).

John Gunn

Carroll-Portillo, A., M. Merighi and **J. S. Gunn**. 2005. The role of *Salmonella enterica* serovar Typhimurium two-component system YgiX-YgiY in repressing PmrA-regulated gene transcription (Submitted).

Klimpel G.R., J. Haithcoat, J.E. Masterson, A. Ben Nasr, **J.S. Gunn**, and T. Eaves-Pyles. 2005. *Francisella tularensis* activation of and growth in human monocytes and monocyte-derived dendritic cells (Submitted).

Merighi, M., C.D. Ellermeier, J. M. Slauch and **J.S. Gunn**. 2005. Resolvase-IVET Analysis of the *Salmonella enterica* sv. Typhimurium PhoP and PmrA regulons in BALB/c mice (Submitted).

Morgan, M.M., A. McCoy, A.E. Ashcroft, L. Tran, W.A. Bonass, **J.S. Gunn** and D.A. Devine. 2005. Mutations in *Burkholderia cenocepacia* (*B. cepacia* genomovar III) affecting lipopolysaccharide structure and sensitivity to antimicrobial host defence peptides (Submitted).

Joanne Turner

G. L. Beamer, **J. Turner**. Murine models of susceptibility to tuberculosis (Submitted).

B. Vesosky, D. K. Flaherty, **J. Turner**. Production of TH1 cytokines in old mice facilitates CD8 mediated expression of early resistance to infection with *Mycobacterium tuberculosis* (Submitted).

Brad McGwire

McGwire BS, Olson CL, Engman DM. Identification and characterization of the major surface protease (GP63) of *Trypanosoma brucei* (Submitted).

McGwire BS, O'Connell WA, Engman DM. Identification of surface localized *T. cruzi* gp63-homologues in all life stages and is involved in host parasitism (Submitted).

Books and Chapters

Larry Schlesinger

"Tuberculosis: The Microbe-Host Interface." **Schlesinger LS**, DesJardin L, Co-Editors, Horizon Scientific Press, U.K. 2004.

Phagocytosis and Toll-like Receptors in Tuberculosis, Invited Contributor. **Schlesinger LS,** In: Tuberculosis 2nd Edition, William M. Rom, and Garay S.M., eds, Lippincott, Williams, and Wilkins, 203-214, 2004.

Receptor-mediated recognition of *Mycobacterium tuberculosis* by host cells. Matthew Fenton, Lee Riley, and **Larry Schlesinger** invited contributors. In: Tuberculosis. Cole, Eisenach, Gicquel, McMurray, and Jacobs, eds. American Society for Microbiology Press, 405-426, 2004.

John Gunn

Tamayo, R., A.C. Portillo, and **J.S. Gunn**. 2004. "Mechanisms of Bacterial Resistance to Antimicrobial Peptides", In Mammalian Host Defence Peptides, pp. 323-348, D.A. Devine, R.E.W. Hancock, eds., Cambridge Univ. Press.

Antibiotic resistance and bile. May 2004. Microbiology Today, **31**:94.

Joanne Turner

D. Roberts, A. M. Cooper, J. T. Belisle, **J. Turner**, M. Gonzalez-Juarerro, and I. M. Orme 2002. Murine model of tuberculosis. In Methods in Microbiology, Volume 32: 433-462 (Kaufmann SHE) Academic Press Ltd.

Invited Lectureships*

Larry Schlesinger

Invited Speaker, Summer FASEB Meeting on Lung Surfactant: Cellular and Molecular Biology, Saxtons River, VT, July 20-25, 2002.

Invited Speaker, 3rd Havemeyer Foundation Workshop on *Rhodococcus equi*. Washington State, Seattle, WA, July 13-17, 2002.

Organizer and speaker at University of Iowa Tuberculosis Symposium. Sponsored by the UI Hospital Tuberculosis Task Force/Infection Control, the State Health Department, and the Midwest AIDS Training and Education Center, May 7, 2002.

Invited Speaker, "The lung innate immune response to *M. tuberculosis*: a central role for the macrophage" and "Tuberculosis: a century of learning". Presented at the Infectious Diseases Fellowship Symposium "Globalization of Respiratory Diseases: Epidemiology, Pathogenesis, & Treatment", Mobile Bay, AL, January 23-25, 2003.

Frank N. Nelson Distinguished Lecturer in Molecular Biology, Biotechnology and Medicine. Montana State University, Bozeman, Montana, May 16, 2003. "Mycobacterium tuberculosis and Lung Innate Immunity: A Central Role for the Macrophage".

"New and Emerging Infections-The World Today." Invited speaker for the 20th annual meeting of the Dermatological Association, Columbus, OH, October 31, 2003.

"Lung innate immunity and tuberculosis: A central role for the macrophage", University of Washington, Department of Microbiology, Seattle, WA, February 24, 2004.

"Surfactant protein A contributes to the alternative activation state of lung macrophages", University of Cincinnati, Division of Pulmonary Medicine and Critical Care Grand Rounds, Cincinnati, OH, October 25, 2004.

"Regulation of lung inflammation by macrophages: Impact on respiratory infections", Medical College of Ohio, Department of Microbiology and Immunology, November 10, 2004.

"*Mycobacterium tuberculosis* and lung innate immunity." Invited speaker, annual Meeting Ohio Branch ASM, Ohio Wesleyen University, April 16, 2005.

"Infectious Agents of concern to the public 2005." Invited speaker, Columbus Health Department Public Health Learning Series, Columbus, OH, June 8, 2005.

"*M. tuberculosis* cell wall mannosylated lipoglycans: Elucidation of structural motifs that impact human macrophage recognition and response." To be presented at the 40th U.S.-Japan Cooperative Medical Science Program on Leprosy and Tuberculosis. Seattle, WA, July 28-30, 2005.

John Gunn

"Regulated mechanisms of bacterial resistance to antimicrobial peptides". University of Texas Medical Branch, Galveston, TX, 2002.

"Bile Resistance/Response and Gallstone Biofilms in Typhoid Carriers" North Carolina Central University, Raleigh-Durham, NC, 2002.

"The Interaction of Salmonellae With Bile and Gallstone Surfaces". Case Western Reserve University, Cleveland, OH, 2002.

"Covalent LPS Modifications and Regulated Resistance to Antimicrobial Peptides in *Salmonella typhimurium*". University of Houston, Houston, TX, 2002.

