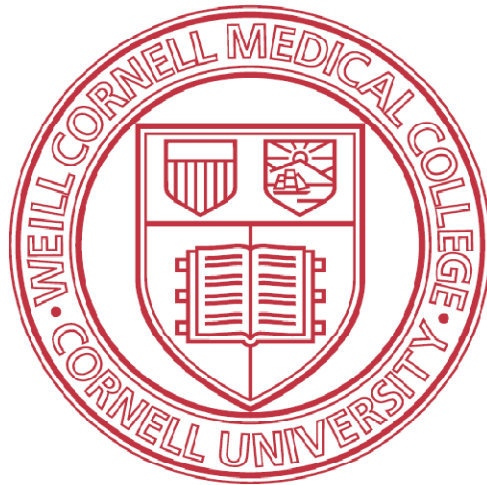


**WEILL CORNELL MEDICAL COLLEGE
NEW YORK-PRESBYTERIAN HOSPITAL**

DEPARTMENT OF MEDICINE

**DIVISION OF
INFECTIOUS DISEASES**



**FACULTY AND FELLOW PROFILES
& DIVISIONAL PROGRAMS**

2009-2010

**Weill Medical College of Cornell University
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The mission of the Division of Infectious Diseases at the Weill Medical College of Cornell University and New York-Presbyterian Hospital is to conduct laboratory, translational, and clinical research; to provide clinical care in both outpatient and inpatient settings; and to provide education and training in infectious diseases. The Division has over 50 full-time, affiliated, adjunct, and voluntary faculty members and includes the Infectious Diseases Clinical Services at New York-Presbyterian Hospital-Weill Cornell Medical Center; the Center for Global Health; basic, translational, and clinical research programs; and the Infectious Diseases Fellowship Program.



The Division of Infectious Diseases facilities include over 10,000 square feet of research and administrative space. There are 10 research laboratories (7,500 sq. ft.) equipped for basic and translational studies, offices, and a computer center (1,500 sq. ft.). Major laboratory research projects are ongoing in bacterial pathogenesis, bioterrorism, food- and water-borne pathogens, leishmaniasis, malaria, and tuberculosis. Major clinical research projects are ongoing in bacterial resistance, hepatitis, HIV/AIDS, human papillomavirus, and transplantation. Current funding for sponsored research and training in the Division of Infectious Diseases in 2009-2010 exceeds \$10 million.

The Center for Global Health coordinates the Division's International Network of research and training programs, including our activities in Brazil, Haiti, and Tanzania, with full-time faculty at each site. These sites offer clinical and research opportunities for Weill-Cornell medical students, residents, fellows and faculty. Research interests include HIV/AIDS, HTLV-1, malaria, intestinal helminths, leishmaniasis, leptospirosis, schistosomiasis, and tuberculosis.

The HIV/AIDS Program provides care to over 2,000 HIV-infected persons in New York City, in addition to conducting basic and clinical research. The Center for Special Studies (the HIV primary clinic, a New York State-designated AIDS Center) and the Cornell HIV/AIDS Clinical Trials Unit (CCTU) outpatient facilities occupy two floors of New York-Presbyterian Hospital as well as an off-site location on the first floor of the Gay Men's Health Crisis (GMHC) building in the Chelsea neighborhood of Manhattan.

The Fellowship Training Program in Infectious Diseases provides intensive clinical and research training for developing physician-scientists. Graduates of the program are highly qualified for the practice of infectious diseases; for conducting bench, translational, and clinical research; and to assume leadership roles in medicine. Our fellows typically go on to academic faculty appointments and/or positions in state, federal, or international public health organizations. The ID fellowship training program places major emphasis on both inpatient and ambulatory clinical training during the first year. The second and subsequent years of fellowship emphasize basic, translational, or clinical research at Weill-Cornell, Rockefeller University or the Memorial Sloan-Kettering Cancer Institute. Fellow research training is supported by an NIH-sponsored T-32 Training Grant. Additional training for fellows is available through Masters degree programs in clinical epidemiology and in clinical investigation and other specialized training programs in bone and joint infections, clinical microbiology, preventative medicine, and public health.

DIVISION OF INFECTIOUS DISEASES FACULTY

Roy M. Gulick, MD, MPH

Professor of Medicine and Chief, Division of Infectious Diseases

Susan Ball, MD, MPH Associate Professor of Clinical Medicine	Clinical HIV	Warren D. Johnson, MD Professor of Medicine	Parasitic Diseases; HIV
Barry Brause, MD Clinical Professor of Medicine	Bone and Joint Infections	Sian Jones, MD Assistant Professor of Medicine	Clinical HIV
Edgar M. Carvalho, MD, PhD [Brazil] Adjunct Professor of Medicine	Immunology; Leishmaniasis	Thomas C. Jones, MD Adjunct Professor of Medicine	Clinical Trials
Macarthur Charles, MD, PhD [Haiti] Instructor in Medicine	HIV Drug Resistance	Laura A. Kirkman, MD Instructor in Medicine	Malaria Pathogenesis
Salvatore Cilmi, MD Assistant Professor of Medicine	Hospital Medicine	Albert I. Ko, MD [Brazil] Associate Professor of Medicine	Leptospirosis; Meningitis
R. Gordon Douglas, Jr., MD Adjunct Professor of Medicine	Vaccines	Jose R. Lapa e Silva, MD, PhD [Brazil] Adjunct Professor of Immunology in Medicine	TB Pathogenesis
Lewis M. Drusin, MD Professor of Clinical Medicine	Hospital Epidemiology	Martin H. Markowitz, MD Adjunct Assistant Professor of Medicine	HIV
Laura L. Fisher, MD Clinical Assistant Professor of Medicine	Lyme Disease	Kristen M. Marks, MD, MS Assistant Professor of Medicine Associate ID Fellowship Director	HIV / HCV Co- infection
Daniel W. Fitzgerald, MD Associate Professor of Medicine	HIV; Bioethics	Samuel T. Merrick, MD Associate Professor of Clinical Medicine	Clinical HIV
Marshall Glesby, MD, PhD Associate Professor of Medicine Associate Chief of Infectious Diseases	HIV Clinical Trials; Hepatitis C	Shari R. Midoneck, MD Associate Professor of Clinical Medicine	Clinical Infectious Diseases; Women's Health
Linnie Golightly, MD Associate Professor of Clinical Medicine ID Fellowship Director	Malaria; Bioterror Agents	Henry W. Murray, MD Professor of Medicine	HIV; Leishmania
Catherine C. Hart, MD Clinical Assistant Professor of Medicine	Clinical Infectious Diseases	Thomas W. Nash, MD Clinical Assistant Professor of Medicine	Clinical Infectious Diseases
Barry J. Hartman, MD Clinical Professor of Medicine	Antibiotic Therapy	Susan C. Nicholson, MD Assistant Professor of Medicine (courtesy)	Skin and Soft Tissue Infections
David C. Helfgott, MD Clinical Assistant Professor of Medicine	Immuno- compromised Hosts	Anthony Ogedegbe, MD Assistant Professor of Medicine	Hospital Medicine
Beatrice Im, MD [Tanzania] Instructor in OB/GYN in Medicine	OB-GYN Infectious Diseases	Jean W. Pape, MD [Haiti] Professor of Medicine	Tuberculosis; HIV
Jonathan L. Jacobs, MD Professor of Clinical Medicine	Clinical HIV	Robert Peck, M.D. [Tanzania] Instructor in Medicine	Medicine/ Pediatrics Education

Steven G. Reed, PhD Adjunct Professor of Microbiology in Medicine	Antigen Discovery	Paul T. Smith, MD Clinical Assistant Professor of Medicine	Clinical Infectious Diseases
Kyu Y. Rhee, MD, PhD Assistant Professor of Medicine	Tuberculosis	Rosemary Soave, MD Clinical Associate Professor of Medicine	Transplantation
Lee W. Riley, MD Adjunct Professor of Medicine	Molecular Epidemiology	Charles A. Steinberg, MD Professor of Clinical Medicine	Clinical Infectious Diseases
Richard B. Roberts, MD Professor Emeritus of Medicine	Antimicrobial Resistance	Bruce W. Stewart, MD Assistant Professor of Clinical Medicine	Clinical HIV
Howard E. Rosenberg, MD Clinical Assistant Professor of Medicine	Clinical Infectious Diseases	Mark Y. Stoeckle, MD Clinical Associate Professor of Medicine	Viral Diseases; Antibiotics
Michael A. Rosenbluth, MD Clinical Assistant Professor of Medicine	Tropical Diseases	Carlos Vaamonde, MD, MSPH Assistant Professor of Clinical Medicine	Clinical HIV; Antibiotic Control
Mirella Salvatore, MD Assistant Professor of Medicine	Immunology	Mary A. Vogler, MD Assistant Professor of Medicine	Clinical HIV; HIV Clinical Trials; pregnancy
Audrey Schuetz, MD Assistant Professor of Medicine	Clinical Microbiology	Scott Weisenberg, MD Instructor in Medicine	Antibiotic Resistance; Tuberculosis
Lawrence Siegel, MD Instructor in Medicine	Clinical HIV; Sexually Transmitted Diseases	Timothy J. Wilkin, MD, MPH Assistant Professor of Medicine	HIV Clinical Trials; HPV
Harjot K. Singh, MD Instructor in Medicine	Clinical HIV	Cecilia Yoon, MD Assistant Professor of Medicine	Clinical HIV; Medical Education
Duane M. Smith, MD Assistant Professor of Clinical Medicine	Clinical HIV		

Mission

The major goal of our program is the training of academic physician-scientists. We provide a wide variety of clinical training experiences in different venues including: rotations on the inpatient services of New York-Presbyterian (NYPH)/Weill-Cornell, the Hospital for Special Surgery, Memorial Sloan Kettering Cancer Center, outpatient clinics (general ID, HIV, and Travel Medicine), clinical microbiology laboratory and hospital epidemiology rotations, and a sexually transmitted disease rotation at the NYC Department of Health. All fellows develop a research project in collaboration with one or more faculty mentors from Weill-Cornell, Rockefeller University, or Memorial Sloan-Kettering Cancer Center. Fellows' research projects span basic, translational and clinical research in diverse areas of investigation. The majority of our fellowship graduates seek careers either in academia, government or with private foundations.

Clinical Rotations

The clinical rotations are concentrated in the first year of the program. The New York- Presbyterian Hospital-Weill Cornell Medical Center is the primary institution of our fellowship training program. The medical center is located in a large clinical and research complex on the Upper East Side of Manhattan. New York-Presbyterian Hospital is the current name of what were formerly two distinct institutions: the Cornell-New York Hospital and the Columbia-Presbyterian Medical Center. Currently, New York-Presbyterian Hospital is the largest health care facility in the New York Metropolitan area and one of the largest in the world. The Greenberg Pavilion of the New York-Presbyterian Hospital (Cornell campus) is a one million square foot facility with 776 patient beds. Weill-Cornell Medical College and Columbia College of Physicians and Surgeons remain independent institutions and separate fellowship programs.

