Mentor/Research Opportunities
Division of Infectious Diseases
Infectious Diseases Fellowship Program

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Elizabeth Connick, MD

Chief, Division of Infectious Diseases
Professor, Medicine
Professor, Immunobiology
Professor, BIO5 Institute
Program Director, Infectious Diseases Fellowship

University of Arizona College of Medicine

My research is focused on HIV infection and ranges from basic laboratory studies of HIV immunopathogenesis to clinical trials. My areas of research interest include pathogenesis of HIV in secondary lymphoid tissues, cure studies, cardiovascular disease, sleep, and HIV infection in women.

Patterson F, Connick E, Grandner M. HIV Status and Sleep Disturbance in College Students and Relationship with Smoking. Sleep Health 2019; 5:395-400. PMCID: PMC6876688.


Ollerton M, Folkvord JM, La Mantia A, Parry DA, Meditz AL, McCarter MD, D’Aquila RT, Connick E; Follicular regulatory T cells eliminate HIV-1-infected follicular helper T cells in an IL-2 concentration dependent manner. Frontiers in Immunology. 2022; 13:878273. doi: 10.3389/fimmu.2022.878273. PMCID PMC9676968

Dr. Al-Obaidi’s research interest focuses on infections in the immunocompromised population, especially within the solid organ and bone marrow transplantation populations. He is currently working on multiple projects studying invasive fungal infections in transplant patients. His research focuses on treatment outcomes and diagnostic test performance.

His work will help better understand the risk factors and ways to prevent infectious complications in transplant patients. Outside the field of transplant infectious diseases, Dr. Al-Obaidi is interested in studying COVID-19 and fungal infections, including Candidiasis, invasive mold infection, and antifungal resistance. Dr. Al-Obaidi is also involved in multiple clinical trials studying investigational drugs against Cytomegalovirus and invasive candidiasis.


Danielle deMontigny Avila, MD, MS

University of Arizona – Tucson

Assistant Professor of Clinical Medicine, Clinical Track
Principal Investigator, Petersen HIV Clinics at University of Arizona
Principal Investigator, Pacific AIDS Education Training Center-Arizona (PAETC)
Lead Physician, Multidisciplinary Endocarditis Team at BUMC

My research interests within infectious disease span a wide range but are focused on HIV care and the management of infective endocarditis. As primarily clinical faculty, many of my projects involve quality improvement measures designed to improve local patient care.

As both a practicing physician and a research scientist, Dr. Donovan has long cultivated a particular interest in medical mycology. Her research focuses on the identification of virulence factors and the interaction of several fungi with the human host. She conducted studies in Coccidioides with goals to help in the earlier diagnosis of Valley fever to improve patient outcomes, lower costs and heighten antibiotic stewardship. Her goal is to identify and characterize regulatory mechanisms at a post-transcriptional level that have a crucial role in the development of Valley fever in humans.


My research interests are HIV prevention and HIV comorbidities including cancer and cardiovascular disease. My work has resulted in over 30 peer-reviewed publications, multiple book chapters, and abstracts at major conferences. I just completed my work as an investigator in a sponsored study entitled “Evaluating the Use of Pitavastatin to Reduce the Risk of Cardiovascular Disease in HIV-Infected Adults (REPRIEVE)”. I also just submitted a manuscript entitled “Update on Pre-exposure prophylaxis awareness and attitudes among adults attending public health clinics in southern Arizona”. An ID fellow was the lead investigator on this study. I am currently involved in a study about screening men who have sex with men for sexually transmitted diseases in which three ID fellows are participating. I am the principal investigator at the University of Arizona/Banner on a phase 4 study using a test-negative design to evaluate the effectiveness of a 20-valent pneumococcal conjugate vaccine against vaccine-type radiographically confirmed community acquired pneumonia in adults ≥ 65 years of age.


John N. Galgiani, MD, has conducted several diverse programs to better understand coccidioidomycosis (San Joaquin Valley fever) and its epidemiology at the University of Arizona since 1978. These include studies of the humoral and cellular immunologic responses to infection, discoveries of preventative vaccines, clinical trials of novel antifungal drugs, standardization of diagnostic testing, and analysis of human genetic differences that account for resistance and susceptibility to progressive disease. Dr. Galgiani is the current author of the coccidioidomycosis chapters in the textbook, Principles and Practice of Infectious Diseases, and the lead author for the Infectious Diseases Society of America’s coccidioidomycosis practice guidelines. He has received competitively awarded federal research funding for most of his career and is funded currently by the NIH. In 2022, Dr. Galgiani received the University of Arizona’s Distinguished Center Director Award and in 2023 the Arizona Bioindustry Associations’s Pioneer Award for Lifetime Achievement.