"Covalent LPS Modifications and Regulated Resistance to Antimicrobial Peptides

in *Salmonella typhimurium*". North Carolina State University, Raleigh-Durham, NC, 2002.

"Gallstone Biofilms and Bile Resistance/Response in Acute and Chronic Salmonella

Infections". Bowling Green State University, Bowling Green, OH, 2002.

"Salmonella Resistance and Response to Bile: Life in the Intestine and Gallbladder". Texas Branch ASM, Austin, 2002.

"The Interaction of Salmonellae With Bile and Gallstone Surfaces". Mexican Society of Infectious Diseases and Clinical Microbiology (Asociación Mexicana de Enfermedades Infecciosas y Microbiología Clínica - -AMIMC-) XXVII annual meeting, Cancun Mexico, 2002.

"Mechanisms of antimicrobial peptide resistance in diverse gram negative bacteria" Gordon Conference, Antimicrobial Peptides, April 2003. Italy.

"The Interaction of Salmonella with Bile and Gallstone Surfaces" ASM Conference on Salmonella, September 2003, Sardinia, Italy.

"Regulated Mechanisms Of Bacterial Resistance To Antimicrobial Peptide Killing". Midwest Pathogenesis Meeting, October 2003, Iowa.

"Regulated Mechanisms of Bacterial Resistance to Antimicrobial Peptide Killing". Universidad Nacional Autómona de México, October 2003, Mexico City, MX.

"Regulated LPS modification and resistance to innate immune killing," Medical College of Ohio, April 2004.

"*Francisella* LPS Structure and Phase Variation," NIAID-Sponsored Tularemia Workshop,

October 2004, Hamilton, MT.

"Progress of the Tularemia RCE Project" Western Regional Center of Excellence for Biodefense and Emerging Infectious Diseases, November 16, 2004, Dallas, TX.

Glycostructures in Biological Systems XIII Symposium, December 1-3, 2004, Hamburg, Germany.

Gordon Research Conference, Antimicrobial Peptides, March 2005. "Resistance and Pathogenesis" Discussion Leader

Joanne Turner

"In vivo IL-10 production reactivates chronic pulmonary tuberculosis in C57BL/6 mice", Phi Zeta Day, Colorado State University. January 2002.

"Tuberculosis: Immunity, reactivation, and aging". Albany Medical Center, July 2002.

"Tuberculosis: Immunity, reactivation, and aging". Oregon State University. December 2002.

"Old mice express a transient resistance to *M. tuberculosis* that is mediated by CD8 T cells", American Association of Immunologists, Denver. Workshop presentation and session Chair, May 2003.

"Correlates of reactivation tuberculosis", London School of Hygiene and Tropical Medicine, London, England. October 2003

"Correlates of reactivation tuberculosis", TB Research Group, VLA Weybridge, England. October 2003.

"Immune Correlates of reactivation tuberculosis", College of Medicine, University of Cincinnati Center, November 2003

* Invited Lectures do not include the numerous talks given to various OSU colleges and departments.

Meeting Abstracts

Larry Schlesinger

Ferguson JS, Weis JJ, Martin JL, **Schlesinger LS**. *Mycobacterium tuberculosis* activates complement and binds C3 protein in human lung lavage fluid. Keystone Symposia, Tuberculosis: Integrating Host and Pathogen Biology, Taos, NM, January 25-30, 2003.

Ferguson JS, Kang B, Shinnick TM, Dawson AJ, **Schlesinger LS**. Surfactant protein D reduces the growth of *Mycobacterium tuberculosis* in human macrophages and increases phagosome-lysosome fusion. Keystone Symposia, Tuberculosis: Integrating Host and Pathogen Biology, Taos, NM, January 25-30, 2003.

Olakanmi O, **Schlesinger LS**, Ahmed A, Britigan BE. Iron trafficking within human macrophages and its acquisition by intraphagosomal *Mycobacterium tuberculosis*: impact of

interferon- and hemochromatosis. Keystone Symposia, Tuberculosis: Integrating Host and Pathogen Biology, Taos, NM, January 25-30, 2003.

Olakanmi O, **Schlesinger LS**, Ahmed A, Britigan BE. The nature of extracellular iron chelates, macrophage HFE status and interferon-γ influence iron acquisition by intraphagosomal mycobacterium tuberculosis. World Congress on Iron Metabolism, Bethesda, MD, May 4-9, 2003.

Schlesinger LS, McCarthy T, Torrelles JB. Role of *Mycobacterium tuberculosis* phosphomannomutases in the biosynthesis of cell wall glycoconjugates. 10th Annual Midwest Microbial Pathogenesis Conference, Iowa City, IA, October 10-12, 2003.

Olakanmi O, **Schlesinger LS,** Britigan BE. Iron Acquisition by *M. tuberculosis*: role of chelate and hemochromatosis. VA Office of Research and Development National Meeting, Washington, DC, March 9-12, 2004.

Crowther, J, **Schlesinger LS**. SP-A uptake and trafficking in Human Macrophages. 2004 FASEB Summer Research Conference, Lung Surfactant: Cellular and Molecular Biology, Saxton's River, VT, July 24-29, 2004.

McCarthy TR, Torrelles JB, Shearer-MacFarlane A, Katawczik M, Kutzbach B, DesJardin LE, Clegg S, Goldberg JB, **Schlesinger LS**. Characterization of manB, a functional *Mycobacterium tuberculosis* phosphomannomutase involved in the biosynthesis of surface expressed mannosylated glycoconjugates. 11th Annual Midwest Microbial Pathogenesis Conference, East Lansing, MI, October 1-3, 2004.

McCarthy TR, Torrelles JB, MacFarlane AS, Katawczik M, Kutzbach B, DesJardin LE, Clegg S, Goldberg JB, **Schlesinger LS**. Characterization of manB, a functional Mycobacterium tuberculosis phosphomannomutase involved in the biosynthesis of surface expressed mannosylated glycoconjugates. Keystone Symposia, Tuberculosis: Integrating Host and Pathogen Biology, Whistler, British Columbia, Canada, April 2-7, 2005.

Torrelles JB, Azad A, Wang W, **Schlesinger LS**. Characterization of the association of purified phosphatidylinositol mannoside species from Mycobacterium tuberculosis with the human macrophage mannose receptor. Keystone Symposia, Tuberculosis: Integrating Host and Pathogen Biology, Whistler, British Columbia, Canada, April 2-7, 2005.