First-year fellows spend ~10 months on the inpatient consultation service and second-year fellows spend ~2 months. An active consultation service serves a broad range of complex medical and surgical patients. On average, division staff manage 80-90 inpatient consults per month. Fellows spend a minimum of one month in the Clinical Microbiology Laboratory and in the Hospital Epidemiology Department. Memorial Sloan-Kettering Cancer Center (MSKCC), located across the street, is a private hospital specializing in oncologic evaluation and treatment. Fellows spend one month on the MSKCC inpatient consultation service during their first year. Clinical electives also are available in cardiovascular and neurologic infections, HIV/AIDS, neutropenic and non-HIV immunocompromised hosts, orthopedic and rheumatologic infections, and transplantation.

First- and second-year fellows participate in a weekly continuity outpatient clinic for patients with HIV/AIDS and other infectious diseases where they build a panel of patients who will be followed over the course of the fellowship, with guidance from a faculty preceptor. Fellows also participate actively in the Travel Medicine clinic.

Basic, Translational, Clinical, and Epidemiologic Research

Research training occupies the majority of the second and subsequent years of fellowship. Fellows select from a broad range of research opportunities in basic, translational, clinical or epidemiologic research. Fellows conduct their research in the Weill-Cornell Division of Infectious Diseases, other divisions within the Department of Medicine (e.g. GI, Immunology), other departments within the Medical College (e.g. Department of Microbiology, Department of Public Health), Rockefeller University, or the Memorial-Sloan Kettering Cancer Center. Faculty mentorship from these diverse institutions allows a wide diversity of research opportunities.

The Division has a NIH-sponsored T32 training grant for the support of research training of physician-scientists. The objective is to train physician-scientists in biomedical research, with an emphasis on the pathogenesis of infectious diseases. Weill Cornell has an NIH-funded Clinical and Translational Science Center (CTSC) with state-of-the-art facilities for conducting translational and clinical research.

Division fellowship graduates have generally received independent research awards following their fellowship, primarily from the NIH, including K08 (Mentored Clinical Scientist Development Award) and K23 (Mentored Patient-Oriented Research Career Development Award). Research topics for these awards have included bioterrorism, HIV pathogenesis, HIV/TB coinfection, HIV vaccine development, HTLV-1, human papillomavirus, KSHV/HHV8, leishmania pathogenesis, leptospirosis, malaria, tuberculosis, and viral hepatitis.

Supplemental Training Programs

Other training programs within the medical college are available to supplement fellowship training, depending on the fellow's specific interests.

Clinical Research Training: Certificate and Masters Degree Programs

<http://www.med.cornell.edu/clinicalresearch/> – Weill-Cornell is the recipient of an NIH-sponsored K30 grant to train clinical investigators and to grant a Masters Degree in Clinical Investigation. Cornell's Masters of Clinical Investigation research program trains patient-oriented researchers to conceive, design and conduct independent clinical research in a well-structured cross-disciplinary team environment. The curriculum offers two tracks that are designed for rigorous training in clinical investigation. *Track I* is a core curriculum providing the basic skills of clinical investigation, leading to a **Certificate of Clinical Investigation**. It includes training in the development of research hypotheses and methods of hypothesis testing; grant writing and manuscript preparation; data collection, construction of databases and data management systems; computer programs for data analysis; statistical analysis and the appropriate use of various statistical techniques in clinical research; basic epidemiologic principles in clinical research; ethics and human subjects protection in the conduct of patient-oriented research; regulatory requirements of clinical research; preparing protocols for the Human Rights Committee and other agencies; grants management and intellectual property; and general and specific state-of-the-art research tools and techniques. *Track II*, leading to a **Masters Degree in Clinical Investigation**, includes the core curriculum (Track I); additional electives in the trainee's area of interest; and a clinical research project mentored by a clinical investigator in its design and implementation. Members of the Infectious Disease Division (Drs. Glesby, Gulick, Wilkin) serve as faculty for this training program. Fellows and junior faculty members have used this program to supplement their training as clinical researchers.

Preventative Medicine Training

http://www.med.cornell.edu/public.health/res_gen.html – After the initial year of clinical ID training, fellows have the opportunity to enter a two-year Masters of Public Health program, which is directed by Dr. Elizabeth Nilson in the Department of Public Health. Upon completion of the General Preventive Medicine Residency, fellows receive an MPH from the Columbia University School of Public Health; they also are eligible for certification by American Board of Internal Medicine / Infectious Diseases and the American Board of Preventive Medicine. The program emphasizes epidemiology, biostatistics, clinical and preventive medicine, medical care organization, medical sociology, and health economics and education. Fellows take classes at Columbia and participate in Cornell's Public Health seminars and teaching program for undergraduate and medical students. Fellows also assume responsibility in an ongoing research or service project. Each fellow will have an individual program designed to meet his/her specific professional goals. Fellows have used this program to supplement their training in hospital epidemiology and public health.

Fellowship in Public Health Research

http://www.med.cornell.edu/publichealth/education_and_training/residencies_and_fellowships.html. In the second fellowship year, it is possible to facilitate a 1-2 year public health research experience in the Department of Public Health. Activities include mentored research and coursework in the Weill Cornell Masters Degree Program in Clinical Investigation. Supervised research including mentors from the Division of Infectious Diseases and faculty from the Department of Public Health is a key part of the training program. The fellowship also uses the conference and review procedures for post-graduate training in the Department of Public Health and leads to a certificate recognizing advanced public health research.

Clinical Microbiology Fellowship Program

The Clinical Microbiology Laboratory offers a one-year ACGME-accredited fellowship in Medical Microbiology designed to train pathologists and infectious disease specialists for academic careers in Medical Microbiology, focusing on a combination of clinical research training and direction of laboratory services. Medical Microbiology fellows will primarily rotate through the Clinical Microbiology Laboratory of New York-Presbyterian Hospital-Weill Cornell Medical Center. In addition, fellows will spend time in the infectious disease-related serology section of the Central Laboratory and in the microbiology-related section of the Molecular Pathology Laboratory. A one-month rotation on the patient care units with members of the Infectious Disease service, followed by weekly rounds with the Infectious Disease team, are also components of the scheduled curriculum. The program provides individualized training through faculty guidance, mentored research, and didactic lectures. Trainees will gain hands-on experience in all aspects of clinical microbiology including bacteriology, mycobacteriology, mycology, parasitology, virology, antimicrobial susceptibility testing, infectious disease molecular testing, and serology through structured bench rotations. The fellows will participate in test development and evaluation as well as applied clinical research. The Medical Microbiology fellow will not only provide interfaces between Clinical Microbiology, Pathology, and Infectious Diseases, but will also aid in further education to clinicians and nursing staff on the importance of laboratory medicine in patient care, as well as the most appropriate methods for collection and transport of clinical specimens for diagnosis of infectious diseases.

Research and Training Program for International Biomedical Researchers

We offer an international research and training program in global infectious diseases/HIV-AIDS designed to increase the capability of scientists in foreign countries, and especially in developing countries, to conduct their own research. Cornell clinical and research fellows may collaborate with the international fellows on these research projects. The program focuses on training Brazilian and Haitian health professionals. The training program includes work that will lead to a M.S. or Ph.D. degree, training for 3-6 months in laboratory procedures and research techniques, and practical and applied short-term training courses. Long-standing research and training programs between the Division of Infectious Diseases at Cornell and the Federal Universities of Bahia and Rio de Janeiro, Brazil and GHESKIO Centers in Haiti provide the infrastructure and framework for the coordination of this training program with ongoing overseas research efforts.

Conferences

A variety of conferences are available to support education and training of Infectious Diseases Fellows and include Clinical Case Conference (weekly), Advanced Topics in Infectious Diseases (weekly lectures from WMC or outside speakers), Core Topics in Infectious Diseases (weekly during the summer), Fellow Journal Club (weekly), Faculty Journal Club and Research Conference (alternating weekly), Microbiology Laboratory Plate Rounds (weekly), HIV Conference (weekly alternating with journal club, lectures and discussion of ongoing clinical trials), ID Fellow Research-In-Progress talks, Intercity Infectious Disease Rounds (monthly rotating with other institutions in the New York area), Medical Grand Rounds (weekly), Department of Microbiology and Immunology Research-In-Progress talks (monthly) and others.

CURRENT CLINICAL FELLOWS (2009 – 2010)

Name	Year of Fellowship	Medical School	Internal Medicine Residency	Research Project
Dahlene Fusco, MD, PhD	4	Albert Einstein	Massachusetts General Hospital	Mucosal immunity for influenza
Elizabeth Alexander, MD	3	Weill Cornell	Mt. Sinai	Molecular epidemiology and mechanisms of resistance in <i>S. aureus</i>
Jennifer Downs, MD	3	Weill Cornell	Columbia	Female genital schistosomiasis
Meera Pahuja, MD	2	Virginia Commonwealth University	Weill Cornell	Stavudine-related peripheral neuropathy in HIV infection
Rituparna Pati, MD, MPH	2	University of Connecticut	Weill Cornell	Quality of HIV care in developing countries
Michael Satlin, MD	2	University of Virginia	Weill Cornell	Metabolic complications of HIV
Kathryn Dupnik, MD	1	University of Virginia	Columbia	TBA
Jyoti Mathad, MD	1	Albany Medical College	Maryland	TBA
Selin Somersan, MD	1	Harvard	Weill Cornell	TBA

FORMER CLINICAL FELLOWS (last 10 years)

Name	Medical School	Internal Medicine Residency	Period of Fellowship Training and Research Topic	Current Position
Kamran Khan, MD, MPH	University of Toronto	University of Minnesota	1999-2002 MPH program, immigrant health	Assistant Professor, University of Toronto
Cecilia Yoon, MD	Mt. Sinai	Mt. Sinai	1999-2001 HIV clinical trials	Assistant Professor, Weill Cornell
Gonzalo Bearman, MD, MPH	SUNY Buffalo	SUNY Buffalo	2000-2003 MPH program, nosocomial infections	Assistant Professor & Associate Hospital Epidemiologist, Virginia Commonwealth University
Kiren Mitruka, MD	UMDNJ	Yale-New Haven	2000-2002 Malaria gene expression	Assistant Professor of Medicine, U of Miami; Assistant Director, Office of Epidem. and Disease Control, Miami-Dade County Dept of
Johanna Reina, MD	Escuela Colombiana de Medicina, Colombia	University of North Carolina	2000-2002 Leishmaniasis therapy	Physician, Northern California Health Care System
David Gardiner, MD	Jefferson	Jefferson	2001-2004 HIV vaccines	Wyeth Laboratories
Kyu Rhee, MD, PhD	University of California, Irvine	Weill Cornell	2001-2005 Tuberculosis	Assistant Professor, Weill Cornell
Kristen Marks, MS, MD	Columbia	Weill Cornell	2002- 2005 HIV/HCV hepatic steatosis	Assistant Professor, Weill Cornell
Matthias Frank, MD, PhD	Free University, Berlin, Germany	University of Washington	2002-2006 Malaria antigens	Assistant Professor, Hamburg Institute for Tropical Medicine, Germany
Marina Caskey, MD	Universidade Federal de Sergipe, Brazil	St. Luke's-Roosevelt	2003-2006 HTLV-1 epidemiology	Instructor in Clinical Investigation, Rockefeller University

