

Department of Microbiology & Immunology
Jefferson Medical College of Thomas Jefferson University

Departmental Annual Report
July 1, 2009-July 1, 2010

Tim L. Manser, PhD
Chair

Laurence C. Eisenlohr, VMD, PhD
Vice Chair for Programmatic Research



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FACULTY OF THE DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

Name	Faculty Academic Rank	Joint Appointment or Affiliation
Tim L. Manser, B.A., Ph.D.	Plimpton Pugh Professor and Chair	
David Abraham, B.S., Ph.D.	Professor	
David Berd, B.S., M.D.*	Professor	Dept Medical Oncology
Melvin J. Bosma, Ph.D.	Adjunct Professor	Fox Chase Cancer Center
Catherine E. Calkins, B.A., Ph.D.	Professor	
Bernhard Dietzschold, B.S., D.V.M.	Professor	
Laurence C. Eisenlohr, V.M.D., Ph.D. ***	Professor	
Neal Flomenberg, B.S., M.D.*	Professor	Dept Medical Oncology
Richard R. Hardy, Ph.D.	Adjunct Professor	Fox Chase Cancer Center
Donald L. Jungkind, B.S., Ph.D.*	Professor	Dept Pathology, Anatomy & Cell Biology
Jeffrey V. Ravetch, M.D., Ph.D.	Adjunct Professor	Rockefeller University
Matthias Schnell, Ph.D.**	Professor	
Linda D. Siracusa, B.Sc., Ph.D.	Professor	
J. Bruce Smith, M.S., M.D.*	Professor	Dept of Medicine
Raffaele Baffa, M.D.*	Associate Professor	Department of Urology
Arthur Buchberg, B.Sc., Ph.D.	Associate Professor	
Kerry S. Campbell, B.S., Ph.D.	Adjunct Associate Professor	Fox Chase Cancer Center
Glen F. Rall, B.A., Ph.D.	Adjunct Associate Professor	Fox Chase Cancer Center
Luis J. Sigal, DVM, Ph.D.	Adjunct Associate Professor	Fox Chase Cancer Center
David L. Wiest, B.S., Ph.D.	Adjunct Associate Professor	Fox Chase Cancer Center
Yuri Sykulev, M.D., Ph.D.	Associate Professor	
Jianke Zhang, PhD	Associate Professor	
Kishore Alugupalli, Ph.D.	Assistant Professor	
Jerome G. Buescher, B.A, Ph.D.	Clinical Assistant Professor	
John F. Klement, B.S., M.S., Ph.D.*	Assistant Professor	Dept of Dermatology
Carlisle P. Landel, A.B., Ph.D.	Research Assistant Professor	
James P. McGettigan, B.S., M.S., Ph.D.	Research Assistant Professor	
Laura Mandik-Nayak, B.S., Ph.D.	Adjunct Assistant Professor	Lankenau Institute for Medical Research
Fabienne Paumet, Ph.D.	Assistant Professor	
S.M. Ziaur Rahman, M.D., Ph.D.	Research Assistant Professor	
Nadezhda Anikayeva, Ph.D.	Research Instructor	
Milosz A. Faber, M.S., Ph.D.	Research Instructor	
W. Paul Havens, Jr., A.B., M.D.	Honorary Professor	Dept of Medicine
Susan E. Rittenhouse, B.A., Ph.D.	Professor Emeritus	
Jussi Saukkonen, M.D.	Honorary Professor	
Charles Panos, Ph.D.	Professor Emeritus	
Abbas ar-Rushdi, B.S, Ph.D.	Honorary Research Associate Professor	
Carl F. Clancy, B.S., M.S., Ph.D.	Honorary Associate Professor	

* *Secondary appointment in the Department of Microbiology and Immunology*

** *Jefferson Vaccine Center, Director*

*** *Jefferson Vaccine Center, Associate Director, Vice Chair for Programmatic Research,*

DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY
JEFFERSON MEDICAL COLLEGE

INTRODUCTION

The Department of Microbiology and Immunology continues to deliver outstanding education and training to medical students, graduate students and postdoctoral research fellows. The Department's primary goals remain education and building and maintaining internationally recognized research programs in the areas of immunology, infectious disease and genetics. Departmental faculty maintain active research programs while providing for the education of Jefferson Medical College second year students and the College of Graduate Studies (CGS) students at all levels. Departmental faculty research efforts are reflected in scholarly publications in high impact journals as well as faculty contributions to scientific meetings. Considerable effort is put forth by faculty in writing grant applications in a highly competitive funding arena.