Olakanmi O, **Schlesinger LS**, Britigan BE. Decreased growth of Mycobacterium tuberculosis in macrophages from patients with hereditary hemochromatosis. International Bioiron Meeting, Prague, Czech Republic, May, 2005.

John Gunn

Devine DA, Walling S, Morgan MM, Ashcroft AE, Bonass WA, Keen JN, Percival RS, Yousuf Z, **Gunn J**. Interactions between antimicrobial peptides and Polymixin B sensitive *Burkholderia cepacia* mutants in relation to lipopolysaccharide structure. 43rd ICAAC, Chicago, Illinois, September 2003.

Tamayo R, Tran LT, **Gunn J**. PmrA-mediated LPS modifications-Role in survival of *S. enterica* serovar Typhimurium in the mouse small intestine. Microbial Pathogenesis and Host Response, Cold Spring Harbor Laboratory, September 2003.

Carroll-Portillo A, Prouty A, Manos J, Belas R, **Gunn JS**. The role of UblAB in *S. enterica* serovar Typhimurium motility and type III secretion. Microbial Pathogensis and Host Response, Cold Spring Harbor Laboratory, September 2003.

Gunn JS, Soni S, Crawford RW, Nano FE, Perry MB, Vinogradov E, Conlan WJ. *Francisella tularensis* LPS phase variation: Role in virulence and innate immune killing. ASM Biodefense Meeting, Baltimore, MD, March 2004.

Vallor AC, Lauriano CM, Patterson JL, **Gunn JS**, Klose KE. Evaluation of attenuated *Salmonella typhimurium* vaccines expressing *Bacillus anthracis* protective antigen in mice. ASM Biodefense Meeting, Baltimore, MD, March 2004.

Soni S, Klose KE, **Gunn JS**. Construction of a novel live-attenuated vaccine for food-borne pathogens. 104th General ASM Meeting, New Orleans, LA, May 2004. (Chosen for national press coverage.)

Navarre W, Halsey T, Frye J, Walthers D, McClelland M, Potter J, Kenney L, **Gunn J**, Fang F, Libby SJ. Apparent regulation of SlyA specificity by PhoP in *Salmonella enterica*. 104th General ASM Meeting, New Orleans, LA, May 2004.

Maier, R.J., A. Olczak, S. Maier, S. Soni, and **J. Gunn**. "Role of Hydrogen Use in Pathogenesis by Infectious Bacteria" International Hydrogenase Conference, 2004, Reading, England, August 2004.,

Merighi, M, C.D. Ellermeier, J.M. Slauch, and **J.S. Gunn**. "Recombination-based in vivo expression technology analysis shows extracellular expression of the *Salmonella enterica* sv. Typhimurium *pmrHFIJKLM* locus in the illeal lumen of BALB/c mice" Midwest Pathogenesis Meeting, E. Lansing, MI Oct. 2004.

Mohapatra N., S. Soni, M.B. Perry, E. Vinogradov, and **J.S. Gunn**. "Genetic and Structural Analysis if *Francisella* spp. LPS." 2004 Midwest Pathogenesis Meeting, E. Lansing, MI, Oct.

Devine DA, M.M. Morgan, A.E. Ashcroft, J. Keen, **J.S. Gunn**, R.S. Percival, W.A. Bonass, Z. Yousuf and P.D. Marsh. "Environmental regulation in *Burkholderia cenocepacia* of cell components relevant to interactions with host defence peptides" Gordon Conference, Antimicrobial Peptides, March 2005.

A. Balagopal, A. Shearer Macfarlane, N. Mohapatra, S. Soni, **J.S. Gunn**, L.S. Schlesinger. "Identification of receptor-ligand interactions that mediate entry of *Francisella novicida* and the Live Vaccine Strain of *Francisella tularensis* into human macrophages". OSU Medical School Research Day, March 2005.

Joanne Turner

Production of TH1 cytokines in old mice facilitates CD8 mediated expression of early resistance to infection with *Mycobacterium tuberculosis*. B. Vesosky, D. Flaherty, E. Rottinghaus, **J. Turner**. Tuberculosis: Integrating host and pathogen biology. Whistler, BC, Canada 2005.

Immunological influence of *Mycobacterium avium* exposure on the protective efficacy of the BCG vaccine. D. K. Flaherty, G. L. Beamer, B. Vesosky, **J. Turner**. Tuberculosis: Integrating host and pathogen biology. Whistler, BC, Canada 2005.

Production of TH1 cytokines in old mice facilitates CD8 mediated expression of early resistance to infection with *Mycobacterium tuberculosis*. B. Vesosky, D. Flaherty, E. Rottinghaus, **J. Turner**. 4th annual OSUMC Graduate and Postgraduate Research Day 2005.

Use of a whole blood assay to identify correlates of disease progression in mice infected with *Mycobacterium tuberculosis*. G.L. Beamer, D. Flaherty, B. Vesosky, **J. Turner**. 4th annual OSUMC Graduate and Postgraduate Research Day 2005.

Immunological influence of *Mycobacterium avium* exposure on the protective efficacy of the BCG vaccine. D. K. Flaherty, G. L. Beamer, B. Vesosky, **J. Turner**. 4th annual OSUMC Graduate and Postgraduate Research Day 2005.

Brad McGwire

Antileishmanial/trypanosomal activities of antimicrobial peptides. **B. McGwire** and M. Kulkarni. Gordon Conference, Antimicrobial Peptides, March 2005.

Antimicrobial peptide resistance by the parasitic protozoan *Leishmania*: a novel function for the surface metalloprotease and its implications for the design of surface active chemotherapeutics. M. Kulkarni and **B. McGwire.** 4th annual OSUMC Graduate and Postgraduate Research Day 2005.

Antimicrobial peptide resistance by *Leishmania*: a novel function for the surface metalloprotease and its implications for the design of surface active chemotherapeutics
M. Kulkarni, N. Reddy, W. McMaster and **B. McGwire**. Submitted to the 45th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), September 2005.

Membrane active peptides as potential anti-parasite therapeutics. L. Zhang, J. Parente, S. Harris, M. Kulkarni, **B. McGwire** and T. Falla. Submitted to the 45th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), September 2005.