Macarthur Charles, MD, PhD	Albert Einstein	Weill Cornell	2003-2007 HIV drug resistance	Instructor in Medicine, Weill Cornell
Sandra Kesh, MD	Cornell	Weill Cornell	2004-2007 Antibiotic pharmacology	Clinical Practice
Laura Kirkman, MD	Albert Einstein	Yale-New Haven	2004-2008 Malaria	Instructor in Medicine, Weill Cornell
Daniel Morgan, MD	University of Rochester	University of Rochester	2004-2008 HTLV-1 & MRSA	Instructor of Epidemiology, University of Maryland
Lawrence Siegel, MD	Brown	Beth Israel-Deaconess	2005-2008 HPV infection	Instructor in Medicine, Weill Cornell
Scott Weisenberg, MD	Tufts	University of California, San Diego	2005-2008 Tuberculosis	Instructor in Medicine, Weill Cornell

ID DIVISION CURRENT RESEARCH AND TRAINING GRANTS

2009 - 2010

Selected current research and training grants of the faculty and fellows in the Division of Infectious Diseases are listed below. There are opportunities for fellows to participate in these research projects, as well as with investigators at Rockefeller University or Memorial Sloan-Kettering Institute.

1. Pathogenesis of Leishmaniasis: Host, Parasite and Vector – Tropical Medicine Research Center (TMRC). **E Carvalho**, WD Johnson. NIH P50 AI30639. 1991-2012.
2. Tropical Infectious Disease Training Grant. **E Carvalho**, WD Johnson. NIH D43 TW007127, 2004-2009.
3. Monitoring Response to ARV Therapy and Development of HIV-1 Drug Resistance. **M Charles**. 5K23 AI073190. 2008-2013.
4. Amos Medical Faculty Development Award. **M Charles**. Robert Wood Johnson Foundation. 2008-2012.
5. HIV Drug Resistance in Haiti. Mentored Patient-Oriented Research Career Development Award. **M Charles**. NIH K23 AI73190 2007-2012.
6. Clinical Trials for HIV Infection and HIV-Related Diseases. **MJ Glesby, RM Gulick, K Marks, M Vogler, TJ Wilkin**. Multiple Sources. 1999-2009.
7. NY/NJ AIDS Education and Training Center (AETC). **MJ Glesby**, RM Gulick. Health Research Services Administration (HRSA), CU H4A HA00071. 2002-2010.
8. The Women's Interagency HIV Study (WIHS / subcontract). **MJ Glesby**. NIH UO1 AI35004. 2003-2012.
9. Growth Hormone and/or Rosiglitazone for Visceral Adiposity in HIV. **MJ Glesby**. NIH R01 DK065515. 2004-2010.
10. Complications of Chronic Viral Infections. Mid-Career Investigator Award in Patient-Oriented Research. **MJ Glesby**. NIH K24 AI07884. 2008-2013.
11. Multiplexed Detection of Bioterror Agents. F Barany, **LM Golightly**. D Larone. NIH U01 AI162579. 2004-2009.
12. Multiplexed Detection of Food and Waterborne Pathogens. F Barany, **LM Golightly**, D Larone. NIH U01 AI075470. 2007-2012.
13. Cornell Clinical Trials Unit (ACTU). **RM Gulick**, MJ Glesby, K Marks, M Vogler, TJ Wilkin. NIH U01 AI69419. 2007-2013.
14. Antiretroviral Therapy. Mid-Career Investigator Award in Patient-Oriented Research. **RM Gulick**. NIH K24 AI51966. 2003-2013.
15. AIDS International Training and Research Program. **WD Johnson**. NIH D43 TW00018. 1989-2013.
16. Pathogenesis of Infectious Diseases Training. **WD Johnson**. NIH T32 AI07613. 1999-2009.
17. Caribbean HIV/AIDS Regional Training/CHART Initiative (I-TECH). **WD Johnson**. HRSA UW U69HA00047. 2004-2010.
18. Haiti Research Training: Models to Implementation (ICOHRTA). **WD Johnson**. NIH U2R TW06901. 2004-2009.
19. Framework Program for Global Health. **WD Johnson**. NIH R25 TW007736. 2006-2009.

20. Fogarty International Clinical Research Scholars: **WD Johnson**. NIH 5R24 TW0007988. 2008-2009.
21. Production of *M. tuberculosis* Proteins by Yeast and Bacillus Calmette Guerin to Enhance the Sensitivity of TB Serodiagnostic Assay. **WD Johnson**. Foundation for Innovative New Diagnostics (Bill & Melinda Gates Foundation). 2007-2009
22. Genetic Diversity in virulence Genes of Plasmodium falciparum. **L Kirkman**. 1K08 AI076635. 2008-2013.
23. Natural History of Leptospirosis. **AI Ko**. NIH RO1 AI052473. 2003-2014.
24. Emerging Infectious Diseases and Urbanization. **AI Ko**. WD Johnson. NIH D43 TW00919. 1997-2009.
25. Transmission of Drug-Resistant Streptococcus Pneumoniae in Brazil. JN Reis **AI Ko**. NIH R01 TW007303. 2005-2010.
26. Rapid Serodiagnostic Test for Leptospirosis. K Lyashchenko, **AI Ko**. NIH R43-AI072856. 2007-2009.
27. Thrombocytopenia and HIV/HCV: Risk Factors and Treatment. **K Marks**. NIH K23 AI065319. 2005-2010.
28. Tropical Medicine Research Center: Visceral Leishmaniasis in Bihar State, India. S Sundar, **HW Murray**. NIH P50 AI074321. 2007-2012
29. International Clinical Trials Unit (CTU). **JW Pape**, RM Gulick, MJ Glesby, DW Fitzgerald, WD Johnson. NIH U01 AI069421-01. 2006-2013.
30. Comprehensive International Program of Research on AIDS (CIPRA). **JW Pape**, WD Johnson, DW Fitzgerald. NIH UO1 AI010018. 2003-2009.
31. Haiti Research Training: Models to Implementation (ICOHRTA). **JW Pape**. NIH U2R TW06901. 2004-2014.
32. Strengthening and Expanding Antiretroviral Treatment in the Republic of Haiti to HIV/AIDS Infected Populations through Training, Support and Quality Assurance/Quality Control at Antiretroviral Sites as Part of the President's Emergency Plan for AIDS Relief. **JW Pape**. Centers for Disease Control and Prevention. 2005-2010.
33. Specific Target of NO-Mediated Damage in *M. tuberculosis*. **KY Rhee**. NIH K08 AI061393. 2004-2009.
34. Enzymes of Intermediary Metabolism in *Mycobacterium tuberculosis*: Anti-Mycobacterial Targets of Nitric Oxide. **KY Rhee**. Burroughs Wellcome Career Award in the Biomedical Sciences. 2005-2010.
35. Applied Research in Antimicrobial Resistance: Studies of Susceptibility Testing on Gram-negative Multidrug Resistant Organisms. **KY Rhee** (Co-PI), L Saiman (PI). NIH R01CI000537. 2007-2010.
36. AIDS Malignancy Consortium (subcontract). **TJ Wilkin**. NIH U01 CA121947. 2008-2009.

PROFILES OF CORE FACULTY

Barry D. Brause, MD Clinical Professor of Medicine and Director of Infectious Diseases at Hospital for Special Surgery. Dr. Brause was trained in infectious diseases at Cornell and he has been a member of the Infectious Diseases division since 1973. His clinical research has focused on musculoskeletal infections and particularly on infections associated with indwelling foreign materials and prostheses. Dr. Brause has taken part in major national meetings and workshops as an invited participant including the National Institute of Arthritis and Musculoskeletal Disease, the American Dental Association, Council on Dental Therapeutics and the Infectious Diseases Society of America / Interscience Conference on Antimicrobial Agents and Chemotherapy. He has authored chapters on bone and joint infections in the last four editions of Principles and Practice of Infectious Diseases and on “Osteomyelitis” in the last three editions of Cecil-Textbook of Medicine.



brauseb@hss.edu

Macarthur Charles, MD, Ph.D. Instructor in Medicine. Dr. Charles received his MD and PhD degrees from the Albert Einstein College of Medicine. He received clinical training in internal medicine and infectious diseases at the New York Presbyterian-Weill Cornell Medical Center, where he was also the recipient of the Alpha Omega Alpha Medical Honor Society Teaching Award. Dr. Charles' research interests include response to antiretroviral therapy and the development of HIV drug resistance. Currently, he is based full-time at the GHESKIO Centers in Port-au-Prince, Haiti. He is the recipient of a NIH-sponsored Mentored Patient-Oriented Research Career Development Award (K23).



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Daniel W. Fitzgerald, MD Associate Professor of Medicine. Dr. Fitzgerald trained in internal medicine and infectious diseases at the Massachusetts General Hospital. His areas of interest include HIV/AIDS prevention and therapeutic clinical trials and targeted evaluations of HIV/AIDS and TB service programs in Haiti. He is an investigator in: HIV Vaccine Trials to determine the efficacy of an adenovirus 5 recombinant HIV vaccine; a randomized study to determine the optimal time to start antiretroviral therapy in resource-poor countries; studies of drug resistance in Haiti and effects of tropical diarrhea/malnutrition on antiretroviral therapy. Other interests include improving informed consent and empirical studies to inform ethical guidelines for the conduct of clinical research in resource-poor countries. He is on the faculty committee for the Weill-Bugando Program in Mwanza, Tanzania. He is Chair of the Cornell International Education Committee, which oversees international medical student electives and the Co-Director of the Center for Global Health within the ID Division.



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Marshall J. Glesby, MD, PhD Associate Professor of Medicine and Public Health and Associate Chief, Division of Infectious Diseases. Dr. Glesby trained in internal medicine and in infectious diseases at Johns Hopkins and also received a Ph.D. in clinical investigation from the Johns Hopkins School of Hygiene and Public Health. His research interests include metabolic and cardiovascular complications of antiretroviral therapy and viral co-infections in HIV. Current projects include interventions for insulin resistance and increased visceral fat in HIV-infected patients with lipodystrophy, optimization of management of HCV/HIV co-infection, and epidemiology of HTLV-1 in Brazil. Dr. Glesby also directs the HIV/AIDS Clinical Trials Unit at Weill Cornell and serves on the Antiviral Advisory Committee of the U.S. Food and Drug Administration.



