



THE UNIVERSITY OF ARIZONA
COLLEGE OF MEDICINE TUCSON

Infectious Diseases

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

1501 N. Campbell Avenue
PO Box 245039
Tucson, AZ 85724

Tel: 520-626-6887
Fax: 520-626-5183

www.deptmedicine.arizona.edu/divisions/infectious-diseases



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. PMID: PMC6876688.

Ellis KE, Nawas GT, Chan C, York L, Fisher J, **Connick E**, Zangeneh TT. Clinical Outcomes Following the Use of Archived Proviral HIV-1 DNA Genotype to Guide Antiretroviral Therapy Adjustment. *Open Forum Infectious Disease* 2019 Dec 14;7(1): ofz533. doi: 10.1093/ofid/ofz533. eCollection 2020 Jan. PMID: PMC6942490.

Scully EP, Aga E, Tsibris A, Archin N, Starr K, Ma Q, Morese GD, Squires KE, Howell BJ, Wu G, Hosey L, Sieg S, Ehui L, Giguel F, Coxen K, Dobrowski C, Gandhi M, Deeks S, Chomont N, **Connick E**, Godfrey C, Karn J, Kuritzkes DR, Bosch RJ, Gandhi RT; A5366 study team. Impact of Tamoxifen on Vorinostat-Induced HIV Expression in Women on Antiretroviral Therapy (ACTG A5366: The MOXIE trial). *Clin Infect Dis* 2022; 75(8):1389-1396. PMID PMC9555843

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. PMID PMC9676968

Ollerton M, Folkvord JM, Peachman KK, Shashikumar S, Morrison EB, Jagodzinski LL, Peel SA, Khreiss M, D'Aquila RT, Casares S, Rao M, **Connick E**; HIV-1 infected humanized DRAGA mice develop HIV – specific antibodies despite lack of canonical germinal centers in secondary lymphoid tissues. *Frontiers in Immunology*. 2022; 13:1047277. doi: 10.3389/fimmu.2022.1047277. PMID PMC9732419



Mohanad Al Obaidi, MD, MPH

University of Arizona – Tucson

Assistant Professor, Department of Medicine

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.

Al-Obaidi MM, Marquez J, Afghan A, Zangeneh TT. Effect of coccidioidomycosis prophylaxis in selecting non-Candida albicans species amongst solid organ transplant recipients in Arizona. *Mycoses*. 2023 Mar;66(3):237-241. doi: 10.1111/myc.13547. Epub 2022 Nov 27. PMID: 36401812.

Al-Obaidi MM, Ayazi P, Shi A, Campanella M, Connick E, Zangeneh TT. The Utility of (1→3)-β-D-Glucan Testing in the Diagnosis of Coccidioidomycosis in Hospitalized Immunocompromised Patients. *J Fungi (Basel)*. 2022 Jul 25;8(8):768. doi: 10.3390/jof8080768. PMID: 35893136; PMCID: PMC9332557.

Al-Obaidi MM, Ostrosky-Zeichner L, Nix DE. Trends of Azole Antifungal Prescription in the United States: Medicare Part D Provider Utilization and Payment Data Analysis. *Open Forum Infect Dis*. 2023 Jul 10;10(8):ofad345. doi: 10.1093/ofid/ofad345. PMID: 37539063; PMCID: PMC10394725.

Al-Obaidi MM, Gungor AB, Kurtin SE, Mathias AE, Tanriover B, Zangeneh TT. The Prevention of COVID-19 in High-Risk Patients Using Tixagevimab-Cilgavimab (Evusheld): Real-World Experience at a Large Academic Center. *Am J Med*. 2023 Jan;136(1):96-99. doi: 10.1016/j.amjmed.2022.08.019. Epub 2022 Sep 29. PMID: 36181789; PMCID: PMC9519524.



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.

Wurcel AG, Zubiago J, Reyes J, Smyth E, Balsara KR, **Avila D**, Barocas JA, Beckwith CG, Bui J, Chastain CA, Eaton EF, Kimmel S, Paras ML, Schranz AJ, Vyas DA, Rapoport A. Surgeons’ Perspectives on Valve Surgery in People With Drug Use-Associated Infective Endocarditis. *Ann Thorac Surg.* 2023 Sep;116(3):492-498. doi: 10.1016/j.athoracsur.2021.12.068. Epub 2022 Jan 31. PMID: 35108502; PMCID: PMC9339044.



Fariba Donovan, MD, PhD

University of Arizona – Tucson

Associate Professor, Medicine

Researcher, Valley Fever Center for Excellence

Member, BIO5 Institute

Member, Graduate Faculty

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.

Donovan FM, Zangeneh TT, Malo J, Galgiani JN. (2017) Top Questions in the Diagnosis and Treatment of Coccidioidomycosis. *Open Forum Infectious Diseases*. 2017 Sep 12;4(4). PMID 29670928

Donovan FM, Wightman P, Zong Y, Gabe L, Majeed A, Ynosencia T, Bedrick EJ, Galgiani JN, (2019) Delays in Coccidioidomycosis Diagnosis and Associated Healthcare Utilization in Tucson, AZ *Emerging Infectious Diseases*

<https://www.ncbi.nlm.nih.gov/myncbi/1NKPWanDjgnUBx/bibliography/public/>



Lori E. Fantry, MD, MPH

University of Arizona – Tucson

Professor, Department of Medicine

HIV Clinical and Education Director

Associate Clinical Director, ID division

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.

Kang, M, **Fantry LE**. Menopause in HIV-Infected Women. *Journal of Clinical Outcomes Management*. 2016; 23:22-33.