APPENDIX D

CMIB Research Funding

CMIB Faculty

Reported First Year	Sponsor Number	Project Name	Start Date End Date	Annual Total Direct	Annual Total
Schlesinger					$501,119
Gunn					$168,605
Turner					$284,250
		Total Funding Reported First Year			$953,974
Funded FY03/04	**Sponsor Number**	**Project Name**	**Start Date End Date**	**Annual Total Direct**	**Annual Total**
Schlesinger	University of Minnesota M6286208101 (NIH/NIAID U56 AI057164)	Tularemia and lung innate immunity (P-RCE)	9/04/03 8/31/04	$100,000	$147,500
Schlesinger	NIH/NIAID R21 AI059639	TB and innate immune regulation of lung macrophages	4/01/04 3/31/05	$200,000	$299,000
Gunn	University of Texas Health Science Center-San Antonio 117768/116198	Development of a single oral vaccine against multiple food-borne pathogens	7/01/03 3/31/05	$49,773	$53,257
Gunn	University of Texas Health Science Center-San Antonio 117205/100746 (NIH RO1 AI50564)	An oral vaccine against multiple biowarfare agents	8/01/03 7/30/04	$29,266	$42,728
Gunn	University of Texas Health Science Center-San Antonio (NIH/NIAID CFDA 93.856)	Tularemia: pathogenesis and host response	9/04/03 2/29/04	$20,000	$29,200
Gunn	NIH	Salmonella antimicrobial peptide resistance	12/01/03 11/30/08	$200,000	$299,000
		Total Funded FY03/04		$599,039	$870,685
Funded FY04/05	**Sponsor Number**	**Project Name**	**Start Date End Date**	**Annual Total Direct**	**Annual Total**
Schlesinger	University of Minnesota M6286208101 (NIH/NIAID U56 AI057164)	Tularemia and lung innate immunity (P-RCE)	9/04/04 8/31/05	$100,000	$147,500
Schlesinger	NIH/NIAID RO1 AI059639	TB and innate immune regulation of lung macrophages	4/15/05 12/31/2005	$170,000	$254,150
Gunn	University of Texas Health Science Center-	An oral vaccine against multiple biowarfare agents	6/01/04 7/30/05	$77,026	$112,458

	San Antonio 117205/100746 (NIH RO1 AI50564)				
Gunn	University of Texas Health Science Center-San Antonio (NIH/NIAID CFDA 93.856)	Tularemia: pathogenesis and host response	6/01/04 2/28/05	$80,034	$116,769
Gunn	NIH	Salmonella antimicrobial peptide resistance	1/01/05 12/31/05	$200,000	$299,000
Turner	NIH/NIAID R21 AI054841	Mycobacteria interactions and vaccine efficacy	9/15/04 8/31/05	$150,000	$224,250
Turner	NIH/NIA	CD8 T cells and immunity to tuberculosis in old mice	9/30/04 7/31/05	$182,250	$272,464
Turner	American Lung Association	In vitro predictors of susceptibility to reactivation tuberculosis	7/01/05 6/30/06	$60,000	$60,000
Wang	Infectious Diseases Society of America	Summer Scholarship for Medical Students	7/01/04	$2,000	$2,000
		Total Funded FY04/05		$1,021,310	$1,488,591
Pending Award	**Sponsor Number**	**Project Name**	**Start Date End Date**		**Total Request**
Schlesinger	NIH/NIAID RO1 AI059639	TB and innate immune regulation of lung macrophages (year 2)	01/01/06 12/31/06		$299,000
Schlesinger	Environmental Protection Agency EPA-ORD-21276	Research to study virulence of *Mycobacterium avium* complex bacteria from drinking water	8/01/05 7/31/06		$100,000
Schlesinger	NIH/NIAID RO1 AI052458	Altered *M. tuberculosis* mannosylation and the macrophage	12/01/05 11/30/10		$1,878,010
McGwire	American Heart Association (Ohio Valley Affiliate)	Characterization of the surface metalloproteases of *Trypanosoma cruzi*	7/01/05 6/30/07		$121,000
Turner	NIH/NIA	CD8 T cells and immunity to tuberculosis in old mice (year 2)	8/01/05 7/31/06		$336,375
Turner	American Lung Association	In vitro predictors of susceptibility to reactivation tuberculosis (year 2)	7/01/06 6/30/07		$60,000
		Total Pending Award			$2,794,385
In Review	**Sponsor Number**	**Project Name**	**Start Date End Date**		**Total Request**
Schlesinger	NIH/NIAID	*M. tuberculosis* lipoarabinomannan metabolism within human macrophages	4/01/06 3/31/08		$411,125
Gunn	NIH	Bile, biofilms and salmonella gallbladder carriage	7/01/05 6/30/10		$1,857,365
Gunn	NIH/NIAID	LPS phase variation in *Francisella tularensis*	4/01/06 3/31/08		$411,125
McGwire	NIH/NIAID	Antimicrobial peptides for treatment of Leishmaniasis	04/01/06 3/31/08		$411,125
Turner	Case Western Reserve University (NIH)	Proteomic identification of BCG and MTB antigents	4/01/06 3/31/08		$67,276
		Total Funding In Review			$3,158,016

Research Funding (Approximate values excluding most cores) – OSU Faculty (Directly Related to CMIB Activities)

Funded FY03/04	Sponsor Number	Project Name	Start Date End Date	Annual Total Direct	Annual Total
Munson, Robert	University of Minnesota (NIH/NIAID U56 AI057164)	MWCE: Transmission/pathogenesis of bioterrorism agents (P-RCE)	9/04/03 8/31/04		$30,000
Phipps, Andrew	University of Minnesota (NIH/NIAID U56 AI057164)	Early infection with *Bacillus anthracis* and innate immunity (P-RCE)	9/04/03 8/31/04		$12,500
Satoskar, Abhay	University of Minnesota (NIH/NIAID U56 AI057164)	*Francisella tularensis*: Mechanisms of IFN-γ mediated resistance and pathogen-induced immune evasion (P-RCE)	9/04/03 8/31/04		$17,500
Tjarks, Werner	University of Minnesota (NIH/NIAID U56 AI057164)	Deoxyribonucleoside kinases from *Bacillus anthracis* as targets for the development of novel antibiotic drugs (P-RCE)	9/04/03 8/31/04		$30,000
Zwilling, Bruce	University of Minnesota (NIH/NIAID U56 AI057164)	*Francisella tularensis*: Innate Resistance and Iron Transport (P-RCE)	9/04/03 8/31/04		$30,000
		Total Funded FY03/04			$120,000

APPENDIX E

CMIB Work in Progress Discussion Group

Spring 2003 Schedule

3/03/03 Larry Schlesinger, Infectious Diseases: Organizational meeting. Discussion of the goals and principles of the CMIB and future events.