Dr. Hayes research and projects primarily focus on optimizing antimicrobial usage and limiting unnecessary diagnostic testing. He is also actively involved in the Mycoses Study Group Education and Research Consortium with particular areas of interest in antifungal stewardship, endemic mycoses, and candidiasis. He has participated in MSG-sponsored clinical trials including the recently completed MSG-15 trial: Suba-itraconazole versus conventional itraconazole in the treatment of endemic mycoses: a multi-center, open-label, randomized comparative trial. He represents Banner University Medical Center/University of Arizona College of Medicine as a principal investigator on the Society for Healthcare Epidemiology of America (SHEA) Research Network. This is an international consortium of greater than 100 hospitals collaborating on multi-center research projects to advance the science of antimicrobial stewardship and healthcare epidemiology. He has become actively involved in diagnostic stewardship initiatives including collaboration on a SHEA diagnostic stewardship webinar series and development of local guidance to implement a diagnostic stewardship program at Banner University Medical Center.


My areas of interest in Infectious Disease include HIV care, infectious of the immunocompromised host, global health, and tropical diseases. I am also passionate about medical education and how technology can be used to enhance patient care and medical training.

Hinestroza M. Can A. Sickle Cell Crisis Or Thrombotic Thrombocytopenic Purpura: A Diagnostic Dilemma.


Hinestroza M. Moinul S. Muehlchlegel S. Osgood M. Wessolosky M. Human Herpes Virus 6 causing non-communicating Hydrocephalus.


As a physician and a research scientist for over 40 years, Stephen Klotz, MD has a wide range of diverse academic interests. He has received research/project funding from multiple entities including the NIH, Veteran Affairs, Department of Defense, Health Resources and Services Administration, Arizona Department of Health Services and more. Areas of focus include Candida albicans, host serum amyloid P component (SAP), HIV-Related Frailty, HIV-mediated immune cell aging and kissing bugs (triatome bites, bite-associated anaphylaxis, kissing bug ecology in the Southwest United States and the potential of vector-borne transmission of the parasite that causes Chagas Disease, Trypanosoma cruzi.


Saman Nematollahi, MD, MEHP

University of Arizona – Tucson

Assistant Professor, Medicine (Clinical Scholar Track)
Associate Program Director, Infectious Diseases Fellowship
Assistant Director, Internal Medicine Clerkship,
Department of Medicine

Saman Nematollahi's research focus includes both medical education and fungal infections. Specifically, within education and diagnostic reasoning, he oversees projects related to assessment, innovation, teaching, and finding ways to democratize diagnostic reasoning. He also has interests in curriculum design and studying the impact of social media education. His clinical research interest includes fungal infections such as Aspergillus and non-Aspergillus hyaline molds, Pneumocystis jiroveci pneumonia, and cryptococcosis.


My infectious disease interests are in quality improvement in infectious diseases as well as diagnostic and antimicrobial stewardship. The OPAT program provides a means to synergize these interests in improving patient care and outcomes. My previous work in Clostridioides difficile has led me to consider the complexity of diagnostic testing and ways to improve ordering and interpretation.


Dr. Riaz is currently leading the orthopedic infectious disease research program. He is conducting clinical research projects pertaining to coccidioidomycosis of the vertebral column where he is collaborating with the Valley Fever Center of Excellence. He is also working with orthopedic hand surgery on a project related to the utility of markers of inflammation in hand infections. Additionally, Dr. Riaz is working on conducting a randomized controlled trial looking at the utility of antibiotic beads in lower extremity foot and ankle infections.


Tirdad T. Zangeneh, DO, MA, FACP, FIDSA, FAST

University of Arizona – Tucson

Professor, Medicine – (Clinical Scholar Track)
Associate Program Director, Internal Medicine Residency Program – Tucson Campus
Director, Infectious Disease Transplant Program, Banner UMC Tucson

Tirdad Zangeneh’s clinical research interests include the prevention, diagnosis, and management of infections in immunocompromised patients including solid organ and hematopoietic stem cell transplant populations. His most current projects focus on Aspergillus PCR diagnostics, Coccidioidomycosis management, Strongyloidiasis screening, and Mucormycosis associated invasive fungal infections in immunosuppressed hosts. Dr. Zangeneh has been involved in multiple clinical trials studying investigational therapies and diagnostics for immunocompromised patients. He also serves in the American Society of Transplantation’s, Infectious Diseases Community of Practices, Quality, and improvement committee focusing on studies to improve the quality of care for SOT recipients.