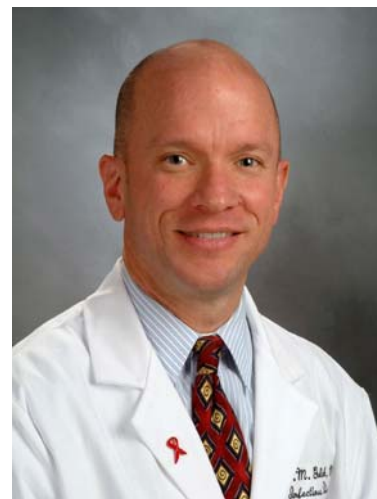
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Linnie M. Golightly, MD Associate Professor of Clinical Medicine and Microbiology and ID Fellowship Director. Dr. Golightly trained in internal medicine at Harlem Hospital and in infectious diseases and molecular parasitology at Harvard University. Dr. Golightly's research interests include: (1) The development and validation of ligase detection reaction (LDR) techniques combined with PCR, capillary electrophoresis, and Universal Arrays to simultaneously differentiate multiple microbial pathogens in a single sample. Dr. Golightly's laboratory is employing high throughput screening platforms using microbial signature profiles to detect Dengue, West Nile and other emerging pathogens. (2) Elucidation of the pathogenesis of cerebral malaria. These studies are being performed in collaboration with investigators at the Noguchi Memorial institute for Medical Research in Accra, Ghana (3) *P. falciparum* drug resistance in Haiti. These studies are being performed in collaboration with GHESKIO in Port-au-Prince, Haiti.



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Roy (Trip) M. Gulick, MD, MPH Professor of Medicine and Chief of Division of Infectious Diseases. Dr. Gulick trained in internal medicine at Columbia and in infectious diseases at Harvard, and received his MPH in clinical trial design from the Harvard School of Public Health. His research focuses on clinical trials of antiretroviral therapies for HIV infection. Dr. Gulick currently serves as Principal Investigator of the Cornell Clinical Trials Unit and Chair, Optimization of Antiretroviral Therapy Scientific Committee of the NIH-sponsored AIDS Clinical Trials Group (ACTG). He also serves as a member of the Panel for Clinical Practices for Treatment of HIV Infection, U.S. Department of Health and Human Services and a Board Member of the International AIDS Society-USA. Current projects include studies of new antiretroviral agents (e.g. HIV chemokine receptor inhibitor, vicriviroc) and evaluating strategies for both antiretroviral therapy-naïve and -experienced HIV-infected patients.



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Barry J. Hartman, MD Clinical Professor of Medicine. Dr. Hartman completed his medicine and infectious disease fellowship training at Cornell. Dr. Hartman did his basic research in the Alexander Tomasz laboratory of the Rockefeller University in New York City studying the mechanism for methicillin-resistance in the *Staphylococcus aureus*. His current focus is clinical care and education and his interests include antibiotics and antibiotic resistance, surgical infections and endocarditis. He has received several teaching awards from students and house staff. He has been the Formulary & Therapeutics Committee Chairman or Co-Chairman at the New York-Presbyterian Hospital for the past 20 years.



David C. Helfgott, MD Assistant Clinical Professor of Medicine. Received his B.A. at the University of Pennsylvania and his M.D. at the Yale University School of Medicine. Dr. Helfgott did his internship and residency at The New York Hospital and his Infectious Diseases fellowship at Cornell University Medical College. During his fellowship Dr. Helfgott was involved in the study of inflammatory cytokines, in particular IL-6, in the laboratory of Dr. Igor Tamm, and he continued this research as an Assistant Professor of Medicine at Cornell University Medical College for several years after completing his fellowship. Dr. Helfgott is an author on several peer-reviewed publications which studied interleukin-6. Since 1994, Dr. Helfgott has been involved in direct patient care and teaching as an Assistant Attending Physician at The New York-Presbyterian Hospital and an Assistant Clinical Professor of Medicine at Weill Medical College.



Warren D. Johnson, Jr., MD The Ben Kean Professor of Medicine and Director, Center for Global Health in the ID Division. He is the former Chief of the Division of International Medicine and Infectious Diseases. Dr. Johnson's career has been committed to research and training in infectious diseases, particularly in resource poor countries. His research interests have included clinical and epidemiological studies of AIDS, tuberculosis, and leishmaniasis. His research has received uninterrupted NIH and Foundation support in Brazil (1969-2012) and in Haiti (1979-2013), including a NIH Merit Award (1990). He has also established outstanding training programs in Brazil, Haiti, and Tanzania. He has chaired numerous NIH Research Committees and served on the NIAID National Advisory Council. He also served as a Director of the ABIM, Chair of the ABIM Infectious Diseases Subspecialty Board, and as a Councilor of the Infectious Diseases Society of America. Dr. Johnson recently received the honor of having the new clinical facility of the GHESKIO Institute for Infectious Diseases and Reproductive Health in Haiti named for him.



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Laura A. Kirkman, MD Instructor in Medicine. Dr. Kirkman received her M.D. from Albert Einstein College of Medicine with distinction in research. She completed her clinical training in internal medicine at Yale-New Haven Hospital and her infectious disease training at the New York-Presbyterian-Weill Cornell Medical Center followed by a postdoctoral fellowship in the laboratory of Dr. Kirk Deitsch in the Department of Microbiology and Immunology. Dr. Kirkman's current research focuses on the DNA repair mechanisms in the human malaria parasite, *Plasmodium falciparum*, and how DNA damage and repair in the parasite relates to diseases pathogenesis. Specifically examining the generation of genetic diversity in genes that encode the key proteins implicated in antigenic variation and the generation of drug resistance. Dr. Kirkman is the recipient of an NIH K08 grant.



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Albert I. Ko, MD Associate Professor of Medicine. Dr. Ko trained in internal medicine at the Brigham and Women's Hospital and in infectious diseases at the Massachusetts General Hospital. He is located full-time in the city of Salvador, Brazil where he coordinates an NIH-supported research and training program that the Division has established with the Oswaldo Cruz Foundation, Brazilian Ministry of Health. The program focuses on infectious disease problems that have emerged as a consequence of rapid urbanization and urban poverty in Brazil and other developing countries. Current research includes community-based cohort studies on the natural history of urban leptospirosis and pneumococcal disease; development of rapid diagnostic tests and recombinant sub-unit vaccines for leptospirosis; active population-based surveillance for emerging infectious diseases and the use of molecular epidemiology to study the transmission of bacterial meningitis and acute respiratory infections.



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Kristen Marks, MD, MS Assistant Professor of Medicine and Associate ID Fellowship Director. Dr. Marks received internal medicine and ID fellowship training at New York-Presbyterian Hospital, where she focused her clinical training and research on HIV and hepatitis virus infections. Her current research focuses on treatment strategies for HIV and hepatitis virus co-infections and includes an NIH-funded, investigator-initiated pilot study to assess the safety and efficacy of anti-D for the treatment of thrombocytopenia during hepatitis C treatment. She also serves as a co-investigator in the Cornell HIV/AIDS Clinical Trials Unit. She is the recipient of an NIH-sponsored Mentored Patient-Oriented Research Career Development Award (K23).



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Henry W. Murray, MD The Arthur R. Ashe Professor of Medicine. Dr. Murray is an expert in macrophage activation, immunopathogenesis of infections caused by intracellular pathogens, in particular, *Leishmania*, and the chemo- and immunochemotherapy of leishmaniasis. Dr. Murray's current NIH-supported research is focused on immunoregulation of the host response to antileishmanial chemotherapy in experimental visceral leishmaniasis (kala-azar). This work has in part formed the basis of experimental treatment trials in Indian patients at the kala-azar clinical trials unit he co-directs in Bihar State, India. Dr. Murray is Director of the Arthur Ashe Endowment for the Defeat of AIDS, Editor of the travel medicine web site, Tropimed U.S., and chairs the Department of Medicine's Quality Assurance Committee. He received the Squibb Award (1989) from the Infectious Diseases Society of America for outstanding achievement in infectious diseases.



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Jean W. Pape, MD Professor of Medicine. Dr. Pape completed his medicine and ID training at Cornell, prior to returning to his native Haiti in 1980. In 1982, he founded the Haitian Study Group on Kaposi's sarcoma and opportunistic infections (GHESKIO). He currently directs NIH-supported HIV vaccine and therapy trials in Haiti. Dr. Pape is the recipient of numerous awards including a citation from Secretary of State Colin Powell for his commitment to AIDS education and training in 2001, the French Legion d'Honneur for his contribution to "the improvement of the health of the Haitian people and that of the people of the world" in 2002, the N'Galy-Mann Lecture Award which recognizes individuals who have contributed in major ways to AIDS clinical research and/or epidemiology in 2007, the Distinguished Service Award from the Global Health Education Consortium (GHEC) in recognition of his "outstanding and dedicated leadership in expanding and enhancing the education of physicians in the field of global health" in 2007, and the "National Alive Treasure of Haiti" award by Foundation Francoise Canez Auguste in 2008. He was elected to the Institute of Medicine of the U.S. National Academies of Science in 2003.



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Robert N. Peck, MD Instructor in Medicine. Dr. Peck received his MD from Vanderbilt University, where he was Alpha Omega Alpha, as well as a Candy Robinson Scholar; he also received the Award of Excellence in Infectious Diseases. He completed a combined medicine/pediatrics residency program at Harvard/ Massachusetts General Hospital and the Children's Hospital in Boston. Dr. Peck currently supervises and teaches Weill Cornell medical students and NYPH residents and fellows rotating through Bugando University College of Health Sciences (BUCHS) and Bugando Medical Center (BMC). He also participates in the teaching and training of BUCHS medical students and interns, as well as the development of the BUCHS/BMC internal medicine and pediatrics residency programs. He is based full-time in Mwanza, Tanzania, at BUCHS and BMC.



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Kyu Y. Rhee, MD, PhD Assistant Professor of Medicine and Microbiology and Immunology. He received his M.D. and Ph.D. from the University of California, Irvine through a medical scientist training program. He then received clinical training in internal medicine and infectious diseases at the New York Presbyterian-Weill Cornell Medical Center where he also completed a postdoctoral fellowship in the laboratory of Dr. Carl Nathan (Department of Microbiology and Immunology). Dr. Rhee's current research focuses on biochemical approaches to drug target discovery against *M. tuberculosis*, the causative agent of tuberculosis, using novel mass spectrometry-based tools. In more recent work, Dr. Rhee has extended his work to translational studies of multidrug resistant gram-positive and gram-negative pathogens. Dr. Rhee is the recipient of an NIH K08 award, a Burroughs Wellcome Career Award in the Biomedical Sciences, and the first William Randolph Hearst Foundation Clinical Scholar in Microbiology and Infectious Diseases.



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Richard B. Roberts, MD Professor of Medicine (Emeritus); Adjunct Professor, Rockefeller University. Dr. Roberts has served as Chief of the Division of Infectious Disease, Vice Chairman of the Department of Medicine, and Associate Dean at the Medical College. His recent research interests include the molecular epidemiology of multidrug resistant gram-positive pathogens.