3/10/03 Joanne Trgovcich, Pathology "Modulation of MHC class II and endocytosis by herpes simplex virus type 1"

3/17/03 Paula Sundstrom, MVIMG "Structure and function of the germ tube adhesion Hwp1: Mapping transglutaminase substrate determinants by site-directed mutagenesis"

3/24/03 Brian Ahmer, Microbiology "Detection of mixed microbial communities and virulence gene regulation by Salmonella"

b Robert Munson, Microbiology, Columbus Children's Research Institute "Phagocytic killing of *Haemophilus ducreyi*"

4/07/03 Louis M. Mansky, MVIMG: "Deltaretrovirus particle release"

4/14/03 Paula Bryant, Microbiology: "The interaction of *M. tuberculosis* with the antigen presentation pathway of MHC class II molecules"

4/21/03 Joan Durbin, Columbus Children's Research Institute: "Viral Interference with Interferon Production"

4/28/03 Mark Wewers, DHLI: "The connection of caspase-1 to CATERPILLER proteins in host defense"

5/05/03 Joy Crowther, Graduate student (Larry Schlesinger) Infectious Diseases: "Surfactant protein A trafficking in macrophages: Implications for its effects on immune responses"

5/12/03 Dr. John Belisle, Microbiology, Colorado State Professor: "Glycopoteins of *M. tuberculosis*: Searching for a biological significance"

5/19/03 Yue Wang (Joy), a postdoctoral associate (William Lafuse), MVIMG: "Mycobacteria suppresses HLA-DR Gene expression without Inhibition of JAK-STAT pathway in human THP-1 cells"

6/16/03 William Lafuse: "TLR2 regulation of STAT1 beta expression in phagocytes"

6/23/03 Andrew Phipps, College of Veterinary Medicine: "Anthrax and myeloid cells"

6/30/03 Haifeng Wu, Pathology: "Macrophage Proteomics"

7/07/03 Brad Rovin, Professor of Medicine: "Functional Chemokine Gene Polymorphisms: MCP-1 and IL-8"

7/14/03 Kevin Mason, postdoc (Dr. Lauren Bakaletz), Columbus Children's Research Institute: "Use of Differential Fluorescence Induction to Identify Site-specific Nontypeable Haemophilus Influenzae (NTHI) Gene Expression in a Chinchilla Model of Otitis Media"

7/21/03 Randall Harris, postdoc (Dr. Lauren Bakaletz), Columbus Children's Research Institute: "A Homolog of Human Beta-Defensin 3 is Expressed in the Upper Airway of the Chinchilla"

7/28/03 Alistair Harrison, postdoc (Dr. Robert Munson), Columbus Children's Research Institute: "A Microarray Approach to the Elucidation of Strain Diversity in Nontypeable Haemophilus Influenzae (NTHI), A Causative Agent of Middle Ear Infection in Children"

CMIB Work in Progress Discussion Group

Fall 2003 Schedule

9/08/03 Joanne Turner, Ph.D. Assistant Professor,Infectious Diseases: "Aging and immunity to tuberculosis: Non-specific effector mechanisms in the aging lung"

9/15/03 Travis McCarthy, Graduate Student (PI Larry S. Schlesinger MD) Infectious Diseases: "Role of *Mycobacterium tuberculosis* phosphomannomutases in the biosynthesis of cell wall glycoconjugates"

9/22/03 Anne M. VanBuskirk, Ph.D., Assistant Prof of Surgery: "The intersection of cytokine gene polymorphisms and monocyte function in TGF-β mediated inhibition of CTL restimulation"

9/29/03 Cancelled- Biomedical Research Week.

10/06/03 Narasimham L. Parinandi, Ph.D. Assistant Professor, Division of Pulmonary & Critical Care Medicine, Dorothy M. Davis Heart & Lung Research Institute: "Phospholipase Signaling Mechanisms Regulate Airborne Particulate Matter-induced Inflammatory Cytokine Release"

10/13/03 Professor Peng George Wang, Departments of Biochemistry and Chemistry: "Bacterial polysaccharides and their relation to human immunity"

10/20/03 John Gunn, Ph.D. Associate Professor, MVIMG: "LPS Modifications and Regulated Resistance to Antimicrobial Peptides in *Salmonella typhimurium*"

10/27/03 Henry Boom, M.D., Case Western Reserve

11/03/03 Bo Yuan, Ph.D., Department of Biomedical Informatics: "Microbial genome analysis, insights into virulence, and drug target identification"

11/10/03 Daniel Janies, Ph.D., Department of Biomedical Informatics: "Evolution of SARS Associated Coronaviruses"

11/17/03 Professor Dr. Stefan Ehlers

11/24/03 Dr. Daren L. Knoell, F.C.C.P Assoc. Professor of Pharmacy and Internal Medicine: "HIV-1 infects the lung epithelium at sites of emphysema"

12/01/03 Abhay Satoskar, PhD, Assistant Professor, Department of Microbiology: "Mechanisms of immunity against Leishmania"

12/08/03 Bryant Lab, Department of Microbiology: "Interaction of Intracellular Pathogens with the MHCII Antigen Presentation Pathway"

12/15/03 Joanne Trgovcich, Ph.D. Assistant Professor, Department of Pathology: "Human Cytomegalovirus pp71 interferes with accumulation of cell surface MHC class I molecules"

CMIB Work in Progress Discussion Group

Winter/ Spring 2004 Schedule

1/26/04 W. James Waldman, Ph.D., Assoc Prof Department of Pathology and MVIMG "Viral infection and autoimmunity: Association of endothelial tropic virus infection and the development of pathogenic endothelial-reactive autoantibodies"

2/02/04 Max Teplitski, Ph.D., Department of Microbiology (PI Brian Ahmer, PhD) "Bacterial communication and host signal-mimics"

2/09/04 Larry Schlesinger, M.D., Professor, Internal Medicine. Directors, Division of Infectious Diseases and CMIB "*M.tb* and macrophages: Is there a link between entry and survival?"