Shende TC, Fisher JM, Perez-Velez CM, Guido AA, Sprowl KM, Drake TM, Adelus ML, Bedrick EJ, **Fantry LE**. PrEP Knowledge and Attitudes Among Adults Attending Public Health Clinics in Southern Arizona. *Journal of Community Health*. 2019 Oct 14 PMID: 31612368.

Fichtenbaum CJ, Ribaldo HJ, Leon-Cruz J, Overton ET, Zanni MV, Malvestutto CD, Aberg JA, Kileel EM, Fitch KV, Van Schalkwyk M, Kumarasamy N, Martinez E, Santos BR, Joseph Y, Lo J, Siminski S, Melbourne K, Sponseller CA, Desvigne-Nickens P, Bloomfield GS, Currier JS, Hoffmann U, Douglas PS, Grinspoon SK; REPRIEVE Investigators (**Fantry LE**). Patterns of Antiretroviral Therapy Use and Immunologic Profiles at Enrollment in the REPRIEVE Trial. *J Infect Dis*. 2020 Jul 9;222(Suppl 1):S8-S19. doi: 10.1093/infdis/jiaa259. PMID: 32645162

York LD, Fisher JM, Malladi L, August AA, Ellis KE, Marquez JL, Kaveti A, Khachatryan M, Paz MK, Adams MD, Bedrick EJ, **Fantry LE**. Antiretroviral Laboratory Monitoring and Implications for HIV Clinical Care in the Era of COVID-19 and Beyond. *AIDS Res Hum Retroviruses*. 2021 Apr;37(4):297-303. doi: 10.1089/AID.2020.0263. Epub 2021 Mar 17. PMID: 33567992.



John Galgiani, MD

University of Arizona – Tucson

*Director, Valley Fever Center for Excellence
Professor, Medicine
Professor, Immunobiology
Professor, BIO5 Institute*

University of Arizona -- Phoenix

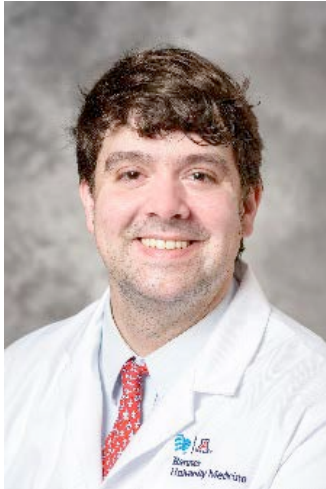
Clinical Professor, Internal Medicine - (Clinical Series Track)

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.

Pu J, Miranda V, Minior D, et al. Improving Early Recognition of Coccidioidomycosis in Urgent Care Clinics: Analysis of an Implemented Education Program. Open Forum Infectious Diseases 2023;10(1):ofac654. DOI: 10.1093/ofid/ofac654.

Galgiani JN, Hsu AP, Powell DA, Vyas JM, Holland SM. Genetic and Other Determinants for the Severity of Coccidioidomycosis: A Clinician's Perspective. Journal of Fungi 2023;9(5):554. (1. Galgiani JN, Shubitz LF, Orbach MJ, et al. Vaccines to Prevent Coccidioidomycosis: A Gene-Deletion Mutant of Coccidioides Posadasii as a Viable Candidate for Human Trials. J Fungi (Basel) 2022;8(8). DOI: 10.3390/jof8080838.

Galgiani JN, Shubitz LF, Orbach MJ, et al. Vaccines to Prevent Coccidioidomycosis: A Gene-Deletion Mutant of Coccidioides Posadasii as a Viable Candidate for Human Trials. J Fungi (Basel) 2022;8(8). DOI: 10.3390/jof8080838



Justin F. Hayes, MD

University of Arizona – Tucson

*Clinical Assistant Professor, Department of Medicine
Director, Antimicrobial Stewardship Program*

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: Sub-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.

Hayes JF. Fighting Back against Antimicrobial Resistance with Comprehensive Policy and Education: A Narrative Review. *Antibiotics (Basel)*. 2022;11(5):644. Published 2022 May 11. doi:10.3390/antibiotics11050644

John P, Shahbazian S, Lainhart WD, **Hayes J**, Mochon B, Nix DE. Risk for primary cephalosporin resistance in Gram-negative bacteremia. *Antimicrob Steward Healthc Epidemiol*. 2023;3(1):e121. Published 2023 Jul 10. doi:10.1017/ash.2023.202

Nix DE, **Hayes JF**, Al Obaidi M, Zangeneh T. Fixed Dosing of Amphotericin B in Morbidly Obese Individuals. *Clin Infect Dis*. 2021;72(9):e431. doi:10.1093/cid/ciaa1076



Monica Hiestroza-Jordan, MD

University of Arizona – Tucson

Clinical Assistant Professor, Medicine

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.

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

Hiestroza M. Jubbal S. Lifestyle Medicine 4th edition – Covid-19 chapter

Hiestroza M. Moinul S. Muehlchlegel S. Osgood M. Wessolossky M. Human Herpes Virus 6 causing non-communicating Hydrocephalus.

Salomon-Escoto K, **Hiestroza M**, Stutsky M, Fraher M, Kay J, Reed G, Wessolossky M. HIV Viral Load Suppression In Patients Utilizing An Integrated Health System Specialty Pharmacy Compared To a Non-integrated Specialty Pharmacy Model.

Hiestroza M, Lomanno J, Nagurla S, Reed G, Jubbal S, Wessolossky M. Experience of Early Remdesivir Treatment for Preventing Severe COVID-19 in Outpatient Setting at UMass Memorial Medical Center-2022.