ADMINISTRATION

The Department's post-award administration is a shared resource with the Department of Biochemistry & Molecular Biology. Rosemarie Fleming-Troendle is our administrator; Christina Bergey is our grants administrator. The Departmental Office (Chair and Assistant, Kathleen Reinersmann) is located Room 302 Bluemle Life Sciences Building (BLSB). The Department continues to share pre-award administration with the Department of Biochemistry & Molecular Biology and the Kimmel Cancer Center. This central office is located in BLSB and is under the direction of Jan Rago. Graduate Education continues to be a shared resource with the Department of Biochemistry & Molecular Biology and the Kimmel Cancer Center managed by Joanne Balitzky.

JEFFERSON VACCINE CENTER

Jefferson Vaccine Center (JVC) (http://jefferson.edu/jmc/microbiology/vaccine_center/) at Thomas Jefferson University was established in October 2007 to unify various researchers under the umbrella of a University-based Center. The Jefferson Vaccine Center is headed by Dr. Matthias Schnell as the director, Dr. Laurence Eisenlohr as the associate director and Dr. Christopher Chambers as the clinical director. The Center currently has 39 members from 10 different Departments at TJU. The Center's mission is to concentrate and enhance existing interests and expertise in vaccine research and related areas of immunology and microbial pathogenesis. The JVC held its second annual retreat on March 26-27 2009 with speakers from academia and industry. Internationally recognized clinical physicians and basic science researchers presented the latest advances in vaccine development. The third annual retreat of the JVC will be in combination with the Lennox K. Black International Prize For Excellence In Biomedical Research November 15-16 2010, which is this designated toward a mechanistic understanding, control, therapy or prevention of Infectious Diseases. Lastly, members of the JVC were able to secure more funding for vaccine related research projects. In addition Dr. Schnell (Microbiology and Immunology and Dr. Rall (Fox Chase Cancer Center and adjunct faculty member of the Department of Microbiology and Immunology) submitted a T32 training grant (Cell Biology, Immunology, and Pathology of Microbial Pathogenesis) to support and extent training of graduate students and postdoctoral fellows in the Department and JVC.

FACULTY

AWARDS/APPOINTMENTS/PROMOTIONS/RESIGNATIONS/TERMINATIONS

AWARDS

Bernhard Dietzschold, DVM, Professor received the 2010 JMC Faculty Award for Innovation in the Biomedical Sciences.

Jerome Buescher, PhD, received the 2010 Dean's Award for Excellence in Education

APPOINTMENTS

Christopher Snyder, Assistant Professor joined the faculty on September 01, 2010. Dr. Snyder is a viral immunologist studying the development of T cell memory to mouse cytomegalovirus (MCMV) and several other viruses. His laboratory is located in Room 536 Bluemle Life Sciences Building.

PROMOTIONS

Jianke Zhang, PhD, promoted from Assistant Professor, Academic Investigator, tenure-eligible track to Associate Professor, Academic Investigator, tenure-eligible track.

RECRUITMENT

Recruitment this year is targeted towards translational cancer immunology research. This is a joint recruitment effort with the Departments of Microbiology & Immunology, Cancer Biology and Medical Oncology.

MEDICAL EDUCATION

Immunity, Infection and Disease (Micr201), 2nd Year Medical School Course

Departmental faculty teaches the course Immunity, Infection and Disease (Micr201) which is presented to second year medical students. Micr201 is under the direction of Dr. David Abraham. This 9-week course was taught to 258 (up from 255) students during this reporting period. The goals of the course are to teach the fundamentals of immunology and the component sections of microbiology, bacteriology, virology, mycology and parasitology. Pharmacology lectures, relevant to immunology and microbiology are presented at points throughout the course. It is the objective of this course to introduce the students to the diagnosis, treatment and prevention of infectious diseases as well as autoimmune pathogenesis and allergy. The course consists of 99 lectures, 11 clinical conferences, 11 review sessions and 8 two-hour laboratories. The Microbiology Laboratory curriculum is under the direction of Jerome Buescher, Ph.D., Assistant Professor.

The 2010 Robert J. Mandle Memorial Graduation Award was presented to Heather Cohn. This award is given each year to the graduating medical student who has shown the greatest proficiency in research in the field of microbiology or related medical sciences as judged by the Department's faculty.

GRADUATE PROGRAMS – DEPARTMENTAL AND INTER-DEPARTMENTAL

The Department offers doctoral programs in Genetics (Linda D. Siracusa, PhD, Director) and Immunology & Microbial Pathogenesis (Kishore Alugupalli, PhD, Director). These, along with doctoral programs in Biochemistry & Molecular Biology as well as Molecular Pharmacology & Structural Biology are sponsored by the Kimmel Cancer Center. In addition, entry via the Flexible-Entry Pathway allows a student to complete the first year of coursework while sampling research in any of the eight Ph.D. Programs within the College of Graduate Studies. Each of the programs of study is designed to provide graduating students with outstanding training and research experience to pursue future careers as scientific investigators in academic, biotechnology, government or industrial settings. Students in each program take a core course, GC 550 Foundations in Biomedical Sciences that includes basic biochemistry, molecular biology, cell biology and genetics as well as complete three laboratory research rotations during the first year of study. They then select a mentor in whose laboratory they will complete their studies, while students completing the first year in the Joint Program also select one of the four Ph.D. Programs as their formal course of study.