2/16/04 Mark D. Wewers, M.D., John A. Prior Professor of Medicine, Pulmonary and Critical Care Division, Deputy Director, Heart and Lung Research Institute "Regulation of Inflammation: CATERPILLERS and the Inflammasome"

2/23/04 Marshall Williams, PhD, Professor of Molecular Virology, Immunology and Medical Genetics "Roles of dUTPase and UNG in Viral Pathogenicity and in Creating Genetic Diversity"

3/01/04 Christopher Premanandan, DVM, Graduate Student, (PI Mike Lairmore, DVM, PhD) "Anthrax pathogenesis"

3/08/04 Abul Azad, PhD Research Scientist, ID (PI Larry Schlesinger, MD)

3/15/04 Jordi Torrelles, PhD, Postdoctoral Researcher, ID (PI Larry Schlesinger, MD) "Production and metabolism of *Mycobacterium tuberculosis* lipoarabinomannan within human macrophages"

3/22/04 Bridget Vesosky, PhD, Research Assoc., Infectious Diseases, CMIB (PI Joanne Turner, PhD) "Non-specific effector mechanisms in the aging lung"

3/29/04 John Gunn PhD, Associate Professor of Molecular Virology, Immunology and Medical Genetics, CMIB "*Francisella tularensis*: Progress toward understanding virulence, intramacrophage survival and resistance to innate immunity"

4/05/04 Kathleen Boris-Lawrie, PhD, Associate Professor Departments of Veterinary Biosciences and Molecular Virology, Immunology & Medical Genetics. "Retrovirus-Host Interactions that Modulate Post-Transcriptional Gene Expression"

4/12/04 Joan Durbin, M.D.,Ph.D., Columbus Children's Research Institute. "Respiratory Syncytial Virus Pathogenesis"

4/26/04 Susheela Tridandapani, Ph.D., Assistant Professor, Department of Internal Medicine. "Molecular Mechanisms involved in the Regulation of Macrophage Response to Immune-Complexes"

5/03/04 Deborah S. Parris, Ph.D. Professor in the Department of Molecular Virology, Immunology, and Medical Genetics. "More than proofreading--the role of the associated

exonuclease activity and processivity factor in maintaining fidelity of herpes simplex virus DNA synthesis"

5/10/04 Jenee Smith, Microbiology Graduate Student (PI, Brian Ahmer, PhD) Department of Microbiology. "Detection of other microbial species by Salmonella"

5/17/04 Mary Jo Burkhard DVM, PhD, DACVP, Assistant Professor, Department of Veterinary Biosciences "Early and persistent loss of mucosal CD8+ T-cells in FIV infection"

5/24/04 Negin Gitiban, IBGP graduate student (PI, Joan Durbin, MD,PhD), "Recombinant NewCastle Disease Virus (rNDV) as a Vaccine Vector"

CMIB Work in Progress Discussion Group

Fall 2004 Schedule

9/20/04 Michael D. Lairmore D.V.M., Ph.D., Professor and Chair, Department of Veterinary Biosciences "Essential Role of HTLV-1 Accessory Genes in Virus Replication and T-Cell Activation"

9/27/04 Host-Pathogen Seminar Series (170 DHLRI)

Professor Ferric Fang, Department of Microbiology, University of Washington "Innate Immunity to salmonella"

9/04/04 Ahmed Yousef, Ph.D., Professor of Food Microbiology, Department of Food Science & Technology and Department of Microbiology "Food-transmitted pathogens and their resistance to preservation methods"

9/11/04 Brad McGwire, MD/PhD. Assistant Professor, Internal Medicine, CMIB, "ECM Leishmania Interactions"

10/18/04 Anne M. VanBuskirk, Ph.D., Assistant Professor, Department of Surgery, Division of Surgical Oncology "A role for CD14+ antigen presenting cells in EBV-driven lymphoproliferative disease"

10/25/04 Michael Bailey, Ph.D. Postdoctoral fellow (P.I. John Sheridan, Ph.D.), Neuroendocrine Immunology Laboratory, College of Dentistry "Reactivation of latent HSV-1: murine and molecular models"

11/01/04 Gabe Meister, 5th year Graduate Student Department of Pathology (PI, W. James Waldman) "Exploring the anti-viral effects of the novel immunosuppressive agent Leflunomide"

11/08/04 Amanda MacFarlane, Ph.D., Research Associate, Infectious Diseases, CMIB (PI, Larry Schlesinger, MD) "The role of serum opsonins in Francisella infection of human macrophages"

11/15/04 Joanne Trgovcich, Ph.D., Assistant Professor, Department of Pathology "Regulation of sphingosine kinase -1 by human cytomegalovirus in glioblastoma cells"

11/22/04 Host-Pathogen Seminar Series (170 DHLRI)

Dr. Michele Swanson, Department of Microbiology and Immunology, University of Michigan, "Autophagy as a macrophage response to infection"

11/29/04 Srinand Sreevatsan, DVM, MPH, Ph.D., Assistant Professor of Department of Veterinary Preventive Medicine, Food Animal Health Research Program, OARDC "Molecular epidemiology and population genetic frameworks amongst Mycobacterium avium subsp. Paratuberculosis"

12/06/04 Joy Crowther, Graduate Student, Infectious Diseases, CMIB (PI, Larry Schlesinger, MD) "Characterization of SP-A binding, uptake, and trafficking through the endolysosomal pathway in primary human macrophages"

12/13/04 Hank A. Lockman, Ph.D., Principal Research Scientist, Battelle Memorial Institute Research "Capabilities at Battelle's Medical Research and Evaluation Facility"

CMIB Work in Progress Discussion Group

Winter/Spring 2005 Schedule

1/01/05 Massimo Merighi, PhD, Postdoctoral Researcher, MVIMG, CMIB (PI, John Gunn, PhD) "In vivo gene expression analysis of Salmonella enterica sv. Typhimurium: an Application of resolvase IVET to regulons involved in antimicrobial peptide resistance"

1/24/05 Host-Pathogen Seminar Series (170 DHLRI)

Dr Peter Barnes, Center for Pulmonary and Infectious Disease Control

The University of Texas Health Center at Tyler, "The role of NK cells in the human immune response to *M. tuberculosis*"

1/31/05 Joanne Turner, PhD, Assistant Professor Internal Medicine, CMIB "Can exposure to environmental mycobacteria interfere with immunity to *M. tuberculosis* infection?"