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Rosemary Soave, MD Clinical Associate Professor of Medicine and Public Health. Dr. Soave's interests are the immunopathogenesis, treatment and epidemiology of the coccidial infections, cryptosporidiosis and cyclosporiasis, and infections in solid organ and bone marrow transplant recipients. Dr. Soave studies the impact of viral infections on solid organ and bone marrow transplantation and the management of febrile neutropenia in bone marrow transplant recipients.



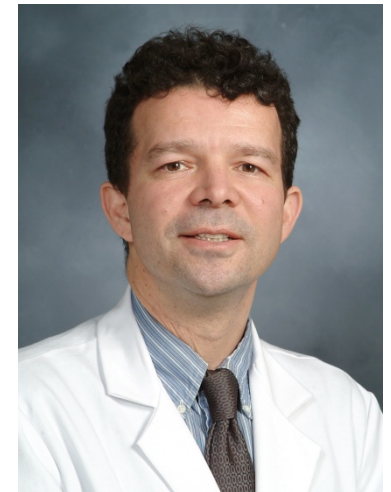
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Mary A. Vogler, MD Assistant Professor of Medicine. Dr. Vogler was recruited to Cornell from New York University School of Medicine (NYU). She trained in internal medicine at the University of Connecticut School of Medicine and in infectious diseases at NYU. Dr. Vogler serves as an HIV/AIDS primary care provider in the Center for Special Studies both for HIV-infected adults and adolescents. She also participates actively as an investigator in the NIH-funded Cornell HIV/AIDS Clinical Trials Unit (CCTU) and in the Fogarty international research programs. Her area of expertise is in the area of HIV-infected women, including pregnancy and mother-to-child transmission. She recently received the AIDS Clinical Trials Group (ACTG) Women's Health Investigator award.



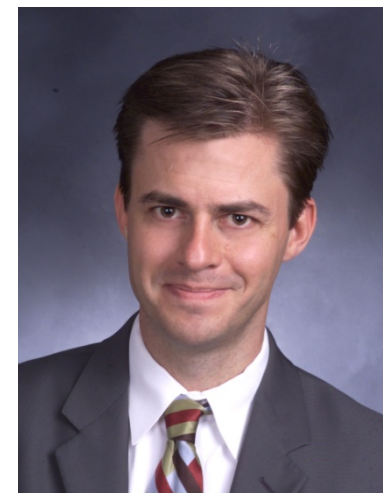
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Scott Weisenberg, MD, D.T.M.&H. Instructor in Medicine. Dr. Weisenberg received his M.D. from Tufts University School of Medicine, and completed an Internal Medicine residency at the University of California at San Diego (UCSD). He was an Assistant Professor of Medicine at UCSD from 1998-2004 where he worked as a clinician-educator. He subsequently received training at the London School of Hygiene and Tropical Medicine, and completed an Infectious Disease fellowship at Weill Cornell Medical Center. He received a KL2 Clinical Scholars Award from the Clinical Translational Science Center in 2008, and he is in the second year of the K30 Masters in Clinical Investigation program. Dr. Weisenberg's research interests include the evolution and maintenance of antimicrobial resistance mechanisms in Gram-negative and Gram-positive bacteria. He is the medical director of both the Weill Cornell Travel Medicine Clinic and the Infectious Disease fellows' clinic.



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Timothy J. Wilkin, MD, MPH Assistant Professor of Medicine. Dr. Wilkin, who completed his internal medicine residency at the University of Chicago and a fellowship in Infectious Diseases and an MPH at Columbia University, joined the Cornell HIV/AIDS Clinical Trials Unit (CCTU) in 2002. He conducts research on human papilloma virus (HPV) infection and anal squamous intraepithelial lesions (ASIL) in HIV+ and HIV-men. He received a K23 award to prospectively determine and compare the prevalence of ASIL in both HIV+ and HIV-men; to examine the association of immunologic parameters on ASIL; and to compare the prevalence and persistence of anal HPV infection between HIV+ men (both with and without a history of receptive anal intercourse) and HIV- men. He also serves as Co-Director of the CCTU, as well as leading several protocol teams in the AIDS Clinical Trial Group. He is chairing AIDS Malignancy Consortium Protocol 052, a clinical trial of the safety and immunogenicity of a quadrivalent human papillomavirus vaccine in HIV-infected men.



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Research Training Faculty

ID Fellows have the opportunity to work in laboratories or programs within the Division of Infectious Diseases, other divisions in the Department of Medicine (e.g. GI, Immunology), other Departments at WMC (Microbiology and Immunology, Pathology, Public Health), as well as Memorial Sloan-Kettering Cancer Institute, and the Rockefeller University, including the Aaron Diamond AIDS Research Center.

RESEARCH TRAINING FACULTY IN OTHER DEPARTMENTS & INSTITUTIONS

Francis Barany, PhD Weill Cornell Dept of Microbiology and Immunology	Multiplex detection of microbial pathogens by ligase chain reaction	http://www.med.cornell.edu/research/fbarany/
Ethel Cesarman, MD, PhD Weill Cornell Dept of Pathology	Molecular basis of viral oncogenesis in AIDS-related non-Hodgkin's lymphomas due to KSHV (HHV-8)	http://www.med.cornell.edu/research/ecesarman/
Andrew J. Dannenberg, MD Weill Cornell Division Gastroenterology & Hepatology	Weill Cornell Cancer Center: Translational studies of cyclooxygenase-2 (COX-2) and chronic inflammation in cancer	http://www.med.cornell.edu/research/andrewdannenberg/
Kirk W. Deitsch, PhD Weill Cornell Dept of Microbiology and Immunology	Molecular basis of var gene-mediated antigenic variation in <i>Plasmodium falciparum</i>	http://www.med.cornell.edu/research/kdeitsch/
Sabine Ehrt, PhD Weill Cornell Dept of Microbiology and Immunology	Host-pathogen interactions of <i>Mycobacterium tuberculosis</i> and the macrophage: Mycobacterial survival strategies in the phagosome	http://www.med.cornell.edu/research/sehrt/
David D. Ho, MD Rockefeller University Aaron Diamond AIDS Research Center	Basic and Clinical Development of Vaccines and Other Prevention Strategies against HIV-1	http://www.adarc.org/david_ho_424.html
Carl F. Nathan, MD Weill Cornell Dept of Microbiology and Immunology	Molecular mechanisms of innate immunity against <i>Mycobacterium tuberculosis</i>	http://www.med.cornell.edu/research/cnathan/
Charles Rice, PhD Rockefeller University	Molecular virology and immunology of Hepatitis C	http://www.rockefeller.edu/labheads/rice/rice.php
Dirk Schnappinger, PhD Weill Cornell Dept of Microbiology and Immunology	Molecular genetic studies of <i>Mycobacterium tuberculosis</i> virulence and persistence	http://www.med.cornell.edu/research/dschnappinger/
Ralph M. Steinman, MD Rockefeller University	Dendritic cell-mediated regulation of lymphocyte function in tolerance and resistance and the development of dendritic cell-based therapies and vaccines	http://www.rockefeller.edu/research/abstract.php?id=15
Andrew H. Talal MD, MPH Weill Cornell Division of Gastroenterology & Hepatology	Identification of biomarkers of histological progression and treatment outcome in Hepatitis C	http://www.weillcornell.org/ahtalal/
Thomas J. Templeton, PhD Weill Cornell Dept of Microbiology and Immunology	Host:parasite interactions of the malaria parasite, <i>Plasmodium</i>	http://www.med.cornell.edu/research/tjtempleton/
Alexander Tomasz, PhD Rockefeller University	Chemical structure, mode of assembly, and biological functions of bacterial cell walls and associated cell surface components in Gram positive bacteria	http://www.rockefeller.edu/labheads/tomasz/contact.php

BIOTERRORISM:

Multiplexed Detection of Bioterror Agents. *Barany, Golightly, Larone.* The current bioterrorism threat to our nation requires the ability to rapidly detect and distinguish bioweapon agents from normal pathogens. Existing detection systems have a limited ability to simultaneously screen in a single sample for multiple agents and their antibiotic resistance, toxin or virulence genes. We are developing ligase detection reaction (LDR) techniques combined with PCR, capillary electrophoresis, and Universal Arrays, which we have already validated in the detection of cancer gene mutations and the diagnosis of genetic diseases. The study will initially test bacterial, fungal and viral nucleic acids and isolates in the laboratories of Drs. Barany and Golightly. Blood culture isolates from patients admitted to the NYP hospital, obtained through Dr. Davise Larone, Head of clinical microbiology at the NYP hospital, will be tested to validate the clinical usefulness of the technique. Samples to test for viral pathogens (Dengue, West Nile) are obtained from the CDC, NYC Department of Health, and sites of endemic disease.

Das S, Pingle MR, Muñoz-Jordán J, Rundell MS, Rondini S, Granger K, Chang GJ, Kelly E, Spier EG, Larone D, Spitzer E, Barany F, Golightly LM. Detection and serotyping of dengue virus in serum samples by multiplex reverse transcriptase PCR-ligase detection reaction assay. *J Clin Microbiol* 2008;46:3276-84.

Rondini S, Pingle MR, Das S, Tesh R, Rundell MS, Hom J, Stramer S, Turner K, Rossmann SN, Lanciotti R, Spier EG, Muñoz-Jordán J, Larone D, Spitzer E, Barany F, Golightly LM. Development of multiplex PCR-ligase detection reaction assay for detection of West Nile virus. *J Clin Microbiol* 2008;46:2269-79.

FOOD AND WATER-BORNE PATHOGENS:

Multiplexed Detection of Food and Waterborne Pathogens. *Barany, Golightly, Larone.* The ability to rapidly detect food and waterborne pathogens is of utmost importance in preventing outbreaks associated with contamination of our nations food and water supply. Existing detection systems have a limited ability to simultaneously screen a single sample for multiple agents. To meet this need we will use the ligase detection reaction (LDR) combined with PCR, and Universal Array detection. We will transfer our assays for distinguishing blood-borne bacterial and viral pathogens onto the Cepheid GeneXpert system, as well as evaluate their performance in modular microfluidic devices. We will extend the family of microbial PCR/LDR assays to the detection of category B bacterial, viral, and protozoan food and water-borne pathogens in stool specimens. The assay will be validated using samples obtained from the NYPH/Cornell as well as collaborators in Haiti (GHESKIO) and Ghana (NMIMR).

Pingle MR, Granger K, Feinberg P, Shatsky R, Sterling B, Rundell M, Spitzer E, Larone D, Golightly L, Barany F. Multiplexed identification of blood-borne bacterial pathogens by use of a novel 16S rRNA gene PCR-ligase detection reaction-capillary electrophoresis assay. *J Clin Microbiol* 2007;45:1927-35.