The Department has been very active in seeking extramural funding for our training programs. A new T32 training grant application was submitted by Matthias Schnell

SCHOOL OF PHARMACY

Departmental faculty under the direction and organization of Dr. Jerome Buescher is responsible for teaching the Immunology section in the newly established School of Pharmacy.

SEMINARS

The Department has established the Annual Bice Perussia Memorial Immunology Symposium. Dr. Perussia, a long-time member of this department until her death in 2006, made major contributions to the field of immunology, particularly in the area of innate immunity. This is a yearly event held in the spring of each year in collaboration with investigators from the Fox Chase Cancer Center. This year's event was held on May 14, 2010. The Department together with the Departments of Biochemistry & Molecular Biology and the Kimmel Cancer sponsor the Joint Research Seminar Series. This weekly seminar series hosts speakers from outside the Jefferson Community and is held each Thursday at 12:00 Noon. The Department has also established in collaboration with the Joint Research Seminar Series an annual memorial lectureship in honor of W. Edward Mercer, PhD, Professor of Microbiology & Immunology. Ettore Appella, M.D. from the National Cancer Institute presented this year's lecture. In addition to the weekly seminars there are three additional named lectureships which take place throughout the academic year.

FACULTY SCHOLARLY MISSION

RESEARCH

The Department's strengths rest with the first-class scientists who make up our research program. In addition to establishing and maintaining research programs, these scientists are responsible for the education of postdoctoral fellows, graduate students and medical students.

GRANT SUPPORT

During the fiscal year 2009-2010, the Department of Microbiology and Immunology was successful in obtaining 13 new grants. Through extramural funds, primarily from the NIH, a total of \$4.5 million was generated for direct research costs and \$2.1 million for indirect costs.

PUBLICATIONS

In the reporting period, faculty published 43 articles in peer-reviewed journals. This number does not include articles submitted for publication or manuscripts in preparation (Appendix A).

TEACHING

Departmental faculty provides the Medical College and the College of Graduate Studies with teaching assistance. The Department faculty assumed responsibility for teaching the Immunology Section in the School of Pharmacy. Each faculty member provides teaching in his/her area of expertise. Teaching commitments vary per faculty member.

UNIVERSITY AND MEDICAL COLLEGE SERVICE

In addition to teaching responsibilities faculty also serve on various committees within the University and Medical College.

EDITORIAL SCHOLARSHIP

A number of faculty serve on editorial boards of professional journals – including the American Journal of Tropical Medicine and Hygiene (David Abraham), Mammalian Genome (Buchberg), Journal of NeuroVirology (Dietzschold), Antigen Processing and Recognition (Eisenlohr), BioMedCentral Immunology, Frontiers in B Cell Biology (Manser), International Journal of Immunological Studies, Self/Nonself: Immune Recognition and Signaling (Sykulev) Genetics (Siracusa) and Journal of Virology (Schnell). Faculty also serves as frequent reviewers for other peer-reviewed journals.

AWARDS/HONORS/STUDY SECTION

Buchberg - Ad Hoc Reviewer National Priorities Research Program, Qatar National Research Fund (Submitted Review)

Member, DDC, Development Differentiation and Cancer Study Section.

American Cancer Society, Atlanta, GA.

Oncological Sciences Fellowship Review Panel. NCI, NIH

ACS-IRG pilot project review Panel.

TJU pilot project program

Buescher - 2010, Dean's Award for Excellence in Education, Jefferson Medical College

Eisenlohr - Permanent Member, CMIB Study Section

Manser - September 2009, Ad hoc Reviewer, NIH, NIAID ZAI1 PA-I J1 1, Special Study Section, B Cells in Autoimmune Disease PO1 (phone review).

Paumet - 2009- Contributing member of “Faculty of 1000 Biology”

Schnell – September 2009, Ad, hoc Reviewer, NIH, NIAID VIRA Study Section

Siracusa - Permanent Member, NIH - NCI Cancer Genetics Study Section

The Collaborative Cross External Advisory Board Member,

University of North Carolina at Chapel Hill

The Mouse Genome Database External Advisory Board Member,

The Jackson Laboratory, Bar Harbor, Maine

The Franklin Institute Preselection Committee for the 2011, Bower Award and

Prize in Scientific Achievement

Sykulev – March 2009, Individual Grant Proposal “The Role of Lis1 in Dynein-Mediated Microtubule Organizing Center Translocation at the Immunological Synapse”, Graduate Women in Science Fellowships

December 2009, NIH Special Panel ZGR1 IMST-C30 “Shared Instrumentation: Proteomics” (phone review)

April 2009, Individual Grant Proposal “Pre-clinical Studies of Recombinant T-Cell Receptor-Like Antibodies for Treatment of Metastatic Melanoma”, The Israel Science Foundation

Zhang - 2009, July, Section Chair, 11th International Conference on Cell Biology, Xian, China.