Dr. Brown has a research focus on the epidemiology and control of vector-borne and zoonotic diseases. Her goal is to identify human disease risk by modeling vector, host and pathogen distributions. The complex nature of the systems she works on diseases requires her to blend field collecting, ecological assessment, laboratory experiments, epidemiological analysis, spatial statistics, remote sensing, geographic information systems, and computer-based modeling in order to develop a more comprehensive view of disease dynamics. Current research areas include: West Nile virus, dengue, canine heartworm, valley fever, spatial epidemiology, and climate change.


Dr. Ehiri’s research focuses on social and behavioral aspects of disease prevention, and on global maternal, child and adolescent health. Most recently, he has focused on HIV prevention, in keeping with its huge global importance. He has been principal investigator of university-wide grants to facilitate global health education and research, and has facilitated the establishment of primary health care programs in less developed countries. He provides technical assistance on maternal and child health issues to national ministries of health, non-governmental organizations, United Nations and bilateral agencies.


I am highly motivated to pursue an academic career in infectious disease epidemiology after spending the first decade of my post-doctoral career in public service – first as an Epidemic Intelligence Service officer and Health Scientist at the Centers for Disease Control and Prevention (CDC), and then as a Senior Epidemiologist at the Oregon Health Authority (OHA). At both the CDC and OHA, I focused on patient safety, communicable disease prevention and antibiotic resistance (AR). During my career in public service, I worked in divisions with mentors committed to robust analytic methods and multidisciplinary academic collaboration. In 2017, I joined the Department of Epidemiology and Biostatistics Department at the University of Arizona College of Public Health. Since joining the academic community, I have sought opportunities for collaborative research on issues of national importance, including AR and healthcare-associated infection prevention.

Since joining the University of Arizona, I have established a grant-funded independent research program. In 2019, I had six active grants and served as Principal Investigator on three. My grants have supported multiple staff and graduate research associate positions. My goal is to continue to grow my research program towards an improved understanding of healthcare-associated infection transmission, as well as antibiotic resistance and stewardship.


https://www.ncbi.nlm.nih.gov/pubmed?term=Ellingson%2C%20Katherine%5BAuthor%5D
Dr. Ernst’s primary projects examine the environmental determinants of vector-borne disease transmission and control; primarily dengue and malaria. Current research projects include an examination of insecticide treated bednet use in western Kenya. Comparisons between determinants of use and effectiveness in highland and lowland areas are underway. She is also working with investigators in entomology to examine the role of *Aedes aegypti* population dynamics in the potential expansion of dengue from northern Mexico to southern Arizona under climate change scenarios. Locally, Dr. Ernst takes an active role in working with the local health departments to examine questions related to vaccine preventable diseases. Her work seeks to understand the reasons behind increasing vaccination exemption rates in Arizona and the development of programs to increase vaccination uptake.


Understanding the mechanisms by which viruses persist—in the absence of overt disease—is the major focus of the lab. Human cytomegalovirus (CMV) is a β-herpesvirus that persists in most of the world’s population by establishing a latent infection. During latency viral genomes are maintained in the absence of virus production. We use CMV as a model for defining and understanding the interactions between viruses and their hosts that allow for the entry into and exit from latent states. Understanding latency and viral persistence is critical to developing novel antiviral therapies to control persistence and its consequences in at-risk individuals, such as stem cell and organ transplant recipients.


Copper is toxic to bacteria but essential to mammalian cells. When copper intoxicates bacteria, it poisons them by displacing metals like manganese, zinc, or iron (mismetallation) needed in enzymatically active sites for function or DNA-binding proteins. Our team exploits this niche by looking for bactericidal copper-binding compounds that lead to microbial intoxication. We have found dimethyldithiocarbamate (DMDC) and derivatives thereof to be bactericidal against the increasingly antibiotic-resistant bacteria *Streptococcus pneumoniae*, Group A and B Strep, and *Pseudomonas aeruginosa*, fungal pathogen *Coccidioides*, and schistosomes. We perform in vitro and in vivo assays to test the efficacy of our compounds and derivatives to fight off antimicrobial-resistant pathogens.