HEPATITIS:

Clinical Studies of Viral Hepatitis. *Marks, Glesby.* Hepatitis C infection is the leading cause of end stage liver disease and need for liver transplantation in this country. Studies have shown that patients with HIV/HCV coinfection have an accelerated course of progression to cirrhosis and end stage liver disease compared to patients with HCV infection alone. Strategies for improving treatment outcomes are needed for this population. Current studies being conducted at Cornell focus on patients with complications of HCV treatment and refractory disease. An

NIH-funded, investigator-initiated pilot study to assess anti-D as a treatment for thrombocytopenia, in the setting of treatment of Hepatitis C infection in HIV-infected and HIV-uninfected individuals, is ongoing. CCTU investigators are leading an ACTG study examining the treatment of insulin resistance prior to HCV retreatment (ACTG 5239). In addition, CCTU is collaborating with investigators from UCSF to conduct a pilot study examining the safety and efficacy of treatment of acute HCV infection in HIV-infected patients. Completed studies include an epidemiologic investigation of risk factors for hepatic steatosis in HIV/HCV coinfection, as well as additional clinical trials conducted with the ACTG. The Center for the Study of Hepatitis C, a multidisciplinary center involving Rockefeller University, Weill Cornell Medical College, and New York Presbyterian Hospital, provides additional opportunities for translational research, access to a serum and tissue bank, and collaboration with experts in the field of virology and hepatitis treatment.

Brau N, Fox RK, Xiao P, Marks KM, Naqvi Z, Taylor LE et al. Presentation and outcome of hepatocellular carcinoma in HIV-infected patients: A U.S.-Canadian multicenter study. **J Hepatol** 2007;47:527-37.

Bussel JB, Marks KM. How effective is eltrombopag for the treatment of thrombocytopenia in patients with HCV infection? **Nat Clin Pract Gastroenterol Hepatol** 2008;5:424-5.

Marks KM, Petrovic LM, Talal AH, Murray MP, Gulick RM, Glesby MJ. Histologic findings and clinical characteristics associated with hepatic steatosis in HIV/HCV coinfecting patients. **J Infect Dis** 2005;192:1943-9.

Glesby MJ, Bassett R, Alston B, Fichtenbaum C, Jacobson EL, Owens S, Race E, Sherman K for the ACTG A5088 team. Pilot study of low dose interleukin-2, pegylated interferon-alfa2b, and ribavirin for the treatment of hepatitis C virus infection in patients with human immunodeficiency virus infection. **J Infect Dis** 2005;191:686-93.

Wan D, Marks KM, Yantiss R, Talal A. Autoimmune hepatitis in the HIV-infected patient: a therapeutic dilemma. **AIDS Patient Care and STDs** 2009 (in press).

HIV/AIDS:

Observational Studies. *Glesby, Gulick, Jacobs, Marks, Merrick, Vaamonde, Vogler, Wilkin.* The Center for Special Studies (HIV clinic) at New York-Presbyterian-Weill Cornell Center uses an electronic medical records system that is an invaluable resource for clinical research. Over 7,000 records of HIV-infected patients dating back to 1991 are available. Completed projects include case-control studies of osteonecrosis and diabetes mellitus in HIV-infected patients, a retrospective review of the safety and efficacy of antiretroviral regimens containing three protease inhibitors, temporal trends in hospital admission diagnoses, and hepatic steatosis. Ongoing studies are addressing diabetes mellitus and outcomes of HAART therapy in pregnancy. Other projects utilize data from the Women's Interagency HIV Study (WIHS, a cohort study of women with or at high risk for HIV infection) through ongoing collaboration. Fellows have the opportunity to design, conduct, and analyze studies using the databases. Selected publications are noted below.

Casau NC, Glesby MJ, Paul S, Gulick RM. Concurrent use of lopinavir/ritonavir and a third protease-inhibitor in treatment-exposed HIV-infected patients. **JAIDS** 2003;32:494-8.

Glesby MJ, Hoover DR, Tan T, et al. Herpes zoster in women with and at risk for human immunodeficiency virus infection: Data from the Women's Interagency HIV Study. **JAIDS** 2004 37:1604-09.

Raiszadeh F, Hoover DR, Lee I, Shi Q, Anastos K, Gao W, Kaplan R, Glesby MJ. Brief Report: Plasma homocysteine is not associated with HIV serostatus or antiretroviral therapy in women. **JAIDS** 2009 (in press).

Vaamonde CM, Hoover DR, Anastos K, Tan T, Shi Q, Gao W, Kovacs A, Cohen M, DeHovitz J, Glesby MJ. Factors associated with poor immunologic response to virologic suppression by highly active antiretroviral therapy in HIV-infected women. **AIDS Res Hum Retroviruses** 2006; 22:222-31.

Yoon C, Gulick RM, Hoover DR, Vaamonde CM, Glesby MJ. Case control study of diabetes mellitus in HIV-infected patients. **J AIDS** 2004;37:1464-69.



Clinical Trials of HIV/AIDS Therapies. *Gulick, Glesby, Marks, Vogler, Wilkin.* The Cornell HIV/AIDS Clinical Trials Unit (CCTU) designs and conducts clinical trials in HIV-infected individuals. The CCTU participates actively in studies sponsored by the NIH-funded AIDS Clinical Trials Group (ACTG) and the pharmaceutical industry. Current clinical investigation centers on three broad areas: (1) antiretroviral agents; (2) immune-based therapies; and (3) treatment and prevention of HIV-related complications, including co-infections and complications of antiretroviral therapy. Additional areas of investigation are pharmacokinetics of HIV drugs and HIV-infected women's health. Current specific projects include studies of the initiation of antiretroviral therapy (ACTG studies A5202 and A5257); HIV therapy for treatment-experienced patients, including new antiretroviral drugs (vicriviroc, an investigational HIV entry inhibitor in ACTG study A5211; maraviroc to boost CD4 counts in ACTG study A5256); immune-based therapy (HIV DNA therapeutic vaccine ACTG study, A5197); and prevention of HIV-related complications (HPV vaccine in ACTG A5240; herpes zoster vaccine in ACTG A5247). Treatment issues in women, specifically, women previously treated with antiretroviral therapy only for prevention of maternal to child transmission (ACTG 5227) is an area of active investigation in studies initiated by CCTU investigators. In addition, management of visceral adiposity in HIV-infected patients is the focus of an investigator-initiated, NIH-funded project. There are opportunities for fellows to participate in all aspects of HIV/AIDS clinical trials. Fellows may spend their fellowship research year(s) conducting HIV/AIDS clinical research as part of the clinical trials unit under the mentorship of one of the HIV clinical trials investigators, and participate in the K30 program (Masters Degree Program in Clinical Investigation).

Glesby MJ, Aberg JA, Kendall MA, et al for the Adult AIDS Clinical Trials Group A5159 Protocol Team. Pharmacokinetic interactions between indinavir plus zalcitabine and calcium channel blockers. **Clin Pharmacol Ther** 2005;78:143-53.

Gulick RM, Ribaud HJ, Shikuma CM, et al. Three- vs. four-drug antiretroviral regimen for the initial treatment of HIV-1 infection: a randomized controlled trial. **JAMA** 2006;296:769-781.

Gulick RM, Ribaldo HJ, Shikuma CM, et al. Triple nucleoside analogue vs. efavirenz-containing regimens for the initial treatment of HIV-1 infection: AIDS Clinical Trials Group (ACTG) Study A5095. **N Engl J Med** 2004;350:1850-61.

Gulick RM, Su Z, Flexner C, et al. Phase II study of the safety and efficacy of vicriviroc, a CCR5 inhibitor, in HIV-1-infected, treatment-experienced patients: ACTG 5211. **J Infect Dis** 2007;196:304-312.

Gulick RM, Lalezari J, Goodrich J, et al. Maraviroc for previously treated patients with R5 HIV-1 infection. **N Engl J Med** 2008;359:1429-41.

Shikuma CM, Yang Y, Glesby MJ, et al. Metabolic effects of protease inhibitor-sparing antiretroviral regimens given as initial treatment of HIV-1 Infection (AIDS Clinical Trials Group Study A5095). **JAIDS** 2007;44:540-50.

Swindells S, DiRienzo G, Wilkin TJ, et al. Regimen Simplification to Atazanavir/Ritonavir Alone as Maintenance Antiretroviral Therapy after Sustained Virologic Suppression. **JAMA** 2006; 296:806-814

Vogler MA. Pregnancy in a Perinatally Infected Woman: Preventing Second-Generation Mother-to-Child Transmission of HIV. **AIDS Read** 2007;17:536-40

Vogler MA, Teppler H, Gelman R, et al. Daily low-dose subcutaneous interleukin-2 added to single- or dual-nucleoside therapy in HIV Infection does not protect against CD4+ T-cell decline or improve other indices of immune function: Results of a randomized controlled clinical trial (ACTG 248). **JAIDS** 2004;36:576-587.

Wilkin TJ, Su Z, Kuritzkes DR, et al. HIV type 1 chemokine coreceptor use among antiretroviral-experienced patients screened for a clinical trial of a CCR5 inhibitor: AIDS Clinical Trial Group A5211. **Clin Infect Dis** 2007; 44:591-5.

Wilkin TJ, McKinnon JE, Dirienzo AG, et al. Regimen Simplification to Atazanavir-Ritonavir Alone as Maintenance Antiretroviral Therapy: Final 48-Week Clinical and Virologic Outcomes. **J Infect Dis** 2009 Feb 1. [Epub ahead of print].

HUMAN PAPILLOMAVIRUS (HPV):

Anal Dysplasia and HPV in HIV+ and HIV- Men. *Wilkin.* Anal carcinoma is increased among HIV+ and HIV- men who have sex with men. Similar to the cervix, premalignant lesions of the anus (squamous intraepithelial lesions or SIL) are readily detectable by screening cytology and have high-risk types of human papillomavirus as the most important cofactor. Previous studies have demonstrated a high rate of anal SIL in HIV+ and HIV- men, but were done prior to the routine use of highly active antiretroviral therapy and were done in a relatively homogenous, white population. Building on Dr. Wilkin's previous work at Columbia University, this study is a prospective cohort study, examining the factors associated with persistence of high-risk HPV in the anal canal. The cohort is comprised of a diverse population of HIV+ and HIV- men, HIV+ men on and off of antiretroviral therapy, and HIV+ men with and without a history of receptive anal intercourse.

Wilkin TJ, Palmer S, Brudney KF, Chiasson MA, Wright TC. Anal intraepithelial neoplasia in heterosexual and homosexual HIV-positive men with access to antiretroviral therapy. **J Infect Dis** 2004;190:1685-91.