CLINICAL MISSION

The Department does not have clinical responsibilities. Many of our faculty have collaborations with physicians and translational scientists in clinical departments; however, we do not maintain any specific clinical activities.

CHAIR’S SUMMARY

Our Department continues to perform at a high level in its research and educational activities. Regarding grant support for research, our faculty has substantially increased grant output relative to historical standards. This, combined with the infusion of new money into the NIH via the ARRA initiative resulted in an outstanding year for our Department both in terms of direct costs and indirect cost recovery. The latter increased over 15% as compared to last year. Importantly, several of our junior faculty also secured their first RO1s. All of our faculty members are now NIH funded and most of our senior and mid level faculty hold multiple NIH grants.

Publication highlights included a report in the Journal of Immunology from the Alugupalli laboratory demonstrating that effective antibody responses to certain bacteria require an interleukin-7 dependent pathway of B cell development. Dr. Paumet and colleagues reported on the discovery and characterization of proteins expressed by certain obligate intracellular bacteria (“SNARE-like proteins) that inhibit the host cell’s defense against such bacteria. This work was published in PLoS One. Finally, Dr. Schnell’s laboratory continued to publish the results of their outstanding studies on the factors influencing Rabies virus pathogenicity. Their most recent report was published in PLoS Pathogens.

Our educational programs continue to improve. Drs. Abraham and Buescher spend tireless hours directing the second year medical school course in Immunity, Infection and Disease (Micro201) and ensuring that it is first rate. Drs. Siracusa and Alugupalli continue to do a great job directing our host Ph.D programs in Genetics, and Immunology and Microbial Pathogenesis, respectively. Also, Dr. Buescher, as full time educator in our Department now directs and gives all lectures in the new Immunology course in the School of Pharmacy (PHRM 525).

The Department is currently attempting to recruit two or more new faculty members. An advertisement for these positions was recently posted in Science and several other journals. We are focusing this search on candidates with established programs in cancer immunology, including tumor immunotherapy, tumor vaccines, tumor virology, GVH/GVL and viral pathogenesis in transplant settings. We envision that such recruits will strengthen the translational component of our research portfolio by enabling collaborative research efforts with several other departments, including Surgery and Medical Oncology.

Our Department underwent review by the Dean's office in the last year. We received generally highly complimentary reviews from both an internal review panel and two external reviewers. However, several opportunities for improvement emerged from this process and we are acting upon them this year. These include the initiation of a Department "social" during which individual laboratories present posters summarizing their research. We have also improved the faculty mentoring program by enforcing frequent meetings of the Department's Appointment and Promotions Committee and individual junior faculty mentoring committees. Given the quality of our current faculty, and our ability to recruit additional outstanding faculty in this year and in the years to come, there is no reason why we should not be able to rise to the level of one of the elite medical school Microbiology and Immunology departments in this country.

APPENDIX A

PUBLICATIONS (JULY 1, 2009 THROUGH JUNE 30, 2010)

DAVID ABRAHAM, PH.D.
PROFESSOR

Alugupalli, K.R. and D. ABRAHAM. 2009. B cell multitasking is required to control nematode infection. *Immunity* 30: 317-319.

Stein, L.H., K.M. Redding, J.J. Lee, T.J. Nolan, G.A. Schad, J.B. Lok and D. ABRAHAM. 2009. Eosinophils utilize multiple chemokine receptors for chemotaxis to the parasitic nematode *Strongyloides stercoralis*. *Journal of Innate Immunity*. 1:618-630.

O'Connell, A.E., L.A. Kerepesi, G.L. Vandergrift, D.R. Herbert, T.J. Van Winkle, D.C. Hooper, E.J. Pearce, and D. ABRAHAM. 2009. IL-4^{-/-} mice with lethal *Mesocostoides corti* infections - reduced Th2 cytokines and alternatively activated macrophages. *Parasite Immunology*. 31:741-749.

Krolewiecki, A.J., R. Ramanathan. V. Fink, I. McAuliffe, S.P. Cajal, K. Won, M. Juarez, A. Di Paolo, L. Tapia, N. Acosta, R. Lee, P. Lammie, D. ABRAHAM and T.B. Nutman. 2010. Improved diagnosis of *Strongyloides stercoralis* using recombinant antigen-based serologies in a community-wide study in northern Argentina. *Clinical and Vaccine Immunology*. 17:1624-1630

KISHORE R. ALUGUPALLI, PH. D.
ASSISTANT PROFESSOR

Shriner A.K., Liu H., Sun G., Guimond M., Alugupalli KR. "IL-7_ Dependent B Lymphocytes are essential for the anti-polysaccharide response and protective immunity to *Streptococcus pneumoniae*." (2010) *Journal of Immunology*. 185(10):525-31.