Stephen A. Klotz, MD

University of Arizona – Tucson

*Professor, Department of Medicine
Petersen HIV Clinics
Medical Director, UA Telemedicine*

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*.

Klotz SA, Lipke PN. The Paradoxical Effects of Serum Amyloid-P Component in Disseminated Candidiasis. *Pathogens*. 2022 Nov 6;11(11):1304. doi: 10.3390/pathogens11111304. PMID: 36365055; PMCID: PMC9697064.

Klotz SA, Bradley N, Lipke PN. Blocking Serum Amyloid-P Component from Binding to Macrophages and Augmenting Fungal Functional Amyloid Increases Macrophage Phagocytosis of *Candida albicans*. *Pathogens*. 2022 Sep 1;11(9):1000. doi: 10.3390/pathogens11091000. PMID: 36145432; PMCID: PMC9505788.

Klotz SA, Smith SL, Schmidt JO. Kissing Bug Intrusions into Homes in the Southwest United States. *Insects*. 2021 Jul 17;12(7):654. doi: 10.3390/insects12070654. PMID: 34357314; PMCID: PMC8306929.



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 jirovecii* pneumonia, and cryptococcosis.

Lau YK, Alemán MJ, Medina R, Brondfield S, **Nematollahi S**. Around the World in 60 Minutes: How a Virtual Morning Report has Created an International Community for Clinical Reasoning and Medical Education. *Teach Learn Med*. 2023 Jun 21:1-10. doi: 10.1080/10401334.2023.2226661. Epub ahead of print. PMID: 37341557.

Phongkhun K, Pothikamjorn T, Srisurapanont K, Manothummetha K, Sanguankeo A, Thongkam A, Chuleerarux N, Leksuwankun S, Meejun T, Thanakitcharu J, Walker M, Gopinath S, Torvorapanit P, Langsiri N, Worasilchai N, Moonla C, Plongla R, Kates OS, **Nematollahi S**, Permpalung N. Prevalence of Ocular Candidiasis and Candida Endophthalmitis in Patients With Candidemia: A Systematic Review and Meta-Analysis. *Clin Infect Dis*. 2023 May 24;76(10):1738-1749. doi: 10.1093/cid/ciad064. PMID: 36750934; PMCID: PMC10411939.

Titanji BK, Tegomoh B, **Nematollahi S**, Konomos M, Kulkarni PA. Monkeypox: A Contemporary Review for Healthcare Professionals. *Open Forum Infect Dis*. 2022 Jun 23;9(7):ofac310. doi: 10.1093/ofid/ofac310. PMID: 35891689; PMCID: PMC9307103.

Nematollahi S, Minter DJ, Barlow B, Nolan NS, Spicer JO, Wooten D, Cortes-Penfield N, Barlow A, Chavez MA, McCarty T, Abdoler E, Escota GV. The Digital Classroom: How to Leverage Social Media for Infectious Diseases Education. *Clin Infect Dis*. 2022 May 15;74(Suppl_3):S237-S243. doi: 10.1093/cid/ciac048. PMID: 35568480; PMCID: PMC9383968.

Penner JC, Le S, Shipley LC, Murdock HM, Minter DJ, **Nematollahi S**. Morning report goes virtual: learner experiences in a virtual, case-based diagnostic reasoning conference. *Diagnosis (Berl)*. 2021 Aug 4;9(1):89-95. doi: 10.1515/dx-2021-0073. PMID: 34348421.



D. Alexander Perry, MD, MPH

University of Arizona – Tucson

*Clinical Assistant Professor, Medicine (Clinical Series Track)
Director of Outpatient Parenteral Antimicrobial Therapy (OPAT)
Core Faculty Internal Medicine and Infectious Diseases*

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.

Menon A, **Perry DA**, Motyka J, Weiner S, Standke A, Penkevich A, Keidan M, Young VB, Rao K. Changes in the Association Between Diagnostic Testing Method, Polymerase Chain Reaction Ribotype, and Clinical Outcomes From *Clostridioides difficile* Infection: One Institution's Experience. 73(9) 1 November 2021, Pages e2883–e2889, <https://doi.org/10.1093/cid/ciaa1395>. PMID: 32930705

El-Dalati S, Cronin D, Riddell IV J, Shea M, Weinberg RL, Washer L, Stoneman E, **Perry DA**, Bradley S, Burke J, Murali S, Fagan C, Chanderraj R, Christine P, Patel T, Ressler K, Fukuhara S, Romano M, Yang B, Deeb GM. The Clinical Impact of Implementation of a Multidisciplinary Endocarditis Team. *The Annals of Thoracic Surgery*. 113(1) January 2022, Pages 118-124. doi.org/10.1016/j.athoracsur.2021.02.027 PMID: 33662308

Perry DA, Shirley D, Patel PC, Putler R, Menon A, Young VB, Rao K. External Validation and Comparison of *Clostridioides difficile* Severity Scoring Systems. *Clinical Infectious Diseases*, 74(11), 1 June 2022, Pages 2028–2035 <https://doi.org/10.1093/cid/ciab737> PMID: 34459885



Talha Riaz, MD

University of Arizona – Tucson

*Clinical Assistant Professor, Medicine (Clinical Series Track)
Orthopedics Infectious Diseases*

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.

Riaz T, Tande AJ, Steed LL, Demos HA, Salgado CD, Osmon DR, Marculescu CE. Risk Factors for Fungal Prosthetic Joint Infection. *J Bone Jt Infect.* 2020 Mar 26;5(2):76-81. doi: 10.7150/jbji.40402. PMID: 32454521; PMCID: PMC7242408.