LEISHMANIA:

Visceral Leishmaniasis: Immunoregulation of Host Response to Antileishmanial Chemotherapy and Immunochemotherapy. *Murray.* Various host immunologic mechanisms, largely T [Th1] cell-dependent, regulate the in vivo capacity to respond to antileishmanial chemotherapy. Using pentavalent antimony and amphotericin B as two distinct pharmacologic probes in *L. donovani*-infected mice, this project is examining the host mechanisms that determine or can enhance initial in vivo host responsiveness to chemotherapy and/or regulate subsequent prevention of posttreatment relapse. The work is focused on the interaction of antileishmanial chemotherapy with amplified cytokine-induced macrophage activation, chemokine-induced granuloma assembly, CD4 and CD8 cell responses, activating and deactivating mechanisms (cytokines, receptors, intracellular signaling) and immunologic effects induced by chemotherapy itself. The goal of the project is to employ immunochemotherapy to improve treatment-induced outcome in visceral leishmaniasis, both the initial host response to chemotherapy and the long-term prevention of relapse in this intracellular protozoal infection.

Murray HW. Accelerated control of visceral *Leishmania donovani* infection in IL-6^{-/-} mice. **Infect Immun** 2008;76:4088.

Murray HW, Xiang Z, Ma X. Responses to *Leishmania donovani* in mice deficient in both phagocyte oxidase and inducible nitric oxide synthase. **Am J Trop Med Hyg** 2006;74:1013.

Murray HW, Tsai CW, Liu J, Ma X. Responses to *Leishmania donovani* in mice deficient in IL-12, IL-12/IL-23 or IL-18. **Infect Immun** 2006;74:4370.

Murray HW, Tsai CW, Liu J, Ma X. Visceral *Leishmania donovani* infection in IL13^{-/-} mice. **Infect Immun** 2006;74:2487.

Murray HW. Prevention of relapse after chemotherapy in a chronic intracellular infection: mechanisms in experimental visceral leishmaniasis. **J Immunol** 2005;174:4916.

Visceral Leishmaniasis in India: The Indo-Cornell Kala-Azar Medical Research and Treatment Center. *Murray.* In 1994, we established the Kala-Azar Medical Research Center (KAMRC) in rural India, in Bihar State (the epicenter of India's visceral leishmaniasis epidemic), to test new treatments and develop new diagnostic and therapeutic approaches. Some of these new clinical approaches were the direct result of experimental work carried out in parallel in *Leishmania*-infected animals in our Cornell laboratory in New York City. Visceral leishmaniasis (kala-azar) is a worldwide parasitic infection that involves the liver, spleen and bone marrow in children and adults. One-half of the world's 500,000 new cases occur in India. The treatment trials work at KAMRC has been remarkably successful, and we are the world's leading treatment unit for this infection. More than 30 separate clinical trials have now been carried out in over 4,000 children and adults. For injectible treatments, we have defined the usefulness of combination immunochemotherapy, short-course treatment, cost-effective treatment and single-dose therapy (28 days had been the usual prior treatment duration). Even more important, we identified and tested miltefosine, the first effective oral therapy for this disease, representing a major breakthrough in treatment in kala-azar. Most recently, we have begun testing short-course combination chemotherapy, using a single dose of a parenteral agent followed by 7 days of oral therapy. Separate results from a series of other trials have also demonstrated the sensitivity, specificity and clinical usefulness of rapid non-invasive diagnosis of kala-azar using fingerstick blood and the K39 antibody strip test. This reliable diagnostic method spares patients with kala-azar splenic or bone marrow aspiration.

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MALARIA:

Endothelial Progenitor Cells and Malaria Pathogenesis. *Golightly.* Despite its virulence, the pathophysiologic basis of *P. falciparum* disease and cerebral malaria are poorly understood. Sequestration of infected red blood cells (iRBCs) in the microvasculature is a major pathologic finding in *P. falciparum* infections. The repair of microvasculature damaged by infection may occur either by the proliferation or migration of local endothelial cells, or the recruitment of bone marrow-derived circulating endothelial progenitor cells (EPCs). We hypothesize that *P. falciparum* infection results in an imbalance between microvascular damage and repair. Cerebral malaria occurs when circulating EPCs are diminished and damaged endothelial cells cannot be replaced. To test this hypothesis, EPC levels and markers of bone marrow activation in *P. falciparum*-infected patients with different degrees of disease severity are being compared with normal uninfected controls. These studies are being performed in collaboration with the Noguchi Memorial institute for Medical Research in Accra, Ghana.

Cann H, Brown SV, Oguariri RM, Golightly LM. 3' UTR signals necessary for expression of the *Plasmodium gallinaceum* ookinete protein, Pgs28, share similarities with those of yeast and plants. **Mol Biochem Parasitol** 2004;137:239-45.

Gyan B, Quarm Goka B, Adjei GO, Tetteh JKA, Kusi KA, Aikins A, Dodoo D, Lesser ML, Sison CP, Das S, Howard ME, Milbank E, Fischer K, Rafii S, Jin D, Golightly LM. Cerebral malaria is associated with low levels of circulating endothelial progenitor cells in African children. **Am J Trop Med Hyg** 2009 (in press).

Oguariri RM, Dunn JM, Golightly LM. 3' gene regulatory elements required for expression of the *Plasmodium falciparum* developmental protein, Pfs25. **Mol Biochem Parasitol** 2006;146:163-172.

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Genetic diversity in virulence genes of *Plasmodium falciparum*: the study of DNA repair mechanisms in the parasite and how they relate to virulence. Kirkman.

Malaria is a vector borne disease endemic to most tropical and sub tropical regions of the world. Though the recent reports have shown a decline in deaths attributable to malaria the burden of disease remains high with 247 million cases and approximately 1 million deaths reported per year. The continued malaria problem is due in part to the development of drug resistance and the ability of the parasite to outwit the human immune system and establish a persistent infection. Genetic variation, which is determined by the parasite's ability to generate and incorporate DNA mutations, is key to both processes and therefore a better understanding of DNA recombination and repair pathways in the parasite will have important implications for both drug development and vaccine design. We aim to study malaria DNA recombination and repair in the context of disease pathogenesis focusing on antigenic variation and the development of drug resistance. **Antigenic Variation:** After invading a red blood cell the malaria parasite modifies its host cell in different ways including inserting parasite derived proteins into the surface of the parasitized red blood cell. The parasite proteins allow for the infected red cell to adhere to the patients blood vessels, a process termed cytoadherence and is one of the key pathogenic and virulence factors of *P. falciparum* infections. A surface protein termed *Plasmodium falciparum* erythrocyte membrane protein 1 (PfEMP1) was identified as the protein responsible for cytoadherence. This protein is encoded by the large multi-copy gene family termed *var*. There is great diversity within this gene family and the mechanisms creating this diversity are a focus of our work. To better understand the generation of genetic diversity within this multicopy gene families we are attempting to manipulate the genome to determine how the parasite repairs damaged DNA. In addition, we are following *var* gene changes in a circulating parasite population. This clinical work is through a collaboration with the malaria group at GHESKIO and the Golightly lab. **Drug Resistance:** We are studying the mechanisms by which a parasite becomes resistant to antimalarials by focusing on the ways in which the parasites acquire mutations in DNA. Using genetically modified parasites we are studying the ability of the parasite to generate point mutations and gene duplications that have been associated with drug resistance in the field.

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TRANSPLANTATION:

Transplant Infectious Diseases. Soave. We work with both the solid organ transplant (renal and pancreas transplants) and the bone marrow transplantation teams to provide infectious diseases consultations and to track infection patterns. We also carry out studies aimed at identifying the emergence of new infections, optimizing diagnostic capabilities, and maximizing preemptive and prophylactic regimens to prevent infections. The impact of CMV and other herpes viruses, as well as BKV, on the outcome of both solid organ and bone marrow transplant recipients is being studied. This project is aimed at identifying risk factors for viral activation such that the infections can be predicted and thus pre-empted. Although much progress has been made in successful prevention of CMV infection, very little is known about the risk factors

for and the prevention of HHV-6, 7 and 8 and EBV in solid organ and bone marrow transplant recipients. The lack of simple diagnostic methods for the detection of these viruses has contributed to our inability to differentiate viral carriage from actual disease. We are also establishing a consortium of infectious diseases physicians who have expertise in transplantation. The purpose of this consortium is to facilitate the exchange of information and new findings, and to provide a framework for pooling data and collaborating in clinical investigations.

TUBERCULOSIS:

Biochemical Approaches to Drug Target Identification: Critical Targets of NO-Mediated Damage in *Mycobacterium tuberculosis* (Mtb). Rhee. Nitric oxide (NO) is a natural product of the immune system that, in a test tube, can kill *Mtb* as well as, or better than, most antibiotics currently used to treat tuberculosis (TB). In humans however, this killing is incomplete and may, in part, be explained by *Mtb*'s ability to detoxify NO. Based on this knowledge, we believe that the antimycobacterial activity of NO against *Mtb* can be used as a blueprint to new potential TB drug targets. That is, if we could identify critical targets of NO-mediated damage in *Mtb*, we might be able to design drugs to inhibit these same targets, mimic NO's antimicrobial effects, and resist *Mtb*'s defenses. Chemical inhibitors of these same targets should be no less effective than NO, more effective than NO by avoiding *Mtb*'s NO-detoxifying machinery and effective in immuno-suppressed individuals who produce inadequate amounts of NO. Using proteomically-based techniques, we have identified 31 such potential targets. All are enzymes that mostly serve intermediary metabolism and/or anti-oxidant defense. Surprisingly, many of these proteins overlap with factors or processes known to be important for the pathogenesis of tuberculosis. One such protein was recently identified as the definitive target of the first new potential TB drug discovered in several decades. We are now pursuing these studies with the use of novel mass spectrometry-based tools that enable comprehensive metabolite profiling of *Mtb*. Overall, it is hoped that the results of this work will lead to the identification of new TB drug targets and the validation of *Mtb* metabolic enzymes as a sensible, but previously underconsidered, class of potential drug targets.

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INTERNATIONAL PROGRAMS

BRAZIL:

The collaboration between Cornell University and the Federal University of Bahia started in 1964 and is still growing after four decades, with new partners in Natal, Fortaleza, Rio and the Oswaldo Cruz Foundation, the Cornell-Bahia program may be the longest collaboration of its type in the world today. To date, over 20 Cornell faculty members and ~120 students and fellows have participated in the program, and over 250 peer reviewed journal publications have emerged from the research. The program has been funded by the Commonwealth Fund and the Rockefeller Foundation, and since 1979, by the NIH. The current NIH funding supports our Tropical Medicine Research Center and a research and training program in infectious disease in urban slum health problems in Salvador, Brazil.



Leishmaniasis and HTLV-I. *Carvalho, Johnson, Glesby, Ko.* This is a multi-disciplinary research program with investigators from Brazil and the United States. We seek to define the pathogenesis of these diseases and to develop intervention measures. Research is conducted at field study sites in the state of Bahia, Brazil, the University of Bahia, and the Division of International Medicine and Infectious Diseases at Cornell. We are working to identify host and parasite factors that determine the outcome of leishmania infection. Based on the immunological studies previously performed, clinical trials have been performed using immunomodulatory agents combined with antimony therapy in cutaneous and mucosal leishmaniasis. Ongoing studies are also investigating the spectrum of subclinical and clinical disease in HTLV-I infection in relation to cytokine profiles.