Liu H, Fitzgerald D, Gran B, Leong JM, Alugupalli KR. "Induction of distinct neurologic disease manifestations during relapsing fever requires T lymphocytes." (2010) *The Journal of Immunology*. 184(10):5859-64.

Benoit VM, Petrich A, Alugupalli KR, Marty-Roix R, Moter A, Leong JM, Boyartchuk VL. "Genetic control of the innate immune response to *Borrelia hermsii* influences the course of relapsing fever in inbred strains of mice." (2010) *Infection & Immunity*. 78(2):586-94.

NADIA ANIKEEVA, PH.D.
RESEARCH INSTRUCTOR

Beal, A.M., N. Anikeeva, R. Varma, T.O. Cameron, G. Vasiliver-Shamis, P.J. Norris, M.L. Dustin, and Y. Sykulev. "Kinetics of early T cell receptor signaling regulate the pathway of lytic granule delivery to the secretory domain." (2009) *Immunity*, 31: 632-642.

ARTHUR M. BUCHBERG, PH.D.
ASSOCIATE PROFESSOR

Boman B., L. Kopelovich, L.D. Siracusa, T. Zhang, K. Henderson, Z. Cofer, A.M. Buchberg, J.Z. Fields and T. Otevrel “A Tcf4-GFP reporter mouse model for monitoring effects of Apc mutations during intestinal tumorigenesis” (2009) Mol Carcinog 48:821-831.

JEROME G. BUESCHER, PH.D.
ASSISTANT PROFESSOR

No Publications

BERNHARD DIETZSCHOLD, D.V.M.
PROFESSOR

Faber M, Li J, Kean RB, Hooper DC, Alugupalli KR, Dietzschold B. “Effective preexposure and postexposure prophylaxis of rabies with a highly attenuated recombinant rabies virus” (2009) .Proc Natl Acad Sci U S A. 106, 11300-05.

Henderson H, Jackson F, Bean K, Panasuk B, Niezgodka M, Slate D, Li J, Dietzschold B, Mattis J, Rupprecht CE. Oral immunization of raccoons and skunks with a canine adenovirus recombinant rabies vaccine. Vaccine 27:7194-7197

Mueller T, Dietzschold B, Ertl H, Fooks AR, Freuling C, Fehlner-Gardiner C, Kliemt J, Meslin FX, Frank R, Rupprecht CE, Tordo N, Wandeler AI, Kieny MP.CE, Tordo N, Wanderler AI, Kieny MP. “Development of a mouse monoclonal antibody cocktail for post-exposure prophylaxis in humans.” (2009). PLoS Negl. Trop. Dis, 3:e542.

LAURENCE C. EISENLOHR, V.M.D, PH.D.
PROFESSOR, MICROBIOLOGY AND IMMUNOLOGY

Snook, A.E., P. Li, B.J. Stafford, E.J. Faul, L. Huang, R.C. Birbe, A. Bombonati, S. Schulz, M.J. Schnell, L.C. Eisenlohr and S. A. Waldman. “Lineage-specific T-cell responses to cancer mucosa antigen oppose systemic metastases without mucosal inflammatory disease” (2009) Cancer Res. 69:3537-3544.

MILOSZ FABER, PH.D.
RESEARCH INSTRUCTOR

Faber, M., Li J., Kean R.B., Hooper D.C., Alugupalli K.R., Dietzschold, B.: “Effective preexposure and postexposure prophylaxis of rabies with a highly attenuated recombinant rabies virus.” Proc. Natl. Acad. Sci. U S A. 106(27), 11300-11305, 2009

CARLISLE P. LANDEL, PH.D.
RESEARCH ASSISTANT PROFESSOR

Zhou H, Huang C, Chen H, Wang D, Landel CP, Xia PY, Bowser R, Liu YJ, Xia XG. (2010) Transgenic rat model of neurodegeneration caused by mutation in the TDP gene. *PLoS Genet.* 2010 Mar 26; 6(3):e1000887.

Fernandes-Alnemri T, Yu JW, Juliana C, Solorzano L, Kang S, Wu J, Datta P, McCormick M, Huang L, McDermott E, Eisenlohr L, Landel CP, Alnemri ES. (2010) The AIM2 inflammasome is critical for innate immunity to *Francisella tularensis*. *Nat Immunol.* 2010 May; 11(5):385-93. Epub 2010 Mar 28.