2/07/05 Jeffrey Lakritz DVM, PhD, Associate Professor, Veterinary Clinical Sciences, "Role of Matrix metalloproteases in Bovine Respiratory diseases"

2/14/05 Jennifer Edwards, PhD Assistant Professor, Pediatrics, Children's Research Institute, Center for Microbial Pathogenesis. "Gonococcal phospholipase D plays a direct role in pilfering signaling events triggered upon infection of primary cervical epithelial cells, in part, through a direct association with Akt kinase"

2/21/05 Mikhail A. Gavrilin, PhD, Research Scientist (PI, Mark D. Wewers, MD), DHLRI, "Intracellular infection of monocytes by Francisella activates the inflammasome complex"

2/28/05 Clint Florence, Microbiology Graduate Student (PI, Paula Bryant, PhD). "Presenting Francisella: the MHC Class II antigen presentation machinery and its interaction with the intracellular bacterium *Francisella novicida.*"

3/7/05 Alistair Harrison, PhD, Post-doctoral Research Fellow, Center for Microbial Pathogenesis, Columbus Children's Research Institute (PI, Robert S. Munson, Jr., Ph.D.). "The Genomic Sequence of an Otitis Media Isolate of Nontypeable *Haemophilus influenzae*" and "Elucidation of Genes Required for the Intracellular Survival of *Francisella tularensis*"

3/14/05 Host-Pathogen Seminar Series (170 DHLRI)

Dr Douglas Golenbock, Infectious Diseases and Immunology, University of Massachusetts Medical School, "Mechanism of Toll-like receptor activation"

3/21/05 Travis McCarthy, Graduate Student, Internal Medicine, CMIB (PI Larry Schlesinger, MD) "Characterization of manB, a *Mycobacterium tuberculosis* phosphomannomutase involved in the biosynthesis of cell wall molecules that mediate the pathogen/host-cell interaction"

3/28/05 Christopher Premanandan, DVM , Postdoctoral Fellow, Veterinary Biosciences (Mentors - Andrew J. Phipps, DVM, PhD and Michael D. Lairmore DVM, PhD) "Expression of Anthrax Toxin Receptors in Mononuclear Phagocytes"

4/4/05 Santiago Partida-Sánchez, Ph.D., Assistant Professor, Pediatrics Children's Research Institute, Center for Microbial Pathogenesis. "Regulation of phagocyte chemotaxis and migration; role for cADPR and ADPR, novel calcium second messengers"

4/1//05 Michael J. Giese OD, PhD, Associate Professor of Clinical Optometry

4/20/05 Special time:Wednesday 4pm 1147 Graves

Yousef Abu Kwaik, Professor, Bumgardner Endowed Chair in Molecular Pathogenesis

Department of Microbiology and Immunology, University of Louisville College of Medicine

4/25/05 Host-Pathogen Seminar Series (170 DHLRI)

Dr Tomas Ganz, Department of Medicine, David Geffen Scholl of Medicine at UCLA

"Hepcidin, a peptide hormone at the interface of innate immunity and iron metabolism"

5/2/05 Bridget Vesosky Ph.D., Research Associate, Infectious Diseases, CMIB (PI, Joanne Turner, PhD). Production of TH1 cytokines in old mice facilitates CD8 mediated expression of earl resistance to infection with *Mycobacterium tuberculosis*.

5/9/05 Melinda Dunn, Graduate Research Associate, Intergrated Biomedical Science(PI, Jim Waldman). Inhibition of Respiratory Syncytial Virus by the Experimental Immunosuppressive Agent Leflunomide

5/18/05 Special time:Wednesday at 5:15pm 1147 Graves

Guenter Harth, Ph.D., Senior Scientist UCLA "Fighting an ancient foe - novel approaches to develop TB vaccines and drugs"

5/25/05 Special time:Wednesday 4pm 1147 Graves

Dr. Lee-Ann Allen, University of Iowa, Division of Infectious Diseases, Inflammation Program

on *Helicobacter pylori* and phagocytes.

APPENDIX F

Host-Pathogen Seminar Series schedule

2004/2005 Schedule

Monday September 27th
Dr Ferric Fang. Department of Microbiology, University of Washington
"Innate Immunity to salmonella"

Monday November 22nd
Dr. Michele Swanson. Department of Microbiology and Immunology, University of Michigan
"Autophagy as a macrophage response to infection"

Monday January 24th
Dr Peter Barnes. Center for Pulmonary and Infectious Disease Control, The University of Texas Health Center at Tyler
"The role of NK cells in the human immune response to *M. tuberculosis*"

Monday March 14th
Dr Douglas Golenbock. Infectious Diseases and Immunology, University of Massachusetts Medical School
"Mechanism of Toll-like receptor activation"

Monday April 25th
Dr Tomas Ganz. Department of Medicine, David Geffen Scholl of Medicine at UCLA
"Hepcidin, a peptide hormone at the interface of innate immunity and iron metabolism"

2005/2006 Schedule

Monday October 17th
Dr Marcus Horwitz. Department of Medicine, UCLA School of Medicine.

Monday November 14th
Dr William Goldman. Department of Molecular Microbiology, Washington University School of Medicine.