Riaz T, Howard M, Diehn F, Tande AJ, Ross C, Huddleston P, Berbari E. Utility of disc space aspirate cell counts and differentials in the diagnosis of native vertebral osteomyelitis. *J Bone Jt Infect.* 2022 Oct 20;7(5):213-219. doi: 10.5194/jbji-7-213-2022. PMID: 36415688; PMCID: PMC9673032.



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.

Zangeneh TT, Al-Obaidi MM. Diagnostic Approach to Coccidioidomycosis in Solid Organ Transplant Recipients. *J Fungi (Basel)*. 2023 Apr 26;9(5):513. doi: 10.3390/jof9050513. PMID: 37233224; PMCID: PMC10219217.

Al-Obaidi MM, Gungor AB, Murugapandian S, Thajudeen B, Mansour I, Wong RC, Tanriover B, **Zangeneh TT**. The Impact of Nirmatrelvir-Ritonavir in Reducing Hospitalizations Among High-Risk Patients With SARS-CoV-2 During the Omicron Predominant Era. *Am J Med*. 2023 Jun;136(6):577-584. doi: 10.1016/j.amjmed.2023.02.022. Epub 2023 Mar 8. PMID: 36898600; PMCID: PMC9993659.

Al-Obaidi MM, Ayazi P, Shi A, Campanella M, Connick E, **Zangeneh TT**. The Utility of (1→3)-β-D-Glucan Testing in the Diagnosis of Coccidioidomycosis in Hospitalized Immunocompromised Patients. *J Fungi (Basel)*. 2022 Jul 25;8(8):768. doi: 10.3390/jof8080768. PMID: 35893136; PMCID: PMC9332557.

Al-Obaidi M, Youssefi B, Bardwell J, Bouzigard R, Le CH, **Zangeneh TT**. A Comparative Analysis of Mucormycosis in Immunosuppressed Hosts Including Patients with Uncontrolled Diabetes in the Southwest United States. *Am J Med*. 2021 Sep;134(9):1155-1159. doi: 10.1016/j.amjmed.2021.04.008. Epub 2021 May 8. PMID: 33974907



Heidi E. Brown, PhD, MPH

University of Arizona – Tucson

Epidemiology and Biostatistics, School of Public Health Associate Professor, Public Health

Associate Professor, Geography/Regional Development

Associate Professor, Entomology / Insect Science - GIDP

Associate Professor, Remote Sensing / Spatial Analysis - GIDP

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.

Luz PM, **Brown HE**, Struchiner CJ, Disgust as an emotional driver of vaccine attitudes and uptake ? A mediation analysis *Epidemiology & Infection, Cambridge University Press, 2019, Apr 26.*

PMID 31063117

Isoe, Koch LE, Isoe YE, Rascon AA Jr, **Brown HE**, Massani BB, Miesfeld RL. Identification and characterization of a mosquito-specific eggshell organizing factor in *Aedes aegypti* mosquitoes. *PLoS Biol*, 2019 Jan 8 PMID: 30620728

Brown, H.E., Dennis, L., **Lauro, P.L., Purva, J., **Pelley, E., Oren. E. “Emerging Evidence for Infectious Causes of Cancer in the United States” *Epidemiologic Reviews*. 2019, 41(1): *in press*.

Smiley-Evans, T., Shi, Z., Boots, M., Wenjun, L., Olival, K., Xiao, X., VandeWoude, S., **Brown H.E.**, Chen, J.L., Civitello, D., Escobar, L.E., Grohn, Y.T., Li, H., Lips, K.R., Liu, Q., Liu J., Martinez Lopez, B., Shi., J., Shi., X., Xu, B., Lihong, Y.L., Zhu, Y., Getz, W.M. “Synergistic China-US Ecological Research is Essential for Global Emerging Infectious Disease Preparedness” *EcoHealth*, 2020, <https://doi.org/10.1007/s10393-020-01471-2>.



John Ehiri, PhD, MPH, MSc

University of Arizona – Tucson

*Senior Associate Dean, Academic and Faculty Affairs
Professor, Public Health
Liason, UAHS Global Initiatives
Member of the Graduate Faculty*

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.

Ejemot-Nwadiaro, R. I., **Ehiri, J. E.**, Arikpo, D., Meremikwu, M. M., & Critchley, J. A. (2021). Hand-washing promotion for preventing diarrhoea. *The Cochrane database of systematic reviews*, 12, CD004265.

Kram, N. A., Yesufu, V., Lott, B., Palmer, K. N., Balogun, M., & **Ehiri, J.** (2021). 'Making the most of our situation': a qualitative study reporting health providers' perspectives on the challenges of implementing the prevention of mother-to-child transmission of HIV services in Lagos, Nigeria. *BMJ open*, 11(10), e046263.

Riggs, S. L., Thomson, C. A., Jacobs, E., Cutshaw, C. A., & **Ehiri, J. E.** (2021). Hispanic Ethnicity and Cervical Cancer Precursors Among Low-Income Women in Arizona. *International journal of women's health*, 13, 929-937.

Ehiri JE, Alaofe HS, Yesufu V, Balogun M, Iwelunmor J, Kram NA, Lott BE, Abosede O, (2019). AIDS-related stigmatisation in the healthcare setting: a study of primary healthcare centres that provide services for prevention of mother-to-child transmission of HIV in Lagos, Nigeria. *BMJ Open* 2019, May PMID: 31110094

Ernst, K. C., Erly, S., Adusei, C., Bell, M. L., Kessie, D. K., Biritwum-Nyarko, A., & **Ehiri, J.** (2017). Reported bed net ownership and use in social contacts is associated with uptake of bed nets for malaria prevention in pregnant women in Ghana. *Malaria Journal*, 16(1), 13.