Zurita E, Chagoyen M, Cantero M, Alonso R, González-Neira A, López-Jiménez A, López-Moreno JA, Landel CP, Benítez J, Pazos F, and Montoliu L. (2010) Genetic polymorphisms among C57BL/6 mouse inbred strains. *Transgenic Res.* 2010 May 27. [Epub ahead of print].

TIM L. MANSER, B.A., PH.D.
PLIMPTON PUGH PROFESSOR AND CHAIR

Coffey, F., B. Alabyev and T. Manser “Initial clonal expansion of germinal center B cells takes place at the perimeter of follicles” (2009) *Immunity* 30: 599-609.

Vuyyuru, R., C. Mohan, T. Manser and Z. S. M. Rahman “The lupus susceptibility locus *Sle1* breaches peripheral B cell tolerance at the antibody forming cell and germinal center checkpoints” (2009) *J. Immunol.* 183: 5716-5727.

Schwickert, T. A., B. Alabyev, T. Manser and M. C. Nussenzweig “Germinal center re-utilization by newly activated B cells” (2009) *J. Exp. Med.* 206: 2907-2914.

Coffey, F. and T. Manser “Expression of cellular FLIP by B cells is required for their participation in an immune response” (2010) *J. Immunol.* 184: 4871-4879.

JAMES P. MCGETTIGAN, PH.D.
RESEARCH ASSISTANT PROFESSOR

Cenna J., M. Hunter, G.S. Tan, A.B. Papaneri, E.P. Ribka, M.J. Schnell, P.A. Marx, and J.P. McGettigan, “Replication-deficient rabies virus-based vaccines are safe and immunogenic in mice and non-human primates.” (2009) *J Infect Dis.*, 200(8):1251-60.

Faul, E.J., P.P. Aye, A.B. Papaneri, B. Pahar, J.P. McGettigan, F. Schiro, I. Chervoneva, D.C. Montefiori, A.A. Lackner, and M.J. Schnell (2009). “Rabies virus-based vaccines induce high levels of neutralizing antibody and potent CD8+ T cells responses that protect rhesus macaques from AIDS-like disease after SIVmac251 challenge.” *Vaccine*, 28(2):299-308. Epub 2009 Oct 29

Gomme, E.A., E.J. Faul, P. Flomenberg, J.P. McGettigan, and M.J. Schnell “Characterization of a Single-Cycle Rabies Virus Based Vaccine Vector” (2010) *J. Virol.* 84(6):2820-31. Epub 2010 Jan 6

Schnell, M.J., J.P. McGettigan, C. Wirblich, and A. Papaneri, “Cell Biology of Rabies Virus: using stealth to reach the brain” (2010) *Nature Reviews in Microbiology*, Jan; 8(1):51-61.

McGettigan, J.P. “Experimental Human Rabies Vaccines – An Update” (2010) *Expert Reviews in Vaccines*, In-press

FABIENNE PAUMET, PH.D.
ASSISTANT PROFESSOR

J. Wesolowski, F. Paumet “SNARE motif: a common motif used by pathogens to manipulate membrane fusion” (2010), *Virulence* 1: 319-324

F. Paumet, J. Wesolowski, A. Garcia-Diaz, C. Delevoye, N. Aulner, H.A. Shuman, A. Subtil, J.E. Rothman “Intracellular bacteria encode inhibitory SNARE-like proteins” (2009), *PLoS One* 4:e7375

(corresponding author)

S.M. ZIAUR RAHMAN, M.D., PH.D.
RESEARCH ASSISTANT PROFESSOR

Vuyyuru, R., C. Mohan, T. Manser and Z.S.M. Rahman “The lupus susceptibility locus *Sle1* breaches peripheral B cell tolerance at the antibody-forming cell and germinal center checkpoints” (2009) *J. Immunol.*, 183: 5716-27.

MATTHIAS J. SCHNELL, PH.D.
PROFESSOR

Wanjalla CN, Faul EJ, Gomme EA, Schnell MJ: Dendritic cells infected by recombinant rabies virus vaccine vector expressing HIV-1 Gag are immunogenic even in presence of vector-specific immunity. *Vaccine*, in press 2010.

Schnell MJ, McGettigan JP, Wirblich C, Papaneri A: The cell biology of rabies virus: using stealth to reach the brain. *Nat Rev Microbiol* 2010, 8:51-61.

Prehaud C, Wolff N, Terrien E, Lafage M, Megret F, Babault N, Cordier F, Tan GS, Maitrepierre E, Schnell MJ Menager P, et al: Attenuation of rabies virulence: takeover by the cytoplasmic domain of its envelope protein. *Sci Signal* 2010, 3:ra5.

Mareeva T, Wanjalla C, Schnell MJ, Sykulev Y: A novel composite immunotoxin that suppresses rabies virus production by the infected cells. *J Immunol Methods* 2010, 353:78-86.