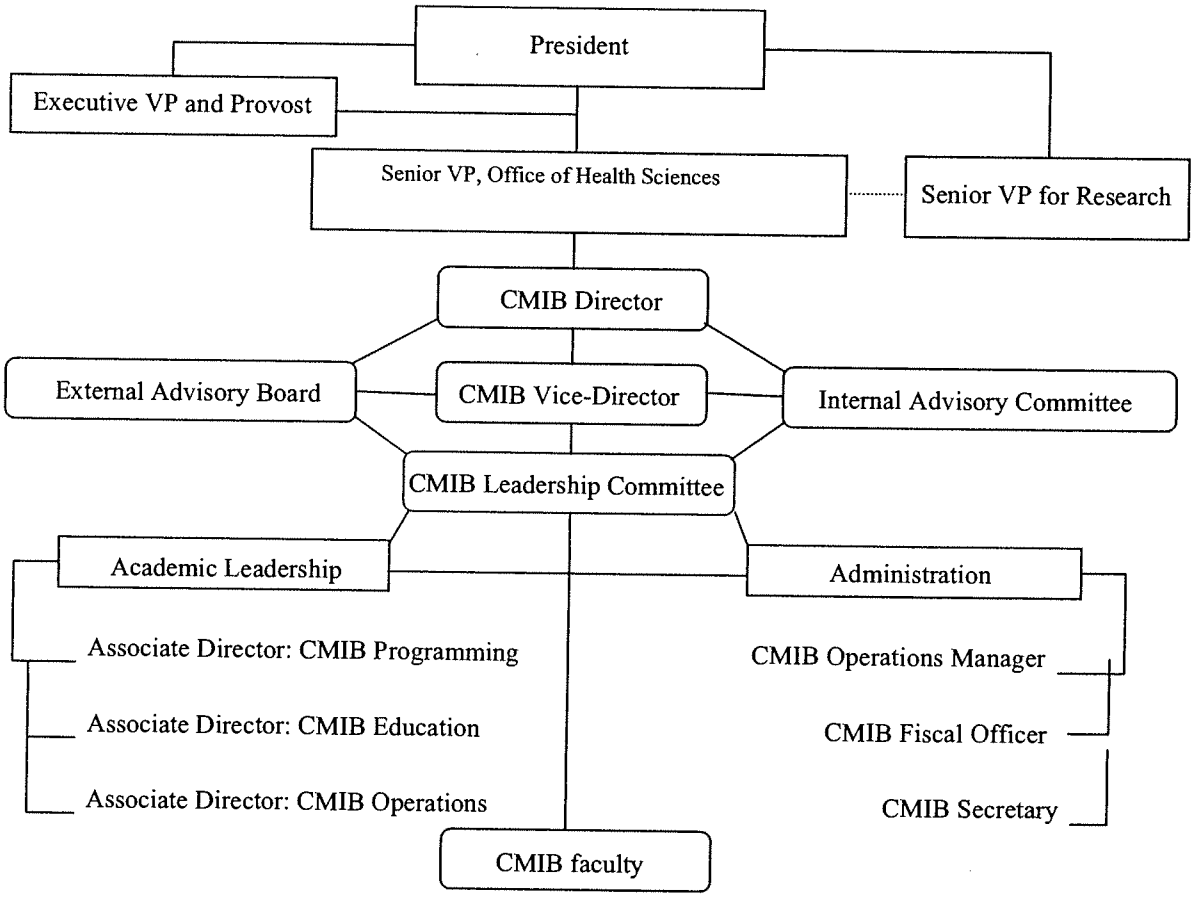
Monday January 9th
Dr Mary Wilson. Department of Internal Medicine and Microbiology, University of Iowa.

Monday February 20th
Dr Christine Biron. Department of Molecular Microbiology, Brown University

Monday March 13th
Dr Stephen Lory. Department of Microbiology and Molecular genetics, Harvard Medical School.

APPENDIX G

CMIB Organizational Chart



APPENDIX H

BUDGET

Sources	
College of Medicine and Public Health	$80,000
Total Sources	$80,000
Uses	
Personnel	
Salary	$33,186
Benefits	$11,002
Total Personnel	$44,188
Office Supplies & Services	$20,312
Educational Programs	$15,500
External Advisory Commnittee	$0
Total Uses	$80,000
Variance	$0

LISTS OF INTERNAL LETTERS OF SUPPORT

Allan J. Yates, M.D., Ph.D.	Associate Dean for Graduate Student Education Director, Integrated Biomedical Science Graduate Program
Caroline C. Whitacre, Ph.D.	Professor, Department of Molecular Virology, Immunology and Medical Genetics, College of Medicine Associate Vice President for Health Sciences Research and Vice Dean for Research
Joan M. Herbers	Dean, College of Biological Sciences
Carlo Croce, MD	Professor and Chair, Department of Molecular Virology, Immunology and Medical Genetics
Wolfgang Sadee	Chair, Department of Pharmacology, College of Medicine Director of Biomedical Sciences
Thomas Rosol, DVM, PhD, ACVP	Dean, Ruth Stanton Chair in Veterinary Medicine Professor, Veterinary Biosciences
Bobby D. Moser	Vice President for Agricultural Administration and Dean
Robert W. Brueggemeier, Ph.D.	Dean, College of Pharmacy, Professor of Medicinal Chemistry
John Bernard, M.D.	Interim President, Columbus Children's Research Institute Professor of Pediatrics and Vice-Chair for Research
Lauren O. Bakaletz, Ph.D.	Director, Center for Microbial Pathogenesis, Columbus Children's Research Institute
Michael R. Grever, M.D.	Charles A. Doan Chair of Medicine, Associate Dean for Medical Services, Chair and Professor, Department of Internal Medicine, Co-Program Leader, Experimental Therapeutics, James Comprehensive Cancer Center
Carl F. Kohrt	President and Chief Executive Officer, Battelle
Michael D. Lairmore, DVM, PhD	Professor and Chair, Veterinary Biosciences Associate Director for Basic Sciences, Comprehensive Cancer Center
Stanley Lemeshow, Ph.D.	Dean, School of Public Health, Director of Center for Biostatistics

Teresa C. Long, M.D., M.P.H.	Health Commissioner, City of Columbus
Pete Denkowski, MS, RN	Director, Ben Franklin TB Control Program, City of Columbus
Hagop S. Mekhjian, MD	Chief Medical Officer, Associate Vice President, Health Services
Richard D. Rosen	Vice President, External Business Relations
Fred Sanfilippo, MD, PhD	Senior Vice President and Executive Dean for Health Sciences
Cecil Smith, Dr. P.H.	Assistant Vice President, Institutional Biosafety Officer Office of Environmental Health and Safety
Y.M. Saif, DVM, PhD	Professor and Head, Ohio Agricultural Research and Development Center

LISTS OF EXTERNAL LETTERS OF SUPPORT

E. Peter Greenberg, Ph.D.	Professor and Chair, University of Washington School of Medicine
Eric Brown, M.D.	Professor of Medicine & Microbiology and Immunology, University of California, San Francisco
Patrick M. Schlievert	Professor, Department of Microbiology, University Of Minnesota