Katherine Ellingson, PhD

University of Arizona – Tucson

Associate Professor, Public Health

*Associate Professor, Animal and Comparative Biomedical
Sciences*

Associate Professor, Medicine

Epidemiology and Biostatistics, School of Public Health, U of AZ

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.

Ellingson, K., Haas, J., Aiello, A., Kusek, L., Maragakis, L., Olmsted, R., ... Yokoe, D. (2014). Strategies to Prevent Healthcare-Associated Infections through Hand Hygiene. *Infection Control & Hospital Epidemiology*, 35(8), 937-960. doi:10.1086/677145

Yokoe, D. S., Anderson, D. J., Berenholtz, S. M., Calfee, D. P., Dubberke, E. R., **Ellingson, K. D.**, ... Maragakis, L. L. (2014). A Compendium of Strategies to Prevent Healthcare- Associated Infections in Acute Care Hospitals: 2014 Updates. *Infection Control and Hospital Epidemiology : The Official Journal of the Society of Hospital Epidemiologists of America*, 35(8), 967–977. <http://doi.org/10.1086/677216>

<https://www.ncbi.nlm.nih.gov/pubmed?term=Ellingson%2C%20Katherine%5BAuthor%5D>



Kacey Ernst, PhD, MPH

University of Arizona – Tucson

Department Chair, Epidemiology and Biostatistics

Professor, Public Health

Professor, School of Animal and Comparative Biomedical Sciences

Professor, Geography

Professor, Arid Lands Resources Sciences - GIDP

Professor, Entomology / Insect Science - GIDP

Professor, Global Change - GIDP

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.

Hawkes, B. A., Khan, S. M., Bell, M. L., Guernsey de Zapien, J., **Ernst, K. C.**, & Ellingson, K. D. (2023). Healthcare System Distrust and Non-Prescription Antibiotic Use: A Cross-Sectional Survey of Adult Antibiotic Users. *Antibiotics (Basel, Switzerland)*, 12(1).

Jacobs, E. T., Catalfamo, C. J., Colombo, P. M., Khan, S. M., Austhof, E., Cordova-Marks, F., **Ernst, K. C.**, Farland, L. V., & Pogreba-Brown, K. (2023). Pre-existing conditions associated with post-acute sequelae of COVID-19. *Journal of autoimmunity*, 135, 102991.

Madera-Garcia, V., Coalson, J. E., Subelj, M., Bell, M. L., Hayden, M. H., Agawo, M., Munga, S., & **Ernst, K. C.** (2023). Self-Reported Symptoms at Last Febrile Illness as a Predictor of Treatment-Seeking in Western Kenya: A Cross-Sectional Study. *The American journal of tropical medicine and hygiene*, 108(1), 212-220.

Anderson, E. J., Coalson, J. E., Agawo, M., Munga, S., Hayden, M., Santos, E. M., Little, A. C., Tamari, N., & **Ernst, K.** (2022). Factors related to long-lasting insecticidal net (LLIN) use during travel in western Kenya: A descriptive analysis. *Travel medicine and infectious disease*, 47, 102291.



Felicia Goodrum Sterling, PhD

University of Arizona – Tucson

Interim Associate Department Head, Immunobiology
Professor, Immunobiology
Director, Graduate Program in Immunobiology
Professor, BIO5 Institute
Professor, Cellular and Molecular Medicine
Professor, Molecular and Cellular Biology
Professor, Cancer Biology-GIDP
Professor, Genetics-GIDP

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.

Zeltzer, S., & **Goodrum, F. D.** (2022). Host translesion polymerases are required for viral genome integrity. *Proc Natl Acad Sci USA*, 119(33), e2203203119.

Zhang, H., & **Goodrum Sterling, F. D.** (2022). The AKT Forkhead box O transcription factor axis regulates human cytomegalovirus replication. *mBio*, e0104222.

Alwine, J. C., Enquist, L. W., Dermody, T. S., & **Goodrum, F.** (2021). What Is the Price of Science?. *mBio*, 12(2).

Crawford, L. B., Hancock, M. H., Struthers, H. M., Streblow, D. N., Yurochko, A. D., Caposio, P., **Goodrum, F. D.**, & Nelson, J. A. (2021). CD34 Hematopoietic Progenitor Cell Subsets Exhibit Differential Ability To Maintain Human Cytomegalovirus Latency and Persistence. *Journal of virology*, 95(3).

Crawford, L. B., R. Tempel, D. N. Streblow, A. D. Yurochko, **F. D. Goodrum**, J. A. Nelson, and P. Caposio, "Human Cytomegalovirus Infection Suppresses CD34 Progenitor Cell Engraftment in Humanized Mice.", *Microorganisms*, vol. 8, issue 4, 2020 Apr 06.

Zeltzer S, seltzer CA, Igarashi S, Wilson J, Donaldson JG, **Goodrum F.** (2018). Virus Control of Trafficking from Sorting Endosomes posing Regulation of the EGF Receptor: A Molecular Switch Controlling Cytomegalovirus Latency and Replication. *MBio* 2018 Jul 24;9(4), PMID: 30042195.



Michael D. L. Johnson, PhD

Inaugural Keating Family Endowed Professorship for
Interdisciplinary Research at the BIO5 Institute
Associate Dean, Basic Science Research and Graduate Studies,
COMT

Associate Professor, Department of Immunobiology
Director, The National Summary Undergraduate Research Project
Director, Graduate Studies for Applied Biosciences Industrial
Microbial Biotechnology Track
Director of the BIO5 Postdoctoral Fellowship Program
Member, BIO5 Institute

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.