Toxoplasma gondii is an intracellular parasite that is found world-wide and is able to infect most warm-blooded animals (from birds to humans). In humans and rodents, Toxoplasma naturally establishes a life-long, asymptomatic infection of the brain. Unfortunately, in those with limited immune response (e.g., fetus, organ transplant patients), this tropism for the brain can lead to devastating effects including seizures, blindness, and death. Thus, our goal is to understand the brain-Toxoplasma interaction at the cellular and molecular level so that we can i) develop curative treatment for symptomatic toxoplasmosis and ii) identify new mechanisms for modulating brain immune responses, which are now thought to play a role in neurologic diseases ranging from Multiple Sclerosis to Alzheimer’s disease.


Protective immune responses to vaccines, microbial infections, and tumors require that coordinated responses emerge from ‘conversations’ that take place between distinct cell types of the immune system. These conversations ensure that an appropriate response occurs at the appropriate place and time without inducing autoimmunity. We are working to understand the inner workings of the molecular machines that mediate the private cell-to-cell conversations that are central to productive immunity and determine how aging impacts these mechanisms. Our basic research is contributing fundamental insights into the biology of the immune system, which we are using to guide efforts to engineer novel molecular machines that might one day be used in immunotherapies.


Dr. Madhivanan’s work focuses on addressing the systemic inequities that put India’s tribal women at-risk for poor health and birth outcomes. To address these issues, her work has focused on the establishment and use of mobile clinics along with self-help programs in rural and tribal communities. Researcher in Cancer, Epidemiology, Global Health, Health Disparities, Health of Women, Children & Families, Health Promotion, Infectious Disease, and Rural Health.


Dr. Pogreba-Brown’s research projects are focused on foodborne diseases and improving methodology to respond to outbreak investigations. She is currently working on a project to identify the risk factors related to foodborne infection as well as the risk factors related to specific chronic outcomes following acute disease. She has recently initiated a One Health Program at the University to form collaborative research teams from across campus and develop a graduate level certificate program. She is also actively involved in public health preparedness activities, specifically for large events.


All viruses hijack host cell machinery to facilitate their replication. Producing infectious viral progeny relies on host cell metabolic pathways to provide energy and building blocks such as nucleotides, amino acids, and lipids. I am interested in investigating the molecular remodeling of cellular metabolic and lipid environments by viruses. The overall goal of my research in dissecting the complex virus-host metabolism interactions is to guide the development of novel antiviral therapies.


The majority of pathogens enter the body via the mucosal surfaces. We are interested in how bacteria overcome defenses at this barrier. In particular, we study two closely related pathogens, Neisseria gonorrhoeae and Neisseria meningitidis. Our goals are to understand how the neisserial type IV pilus (Tfp) functions in infection, and to identify other determinants that promote attachment, invasion, and intracellular survival. We have also developed a research program on commensal species of Neisseria. In particular, we are interested in the role of the ubiquitous type IV pilus in commensal-host interactions. Our studies use a combination of experimental approaches, including genomics, cell signaling and trafficking, biophysics and high-resolution microscopy.


The goal of research in the Vedantam lab is to investigate the mechanism(s) of gut colonization by the diarrheic disease pathogen Clostridium difficile. Research is focused on the molecular characterization of non-toxin virulence factors of C. difficile and is aimed at designing interventions to combat as well as prevent C. difficile infection (CDI). A long-term goal of Dr. Vedantam’s work is to develop safe and cost-effective non-antibiotic interventions to prevent and treat intestinal infections; one product (jointly protected via a collaborative VA and UA patent process) is currently completing pre-clinical studies.


The Viswanathan laboratory is interested in the interactions between pathogenic bacteria and host cells. Specifically, the study of mechanisms by which enterohemorrhagic Escherichia coli and related bacteria cause disease. Recent studies have focused on the mechanisms by which these pathogens manipulate the survival of host cells. On a broader level, Viswanathan is interested in understanding how these pathogens are disseminated in the environment, and to eventually seek methods to control their spread.


Dr. Worobey taps into the genomes of viruses, using molecular and computational biology, to understand the origins, emergence and control of pandemics. He has made discoveries pinpointing, for example, where, when and how HIV originated and spread worldwide and how influenza pandemics, including the intense 1918 pandemic, emerge and kill large numbers of people. Recently, his interdisciplinary work on SARS-CoV-2 has shed light on how and when the virus originated and ignited the COVID-19 pandemic in China and how SARS-CoV-2 emerged and took hold in North America and Europe.

Current research includes (1) SARS-CoV-2 genomic epidemiology and evolution from local to global scales, (2) work at the intersection of viral evolution and immunology with both SARS-CoV-2 and influenza viruses, (3) influenza vaccines, and (4) pandemic preparedness and prevention.