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Morgan DJ, Guimaraes LH, Machado PRL, D'Oliveira Jr A, Almeida RP, Lago EL, Faria DR, Tafuri WL, Dutra WO, Carvalho EM. Cutaneous leishmaniasis during pregnancy: Exuberant lesions and potential fetal complications. **Clin Infect Dis** 2007;45:478-482.

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Porto AF, Santos SB, Muniz AL, Basilio V, Rodrigues W Jr, Neva FA, Dutra WO, Gollob KJ, Jacobson S, Carvalho EM. Helminthic infection down-regulates type 1 immune responses in human T-cell lymphotropic virus type 1 (HTLV-1) carriers and is more

prevalent in HTLV-1 carriers than in patients with HTLV-1-associated myelopathy/tropical spastic paraparesis. **J Infect Dis** 2005;191:612-8.

Emerging Infectious Diseases and Urban Poverty: The Division established a research and training program with the Oswaldo Cruz Foundation (Fiocruz), Brazilian Ministry of Health in 1996 to address infectious disease problems that have emerged due to rapid urbanization and urban poverty. At present, one billion of the world's population resides in slum settlements. In Brazil, rapid urbanization and migration of the rural poor to the cities has led to a more than 350% growth in the slum (favelas) population in the last 40 years and has created a new pattern of infectious diseases. The Cornell-Fiocruz program is conducting research on urban health problems which include rat-borne epidemic leptospirosis, dengue, bacterial meningitis and acute respiratory infections.

Epidemiology of Bacterial Meningitis and Pneumococcal Disease. Ko, Riley. Acute respiratory infections and bacterial meningitis have become the major infectious disease cause of mortality in increasingly urbanized developing countries such as Brazil. The Division established population-based surveillance for meningitis in the city of Salvador in 1996 and demonstrated penicillin resistance in 15% of the isolates from pneumococcal meningitis cases. Molecular typing analyses found that the emergence of penicillin-resistant pneumococcal meningitis was due to the introduction of a single serotype 14 clone. On-going studies focus on evaluating the current interventions, such as the Hib conjugate vaccine, and identifying new approaches for prevention against penicillin-resistant pneumococcal disease. A longitudinal study is measuring the disease burden of acute respiratory infections in a cohort of children from a poor urban slum and identifying factors associated with the acquisition of pneumococcal disease. The overall aim will be to evaluate the use of a conjugate vaccine and control of inappropriate antibiotic use as interventions in preventing invasive disease due to penicillin-resistant *S. pneumoniae*.

Cordeiro SM, Neves AB, Ribeiro CT, Petersen ML, Gouveia EL, Ribeiro GS, LôboTS, Reis JN, Salgado KM, Reis MG, Ko AI. Hospital-based surveillance of meningococcal meningitis in Salvador, Brazil. **Trans R Soc Trop Med Hyg** 2007;101:1147-53.

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Santos MS, de Sousa Ribeiro G, Oliveira TQ, Santos RC, Gouveia E, Salgado K, Takahashi D, Fontes C, Campos LC, Reis MG, Ko AI, Reis JN. Burden of group A streptococcal meningitis in Salvador, Brazil: report of 11 years of population-based surveillance. **Int J Infect Dis** 2008 Nov 17. [Epub ahead of print]

Urban Epidemic Leptospirosis. *Ko, Johnson.* Leptospirosis, a spirochetal disease transmitted by rats, has emerged to cause large epidemics in cities throughout Latin America as a consequence of rapid urbanization and worsening social inequality. Outbreaks occur each year in poor urban slum communities associated with case fatality rates greater than 15%, due to severe clinical forms such as Weil's disease and pulmonary haemorrhage syndrome. In collaboration with the Brazilian Ministry of Health, the Division established active population-based surveillance in the city of Salvador and identified more than 2,500 hospitalized cases during annual rainfall-associated epidemics since 1996. These investigations have led to national initiatives to sequence the genome of *Leptospira interrogans* and apply high-throughput strategies towards developing vaccines. Current research focuses on: 1) understanding the natural history of leptospirosis and identifying community-based intervention strategies in a longitudinal study of 16,000 residents from a poor urban slum community; 2) developing rapid diagnostic tests for point-of-care use; 3) identifying candidates for a sub-unit vaccine for leptospirosis, and 4) characterizing determinants of leptospiral pathogenesis.

Gouveia EL, Metcalfe J, de Carvalho AL, Aires TS, Villasboas-Bisneto JC, Queiroz A, Santos AC, Salgado K, Reis MG, Ko AI. Leptospirosis-associated severe pulmonary hemorrhagic syndrome, Salvador, Brazil. **Emerg Infect Dis** 2008;14:505-8.

McBride AJ, Santos BL, Queiroz A, Santos AC, Hartskeerl RA, Reis MG, Ko AI. Evaluation of four whole-cell *Leptospira*-based serological tests for diagnosis of urban leptospirosis. **Clin Vaccine Immunol** 2007;14:1245-8.

Reis RB, Ribeiro GS, Felzemburgh RD, Santana FS, Mohr S, Melendez AX, Queiroz A, Santos AC, Ravines RR, Tassinari WS, Carvalho MS, Reis MG, Ko AI. Impact of environment and social gradient on leptospira infection in urban slums. **PLoS Negl Trop Dis** 2008;2:e228.

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Spichler A, Ko AI, Silva EF, De Brito T, Silva AM, Athanzio D, Silva C, Seguro A. Reversal of renal tubule transporter downregulation during severe leptospirosis with antimicrobial therapy. **Am J Trop Med Hyg** 2007;77:1111-9.

HAITI:

The Cornell program in Haiti began in 1980 with the establishment of a unit for the study and treatment of infantile diarrhea at the State University Hospital and Medical School. The Cornell team began its AIDS research in 1982 and was instrumental in the formation of Groupe Haitien d'Etude du Sarcome de Kaposi et des Infections Opportunistes (GHESKIO). Since 1983, Cornell and GHESKIO have had uninterrupted NIH support resulting in over 65 publications, including the first detailed description of AIDS in a developing country (NEJM, 1983). In addition to the established AIDS program, Cornell-GHESKIO provides STD and tuberculosis screening and treatment, as well as family planning, health



education, and counseling programs to ~ 28,000 persons annually. Cornell-GHESKIO also conducts NIH-sponsored HIV vaccine and ART clinical trials.

Research at GHESKIO: HIV/AIDS, STDs, and Tuberculosis

Through clinical and operational research, GHESKIO seeks to define treatment and prevention models for HIV/AIDS and related diseases that are appropriate and effective for Haiti. The main focus of the research is HIV, sexually transmitted infections, and tuberculosis. The GHESKIO research program has evolved from early observational studies to large clinical trials and its designation as an international research center of excellence. In 1983, GHESKIO received its initial funding from the National Institutes of Health to define the epidemiology, natural history, risk factors, and associated co-infections of HIV/AIDS. Since then, GHESKIO's consistent research productivity has been recognized by uninterrupted support from the National Institutes of Health, a MERIT award in 1990, and twenty new or competitive renewal grants. GHESKIO also conducts research with support from the World Health Organization and the French Government's National Agency for AIDS Research.

HIV/AIDS

Ongoing research projects include a **randomized controlled clinical trial of early vs. late antiretroviral therapy for AIDS patients (NIH-sponsored CIPRA study; 2003 – 2009)**, the research is focused on finding the optimal time to start antiretroviral therapy in patients with CD4 counts between 200 and 350 cells/ml. GHESKIO is a member of an international collaboration of scientists and educators searching for an effective and safe HIV vaccine (NIH-sponsored **HIV Vaccine Trials Network; 2001 – 2013**). GHESKIO Director Dr. Jean Pape is the Principal Investigator of the HIV Vaccine Trials Network in Haiti and GHESKIO investigators conduct clinical trials of promising new HIV vaccine candidates. GHESKIO also is a member of an international group of scientists dedicated to developing treatment strategies for HIV and related disorders (NIH-sponsored **AIDS Clinical Trials Group; 2002 – 2013**). GHESKIO conducts clinical trials to evaluate the efficacy of antiretroviral treatment for HIV infected individuals in resource-limited countries. GHESKIO investigators conducted the largest study of treatment outcomes for AIDS patients in a developing country, following 1,000 AIDS patients receiving antiretroviral therapy. Research continues to evaluate the efficacy and feasibility of other AIDS prevention and treatment programs. GHESKIO investigators are evaluating the cost-effectiveness of HIV prevention and care services to maximize efficiency and demonstrate the feasibility of treatment programs in developing countries.

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SEXUALLY TRANSMITTED DISEASES

Evaluation of Rapid Syphilis Diagnostics for the Elimination of Congenital Syphilis in Haiti (2002 – 2010); the goal of this project is to improve syphilis screening throughout the country to reduce deaths due to congenital syphilis. Support is from the United Nations Development Program, the World Bank, and the World Health Organization's Special Program for Research and Training in Tropical Disease.

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Research Training of U.S. Fellows and Haitian Collaborators

There is also an extensive training program for Haitian biomedical personnel in country and at Cornell and Vanderbilt Universities. Currently, over 40 GHESKIO staff are receiving NIH-funded training at Gheskio, Cornell, and Vanderbilt to facilitate HIV research and care in Haiti. In addition, 10 "Centers of Excellence for HIV/AIDS Prevention and Care" have been established with training at GHESKIO—the goal is 25,000 AIDS patients on therapy in 2008. GHESKIO has also been designated by UNAID, WHO, USAID as an "International Caribbean AIDS Training Center."

TANZANIA:

In 2006, a formal affiliation was established between WCMC and the Bugando University College of Health Sciences (BUCHS) and Bugando Medical Center in (BMC) in Mwanza, Tanzania. BMC is an 850-bed tertiary care center serving a population of ~12 million Tanzanians. BUCHS was founded in 2003 and is currently in the process of scaling up to a capacity of 60 medical students per class/year. Since 2005, the philanthropic TOUCH foundation has supported the BUCHS and the BMC. The TOUCH foundation has provided Weill Cornell with a matching grant for a pilot program addressing the educational needs of BUCHS/BMC.

The common goal of the TOUCH foundation and WCMC is to make BUCHS/BMC the best medical school and teaching hospital in East Africa. The goal of the Weill Cornell collaboration is to aid in the development of the BUCHS/BMC infrastructure and training programs by the exchange of faculty, fellows, residents and students. Long-term goals are to create a platform for self-sustaining research programs and clinical knowledge transfer as in our Haiti and Brazil programs. During the first year of the program, WCMC will rotate 50 senior teaching residents and fellows in medicine, pediatrics, and obstetrics and gynecology to Tanzania. Two WCMC faculty members have been recruited and are based in Mwanza to serve as mentors, for both the Tanzanian and WCMC medical students and physicians at BUCHS/BMC. Plans for the involvement of WCMC pre-clinical faculty and graduate student tutors at BUCHS are being implemented.