Menghani SV, Sanchez-Rosario Y, Pok C, Liu R, Gao F, O'Brien H, Neubert M, Ochoa K, Durckel M, Hellinger RD, Hackett N, Wang W, **Johnson MDL**. Novel dithiocarbamate derivatives are effective copper-dependent antimicrobials against Streptococcal species. *Front Microbiol.* 2023 Jan 20;13:1099330. doi: 10.3389/fmicb.2022.1099330. eCollection 2022. PMID: 36741900.

Menghani SV, Cutcliffe MP, Sanchez-Rosario Y, Pok C, Watson A, Neubert MJ, Ochoa K, Wu HJ, **Johnson MDL**. *N,N*-dimethyldithiocarbamate elicits pneumococcal hypersensitivity to copper and macrophage-mediated clearance. *Infect Immun.* 2022 Mar 21:e0059721. doi: 10.1128/iai.00597-21. PMID: 35311543

O'Brien H*, Alvin J*, Menghani SV, Sanchez-Rosario Y, Van Doorslaer K, **Johnson MDL**. Rules of expansion: an updated consensus operator site for the CopR/Y family of bacterial copper exporter system repressors. *mSphere.* 2020 May 27;5(3):e00411-20. doi: 10.1128/mSphere.00411-20



Anita Koshy, MD

University of Arizona – Tucson

Associate Professor, Neurology
Associate Professor, Immunobiology
Associate Professor, BIO5 Institute
Associate Professor, Evelyn F McKnight Brain Institute
Associate Professor, Neuroscience-GIDP
Associate Professor, Medicine

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.

McGovern, K. E., C. M. Cabral, H. W. Morrison, and A. **A. Koshy**, "Aging with *Toxoplasma gondii* results in pathogen clearance, resolution of inflammation, and minimal consequences to learning and memory.", *Sci Rep*, vol. 10, issue 1, pp. 7979, 2020 May 14. [PMCID: PMC7224383](#) [PMID: 32409672](#)

Patell, R., T. Bogue, P. Bindal, **A. Koshy**, M. Merrill, W. C. Aird, K. A. Bauer, and J. I. Zwicker, "Incidence of thrombosis and hemorrhage in hospitalized cancer patients with COVID-19.", *J Thromb Haemost*, 2020 Jul 21. [PMCID: PMC7405046](#) [PMID: 32692862](#)

Cabral, C. M., Tuladhar, S., Dietrich, H. K., Nguyen, E., MacDonald, W. R., Trivedi, T., Devineni, A., & **Koshy, A. A.** (2016). Neurons are the primary target cell for the brain-tropic intracellular parasite *Toxoplasma gondii*. *PLoS Pathogens*.

Hidano, S., Randall, L. M., Dawson, L., Dietrich, H. K., Konradt, C., Klover, P. J., John, B., Harris, T. H., Fang, Q., Turek, B., Kobayashi, T., Hennighausen, L., Beiting, D. P., **Koshy, A. A.**, & Hunter, C. A. (2016). STAT1 Signaling in Astrocytes Is Essential for Control of Infection in the Central Nervous System. *mBio*, 7(6).



Michael S. Kuhns, PhD

University of Arizona – Tucson

Associate Professor, Immunobiology
Associate Professor, BIO5 Institute
Associate Professor, Genetics-GIDP

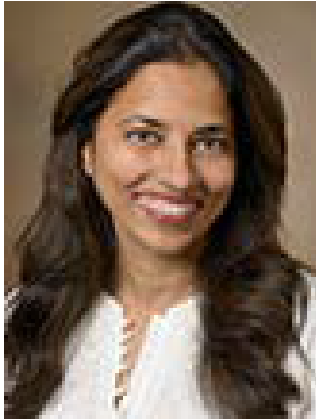
Protective immune responses to vaccines, microbial infections, and tumors require that coordinated responses emerge from ‘conversations’ that take place between distinct cell types of the immune system. These conversations ensure that an appropriate response occurs at the appropriate place and time without 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.

Kobayashi, S., M. A. Thelin, H. L. Parrish, N. R. Deshpande, M. S. Lee, A. Karimzadeh, M. A. Niewczas, T. Serwold, and **M. S. Kuhns**, "A biomimetic five-module chimeric antigen receptor (CAR) designed to target and eliminate antigen-specific T cells.", *Proc Natl Acad Sci U S A*, vol. 117, issue 46, pp. 28950-28959, 2020 Nov 17. [PMCID: PMC7682351](#) [PMID: 33139567](#)

Krummel, M., C. Blish, **M. Kuhns**, K. Cadwell, A. Oberst, A. Goldrath, M. K Ansel, H. Chi, R. O'Connell, J. E Wherry, et al., "Universal Principled Review: A Community-Driven Method to Improve Peer Review.", *Cell*, vol. 179, issue 7, pp. 1441-1445, 2019 Dec 12. [PMID: 31835023](#)

Lichauco K, Lee MS, **Kuhns MS**. (2018). Bonds Yoyage! A Dissociative Model of TCR-CD3 Triggering Is Proposed. *Immunity*, Vol 49, Issue 5, 786-788.

Deshpande NR, Uhrlaub JL, Way SS, Nikolich-Zugich J, **Kuhns, MS**. (2018). TA disconnect between precursor frequency, expansion potential, and site-specific CD4+ T cell responses in aged mice. *PloS One*. 2018 June



Purnima Madhivanan, MBBS, MPH, Ph.D.

University of Arizona – Tucson

Associate Professor, Public Health
Associate Professor, Medicine
Associate Professor, Family and Community Medicine
Associate Professor, BIO5 Institute
Director, Global Health and MCH Programs
Associate Professor, Psychology
Member of the Graduate Faculty
Associate Professor, Clinical Translational Sciences
Associate Professor, Family/Community & Preventive Medicine

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.