Langley WA, Bradley KC, Li ZN, Smith ME, Schnell MJ, Steinhauer DA: Induction of neutralizing antibody responses to anthrax PA using influenza vectors: Implications for disparate immune system priming pathways. *J Virol* 2010.

Gomme EA, Faul EJ, Flomenberg P, McGettigan JP, Schnell MJ: Characterization of a single-cycle rabies virus-based vaccine vector. *J Virol* 2010, 84:2820-2831.

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LINDA D. SIRACUSA, PH.D.
PROFESSOR

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The MUSMIRSUS Database

Version 1 – 2006, Version 2 – 2008

Developed by C. Seignani and L.D. Siracusa, Maintained by L.D. Siracusa

www.kimmeltcancercenter.org/siracusa/musmirsus.htm

CHRISTOPHER SNYDER, PH.D
ASSISTANT PROFESSOR

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YURI SYKULEV, M.D., PH.D.
ASSOCIATE PROFESSOR

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JIANKE ZHANG, PH.D.
ASSISTANT PROFESSOR

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Appendix B
Department of Microbiology & Immunology - Committed Grant Support

Department of Microbiology & Immunology - Committed Grant Support				CURRENT GRANTS					
				07/01/10-06/30/11		07/01/11-06/30/12		07/01/12-06/30/13	
Faculty	Grant Sponsor	Grant Title	Project End Date	FY 11		FY 11-12		FY 12-13	
				Direct	Indirect	Direct	Indirect	Direct	Indirect
Abraham, David	Pfizer Inc. #GA0660XO	Evaluation of the Activity of the Combination Azithromycin-Fluconazole...	08/06/10						
	NIH thru New york blood center	The Development of a recombinant vaccine against Onchocerciasis	06/30/14	154,800	84,715	185,065	100,860	204,417	111,407
	NIH/NIAID R56 AIO76345-01A2	Neutrophil dependent immunity to strongyloides stercoralis	07/31/11	140,000	76,300				
			Abraham Total	294,800	161,015	185,065	100,860	204,417	111,407
Alugupalli, Kishore	NIH/NIAID 5RO1 AIO65750-02	B1B lymphocytes generate T cell-independent memory	6/30/11	47,380	26,059				
			Alugupalli Total	47,380	26,059	-	0		
Arthur Buchberg	NIH 1R21CA135166-01A1	Sensitized screen to identify cooperating genes invloved in pancreatic cancer	05/31/11	110,000	59,950				
	NIH-R01	P-53-Mediated G2/M Checkpoint controls	02/28/11	154,124	84,768				
			Buchberg Total	264,124	144,718				
Calkins, Catherine	NIH/NIAID 1 RO3 IO64636-01A2	New Assay for MRBC-Specific Autoantibody Responses	8/31/10						
			Calkins Total	-	-				
Dietzschold, Bernard	Various Sponsors	Assesment of the Antigenic Composition and Molecular Structure of Pasteur Connaught's Rabies	12/31/50						
	NIH/NIAID 5RO1 AIO60686-04	Generation of Novel Recombinant Rabies Virus Vaccines	09/09/10	17,140	9,427				
	NIH/NIAID 5R56 AIO60686-06	Generation of Novel Recombinant Rabies Virus Vaccines	09/09/11	151,448	82,842	50,483	27,614		
			Dietzschold Total	168,588	92,269	50,483	27,614		
Eisenlohr, Laurence	NIH/NIAID 2RO1 AIO39501-10A2	Accessing the MHC Class I Processing Pathway	12/31/11	86,625	47,211	86,625	47,211		
	NIH/NIAID 51 R01 AIO69192-02	The Basis for MHC Class II-restricted proteasome-dependent epitopes	12/31/10	20,000	16,350				
	NIH/NIAID 1R21 AIO79526-01	Non-proteasomal protease(s) that define C-termini of MHC class I epitope	5/31/11	49,665	27,067				
	NIH/NCI 1R21 CA135602-01	Dynamics of tolerance induction to tumor associated antigens	06/30/11	54,967	29,957				