Block Ngaybe, M., Schmitt, H. J., Mallahan, S., Sena, R., Werts, S., Rooney, B., Magrath, P., & **Madhivanan, P.** (2023). Qualitative assessment of COVID-19 vaccination acceptance among healthcare workers in Pima County. *Human vaccines & immunotherapeutics*, 19(1), 2211464.

Escoffery, C., Petagna, C., Agnone, C., Perez, S., Saber, L. B., Ryan, G., Dhir, M., Sekar, S., Yeager, K. A., Biddell, C. B., **Madhivanan, P.**, Lee, S., English, A. S., Savas, L., Daly, E., Vu, T., & Fernandez, M. E. (2023). A systematic review of interventions to promote HPV vaccination globally. *BMC public health*, 23(1), 1262.

Fisher, C., Bragard, E., & **Madhivanan, P.** (2023). COVID-19 Vaccine Hesitancy among Economically Marginalized Hispanic Parents of Children under Five Years in the United States. *Vaccines*, 11(3).

Taskin T, Ibanez G, **Madhivanan P.** (2019) Quality Assessment of a Systematic Review for HIV Infection and Advanced-Stage Cancer. *JAMA Oncology* 2019 Jul 18. PMID 31318384

Garmendia CA, **Madhivanan P.** (2019) Correcting Meta-analyses and Reviews Affected by Retracted Research-Reply *JAMA INTERNAL MEDICINE*, PMID: 31260023



Kristen Pogreba-Brown, PhD, MPH

University of Arizona – Tucson

*Epidemiology and Biostatistics, School of Public Health
Associate Professor, Public Health
Associate Veterinary Specialist, Animal and Comparative
Biomedical Sciences Associate Professor, BIO5 Institute*

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.

Jacobs, E. T., Catalfamo, C. J., Colombo, P. M., Khan, S. M., Austhof, E., Cordova-Marks, F., Ernst, K. C., Farland, L. V., & **Pogreba-Brown, K.** (2023). Pre-existing conditions associated with post-acute sequelae of COVID-19. *Journal of autoimmunity*, 135, 102991.

Austhof, E., Bell, M. L., Riddle, M. S., Catalfamo, C., McFadden, C., Cooper, K., Scallan Walter, E., Jacobs, E., & **Pogreba-Brown, K.** (2022). Persisting gastrointestinal symptoms and post-infectious irritable bowel syndrome following SARS-CoV-2 infection: results from the Arizona CoVHORT. *Epidemiology and infection*, 150, e136.

Farland, L. V., Khan, S. M., Shilen, A., Heslin, K. M., Ishimwe, P., Allen, A. M., Herbst-Kralovetz, M. M., Mahnert, N. D., **Pogreba-Brown, K.**, Ernst, K. C., & Jacobs, E. T. (2022). COVID-19 vaccination and changes in the menstrual cycle among vaccinated persons. *Fertility and sterility*.

Schaefer, K., Austhof, E., Boyd, K., Armstrong, A., Hoffman, S., & **Pogreba-Brown, K.** (2022). Septicemia Due to Infection: A Systematic Review and Meta-Analysis. *Foodborne pathogens and disease*, 19(2), 104-114.

Barrett E, Carr D, Bell ML, **Pogreba-Brown K** (2018). Post-infectious sequelae after *Campylobacter* enteric infection: a pilot study in Maricopa County, Arizona, USA. Pilot Feasibility Study, 2018 Aug 22;4:142. PMID: 30151236

Benjamin, P., & **Pogreba Brown, K. M.** (2016). Beware of More than the Yellow Snow: A Norovirus Outbreak at a Ski Resort in Arizona. *Epidemiology: Open Access*, 6(244). doi:10.4172/2161-1165.1000244



John Purdy, PhD

University of Arizona – Tucson

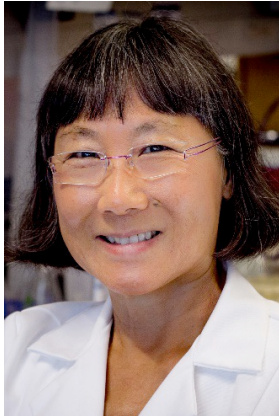
Associate Professor, Immunobiology
Associate Professor, Cancer Biology-GIDP
Faculty Fellow, BIO5 Institute

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.

Wise, L. M., Y. Xi, and **J. G. Purdy**, "Hypoxia-Inducible Factor 1 α (HIF1 α) Suppresses Virus Replication in Human Cytomegalovirus Infection by Limiting Kynurenine Synthesis.", *mBio*, vol. 12, issue 2, 2021 03 23. [PMCID: PMC8092273](#) [PMID: 33758082](#)

Xi Y, Harwood S, Wise L, **Purdy JG** (2019). Human Cytomegalovirus pUL37x1 is Important to Remodeling of Host Lipid Metabolism. nucleating retroviral capsid maturation. *Journal of Virology*. PMID: 31391267

Passalacqua KD, **Purdy JG**, Wobus CE (2019). The inert meets the living: The expanding view of metabolic alterations during viral pathogenesis. *PLOS Pathogens*, 15(7): e1007830. PMID: 31344128



Magdalene So, PhD

University of Arizona - Tucson

Director, Microbial Pathogenesis Program
Professor, Immunobiology
Professor, BIO5 Institute
Professor, Biochemistry/Molecular Biophysics
Professor, Animal and Comparative Biomedical Services
Professor, Molecular and Cellular Biology
Professor, Genetics-GIDP

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.

Rhodes K, Mancheong M, **So, M. Y.** (2019). A Natural Mouse Model for *Neisseria* Persistent Colonization. *Neisseria gonorrhoeae*. *Methods in Molecular Biology*, vol 1997. Humana, New York, NY

Powell DA, Ma M, **So M**, Frelinger JA. (2018). The commensal *Neisseria muscoli* Modulates Host Innate Immunity to Promote Oral Colonization. *Immunohorizons*, 2018 Oct 31; 2(9): 305-313.



Gayatri Vedantam, PhD

University of Arizona – Tucson

Professor, Animal and Comparative Biomedical Sciences
Professor, Immunobiology
Professor, BIO5 Institute
Co-Director, Collaboratory for Anti-infectives & Therapeutics

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.

Anwar, F., & **Vedantam, G.** (2022). Surface-displayed glycopolymers of *Clostridioides difficile*. *Current opinion in microbiology*, 66, 86-91.

Anwar, F., Roxas, B. A., Shehab, K. W., Ampel, N. M., Viswanathan, V. K., & **Vedantam, G.** (2022). Low-toxin RT027 strains exhibit robust virulence. *Emerging microbes & infections*, 11(1), 1982-1993.

Clark, A. E., Adamson, C. C., Carothers, K. E., Roxas, B. A., Viswanathan, V. K., & **Vedantam, G.** (2022). The Alternative Sigma Factor SigL Influences Toxin Production, Sporulation, and Cell Surface Properties. *Frontiers in microbiology*, 13, 871152.

Maseda D, Zackular JP, Trindade B, Kirk L, Roxas JL, Rogers LM, Washington MK, Du L, Koyama T, Viswanathan VK, **Vedantam G**, Schloss PD, Crofford LJ, Skaar EP, Aronoff DM. Nonsteroidal Anti-inflammatory Drugs Alter the Microbiota and Exacerbate *Clostridium difficile* Colitis while Dysregulating the Inflammatory Response. *MBio* (American Society for Microbiology) 2019 Jan 8;10(1). pii: e02282-18. doi: 10.1128/mBio.02282-18.

Vedantam G, Kochanowsky J, Lindsey J, Mallozzi M, Roxas JL, Adamson C, Anwar F, Clark A, Claus-Walker R, Mansoor A, McQuade R, Monasky RC, Ramamurthy S, Roxas B, Viswanathan VK. An Engineered Synthetic Biologic Protects against *Clostridium difficile* Infection. *Frontiers in Microbiology*. 2018 Sep 5; 9:2080. doi: 10.3389/fmicb.2018.02080. eCollection 2018. PMID: 30233548



V.K. Viswanathan, PhD

University of Arizona – Tucson

Professor, Animal and Comparative Biomedical Sciences
Co-Director, Collaboratory for Anti-infectives and Therapeutics
Professor, BIO5 Institute

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.

Maseda D, Zackular JP, Trindade B, Kirk L, Roxas JL, Rogers LM, Washington MK, Du L, Koyama T, **Viswanathan VK**, Vedantam G, Schloss PD, Crofford LJ, Skaar EP, Aronoff DM. Nonsteroidal Anti-inflammatory Drugs Alter the Microbiota and Exacerbate *Clostridium difficile* Colitis while Dysregulating the Inflammatory Response. *MBio* (American Society for Microbiology) 2019 Jan 8;10(1). pii: e02282-18. doi: 10.1128/mBio.02282-18.

Chu, M., Mallozzi, M. J., Roxas, B. P., Bertolo, L., Monteiro, M. A., Agellon, A., **Viswanathan, V. K.**, & Vedantam, G. (2016). A *Clostridium difficile* Cell Wall Glycopolymer Locus Influences Bacterial Shape, Polysaccharide Production and Virulence. *PLoS pathogens*, 12(10), e1005946.

Wilbur, J. S., Byrd, W., Ramamurthy, S., Ledvina, H., Khirfan, K., Riggs, M., Boedeker, E., Vedantam, G., & **Viswanathan, V. K.** (2015). The secreted effector protein EspZ is essential for virulence of rabbit enteropathogenic *Escherichia coli*. *Infection and immunity*.



Michael Worobey, PhD

University of Arizona – Tucson

Department Head, Ecology and Evolutionary Biology
Professor, Ecology and Evolutionary Biology
Professor, Genetics - GDP
Professor, BIO5 Institute

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.

Washington NL, *et al.* Emergence and rapid transmission of SARS-CoV-2 B.1.1.7 in the United States. 2021. *Cell* 184 1-8.

Pekar J, **Worobey M**, Moshiri N, Scheffler K, Wertheim JO. Timing the SARS-CoV-2 index case in Hubei province. 2021. *Science* 372, 412-417.

Worobey M, Pekar J, Larsen BB, Nelson MI, Hill V, Joy JB, Rambaut A, Suchard MA, Wertheim JO, Lemey P. The emergence of SARS-CoV-2 in Europe and North America. 2020. *Science* 370, 564-570.

Worobey M, Plotkin S, Hensley SE. Influenza vaccines delivered in early childhood could turn antigenic sin into antigenic blessings. 2020. *Cold Spring Harbor Perspect Med* 10, a038471. <https://doi.org/10.1101/cshperspect.a038471>

Worobey M, Cox J, Gill D, The origins of the great pandemic. 2019. *Evolution, Medicine, and Public Health*, Volume 2019, Issue 1, pages 18-25.

Han GZ, **Worobey M**. Endogenous lentiviral elements in the genomes of the Mustelidae. 2012. *Molecular Biology and Evolution* 29: 2905-2908.