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				07/01/10-06/30/11		07/01/11-06/30/12		07/01/12-06/30/13	
Faculty	Grant Sponsor	Grant Title	Project End Date	FY 11		FY 11-12		FY 12-13	
				Direct	Indirect	Direct	Indirect	Direct	Indirect
	NIH/NINDS 1F31 NS054444-01A2	Ret Signaling in Paraneoplastic Peripheral Neuropathy	7/31/10						
	NIH/NIA 1F31 AG031666-01	Antigen Processing and the age-related decline in protection against influenza / Tara Robinson	9/30/12	43,094		42,709		10,677	
	NIH Through Foxchase 1U19AIO83008-01	Immune Mechanisms that control extromelia virus infection Proj 3 procc & present of Ectromelia virus to CD4+T lymphocytes	04/30/14	267,909	146,011	198,477	108,170	198,477	108,170
	NIH Through Foxchase 3U19AIO83008-01	Immune Mechanisms that control extromelia virus infection Proj 3 procc & present of Ectromelia virus to CD4+T lymphocytes	07/31/10						
			Eisenlohr Total	522,260	266,596	327,811	155,381	209,154	108,170
Faber, Milosz	NIH/NIAID 1R21AI068837-01A2	Development of a recombinant Nipah virus vaccine for wildlife	05/31/11	150,000	81,750				
			Faber Total	150,000	81,750				
Manser, Tim	NIH/NIAID 5R01 AI038965-11	Negative Selective of Autoreactive Antibodies	11/30/11	165,544	77,898	91,969	55,641		
	NIH/NIAID 5R01 AI046806-09	Regulation of Persistent Ab Responses by Fc Receptors	1/31/11						
	NIH/ACE (Award under Rostami in Neurology)	Dev of a hematopoietically humanized mouse model for the study of human autoimmune disease	04/30/11	100,000	49,050				
			Manser Total	265,544	126,948	91,969	55,641		
McGettigan, James	NIH/NIAID PO1AI082325 CORE B	Functional Analysis of NSV-based HIV vectors	08/31/11	111,979	61,029	22,396	12,206		
	NIH thru Molecular Targeting Techonolgies	Human rabies virus vaccine development	09/30/10						
	NIH 1R01AI079211-01A2	Replication-deficient rabies vectors against rabies virus infection	06/30/13	247,181	135,207	250,000	136,250	250,000	136,250
			McGettigan Total	359,160	196,236	272,396	148,456	250,000	136,250
Paumet, Fabienne	NIH/NIAID 1R01AI073486-01A2	How bacteria corrup the host vesicular trafficking: Role of SNARE-like Proteins	06/30/13	222,462	121,687	225,000	122,625	225,000	122,625
			Paumet Total	222,462	121,687	225,000	122,625	225,000	122,625

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				07/01/10-06/30/11		07/01/11-06/30/12		07/01/12-06/30/13	
Faculty	Grant Sponsor	Grant Title	Project End Date	FY 11		FY 11-12		FY 12-13	
				Direct	Indirect	Direct	Indirect	Direct	Indirect
Rahman, Ziaur	NIH/NIAMS 1R03 AR055701-01A1	Impact of lupus susceptibility loci on peripheral tolerance and onset of disease	5/31/11	50,000	27,250				
			Rahman Total	50,000	27,250				
Schnell Matthias	Various Spao		12/31/50	4,000					
	NIH/NIAID 1R21 AI081388-01	Bat Rabies virus in its natural host	05/31/11	159,665	48,867				
	NIH/NIAID 1PO1AI082325-01	Fuctional Analysis of NSV-based HIV vectors	08/31/11	194,629	106,073	38,926	21,215		
	NIH/NIAID 1PO1AI082325-01	Fuctional Analysis of NSV-based HIV vectors-Administrative	08/31/11	52,021	28351.45	10,404	5,670		
	NIH sub/ U of Pitt 5P40RR018604-05	Center for Neuroanatomy with Neurotropic Viruses	5/31/11	64,267	35,025				
	NIH sub/ MTTI--R41	A novel baccine: botulinum neurotoxin	9/30/10						
			Schnell Total	474,582	218,316	49,330	26,885		
Siracusa, Linda	NIH/NCI 5R01 CA120243-02	Susceptibility Genes and Colorectal Cancer	5/31/12	190,000	104,500	190,000	104,500		
	NIH/NCI 1F31 CA134181-01	A Novel Modifier Locus Supp. ApcMin Intestinal Polyposis	7/31/10						
			Siracusa Total	190,000	104,500	190,000	104,500		
Snyder, Christopher	NIH/NIAID 1K22AI081866-01	Maintenance of the virus-specific T cell equilibrium in chronic MCMV infection	7/31/2012	100,000	8,000				
			Snyder Total	100,000	8,000				
Sykuluv, Yuri	NIH/NIAID 2R01 AI052812-06A2	Immune Receptors on Cytotoxic Lymphocytes & Target Cells	11/30/12	198,638	108,258	115,872	63,150	82,766	45,107
	NIH/NCI 1R21CA131973-01A2	Proximity between immune receptors on the cell surface and the sensitivity of Tce	04/30/11	19,045	10,380				
			Sykulev Total	217,683	118,638	115,872	63,150	82,766	45,107
Zhang, Jianke	NIH/NIAID 1R03 AI076788-01A2	The Function of cFlip in B Lymphocytes	6/30/11	26,000	14,170				
	NIH/NIAID 1R21AI083915-01	Nit1-mediated signaling in T cells	05/31/11	150,000	81,750				
			Zhang Total	150,000	81,750				
TOTALS				3,476,584	1,775,732	1,507,926	805,112	971,337	523,560