

Ph.D. in Clinical Investigation (PCI)

ALBERT EINSTEIN COLLEGE OF MEDICINE



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Introduction

PhD Concentration in Clinical Investigation

The PhD in Clinical Investigation (PCI) provides rigorous advanced training that prepares individuals for an independent research career in clinical and translational science, preparing them to conduct research that aims to improve the health of the population using the methodologies of clinical and translational science. The PCI identifies, educates, supports, and mentors talented PhD and MD-PhD candidates to become impactful and successful scientists. The PCI is offered as a Concentration for predoctoral PhD students enrolled in Einstein's graduate division and for M.D./PhD students in Einstein's Medical Scientist Training Program (MSTP).

Students enrolled in Einstein's PhD or MD-PhD programs can take any number of the three rotations in year one with PCI Faculty. Faculty from any academic department at Einstein may mentor a PCI student, provided they have the qualifications (skills, experience, environment, and support) to serve as a translational research mentor for a predoctoral trainee.

What is PCI?

A training approach that emphasizes clinical/translational research methods and quantitative approaches, focusing on projects with direct application to human health across all diseases or organ systems. The PCI seeks to promote multidisciplinary investigation and to prepare its students to meaningfully and effectively contribute to investigation within the emerging construct of "team science."

Mentors/Departments

A unique aspect of the PCI is that students do not declare in any specific basic science department; departmental responsibilities are managed by the Einstein-Montefiore Institute for Clinical and Translational Research (ICTR). Therefore, *any* qualified faculty member, irrespective of departmental appointment, may serve as a PCI mentor if they meet mentoring standards (experience/ track record, commitment, and a robust research operation that can support students' investigations.)

Program Requirements
PhD in Clinical Investigation (PCI)
Albert Einstein College of Medicine

Program Goal: To provide novel, innovative, and forward-looking pre-doctoral training for biomedical investigators seeking to develop careers in translational research, creating new knowledge to help promote human health and prevent or treat disease.

Curriculum:

- First year graduate students pursue any course of study consistent with general graduate school policies (e.g., 21 credit hours of course work, and 3 rotations, in year 1). Students potentially interested in PCI are encouraged to enroll in the *Design and Conduct of Clinical Research* course and to consult with our program leadership for advice regarding course and/or rotation selection.
- Second year: 6-week Intensive summer course in epidemiology, biostatistics, study design, and data analysis; further required epi/stats course work in the fall semester; advanced elective courses in spring of year 2 and beyond.

Required Courses (usually taken in the second year of graduate school):

Clinical Research: Summer Intensive
Multivariable Regression
Epidemiologic Research Methods

Recommended:

Year 1: Design and Conduct of Clinical Research (*strongly recommended for those without clinical research experience*)

Year 2: and beyond Further methodologically or analytically oriented coursework specific to each trainee, to be determined by program directors and mentors.

Additionally: All PCI courses are integrated with our MS in Clinical Research Methods program; graduate students take classes with medical students (in the MD/MS track) and faculty-level MDs and PhDs.

Program Leaders:

Dean Hosgood, PhD, (Epidemiology and Population Health) Dean.Hosgood@einsteinmed.edu
Paul Marantz, MD, MPH (ICTR) Paul.Marantz@einsteinmed.edu
Louis Weiss MD, MPH (Pathology, Medicine) Louis.weiss@einsteinmed.edu
Sofia de Oliveira, PhD (Development & Molecular Biology) Sofia.deoliveira@einsteinmed.edu



Jacqueline M. Achkar, M.D., M.Sc.

Professor, Department of Medicine (Infectious Diseases)
Associate Director of Translational Bench-to-Bedside Research Training, Clinical
Research Training Program, Co-Director, Global Health Center
Associate Director of T32 for “Geographic Medicine and Emerging Infections”

Dr. Achkar is an Infectious Diseases trained physician-scientist with an additional master’s degree in clinical research methods. She is the Associate Director of Translational Bench-to-Bedside Research Training of the Clinical Research Training Program and has extensive experience in training and mentoring MD and PhD students (incl. PCI students), post-doctoral clinical and research fellows, and junior faculty members.

RESEARCH AREAS: Human host responses to *Mycobacterium tuberculosis* – i) identification of TB biomarkers towards development of simple and rapid diagnostic tests; and ii) identification and investigation of protective antibodies against TB

SELECTED PUBLICATIONS:

Achkar JM*, Cortes L, Croteau P, Yanofsky C, Mentinova M, Rajotte I, Schirm M, Zhou Y, Junqueira-Kipnis AP, Kasprovicz VO, Larsen M, Allard R, Hunter J, Paramithiotis E. Host protein biomarkers identify active tuberculosis in HIV uninfected and co-infected individuals. *EBioMedicine*. 2015; 2(9):1160-68

Chen T, Blanc C, Eder AZ, Prados-Rosales Rafael, Souza ACO, Kim RS, Joe M, Bai Yu, Lowary TL, Tanner R, Brennan MJ, Fletcher HA, McShane H, Casadevall A, **Achkar JM***. Association of Human Antibodies to Arabinomannan with Enhanced Mycobacterial Opsonophagocytosis and Intracellular Growth Reduction. *The Journal of Infectious Diseases*, 2016; 214(2):300-10

Song L, Wallstrom G, Yu X, Hopper M, Van Duine J, Steel J, Park J, Wiktor P, Khan P, Brunner A, Wilson D, Jenny-Avital ER, Qiu J, LaBaer J, Magee DM, **Achkar JM***. Identification of antibody targets for tuberculosis serology using high-density nucleic acid programmable protein arrays. *Mol Cell Proteomics*. 2017; 16(4 suppl 1):S277-S289. PMID: 28223349

Chen T, Blanc C, Liu Y, Ishida E, Singer S, Xu J, Joe M, Jenny-Avital ER, Chan J, Lowary TL, **Achkar JM***. Capsular glycan recognition provides antibody-mediated immunity against tuberculosis. *Journal of Clinical Investigation* 2020; 130(4):1808-1822, PMID: 31935198

Ishida E, Corrigan DT, Malonis RJ, Hofmann D, Chen T, Amin AG, Chatterjee D, Joe M, Lowary TL, Lai JR, **Achkar JM***. Monoclonal antibodies from humans with *M. tuberculosis* exposure or latent infection recognize distinct arabinomannan epitopes. *Communications Biology* 2021; 4(1):1181, PMID: 34642445

Singer SN, Ndumnego OC, Kim RS, Ndung'u T, Anastos K, French A, Churchyard G, Paramithiotis E, Kasprovicz VO, **Achkar JM***. Plasma host protein biomarkers correlating with increasing Mycobacterium tuberculosis infection activity prior to tuberculosis diagnosis in people living with HIV. *EBioMedicine* 2022; 75:103787, PMID: 34968761

SELECTED GRANTS:

NIH/NIAID, 1 R01 AI146329 (Achkar), Title: "Characteristics and protective efficacy of human antibodies against *M. tuberculosis*", Role: PI (35% effort; \$502,863)

The objectives of this proposal are to study polyclonal human antibody responses to the capsule of *Mycobacterium tuberculosis* and to generate and investigate human monoclonal antibodies (mAbs) to the capsular polysaccharide arabinomannan. The overarching goal is to determine the glycan surface epitopes most relevant for antibody-mediated protection against tuberculosis. The knowledge gained could inform new strategies for developing both vaccines and antibody-based immunotherapies against TB.



Adebola Adedimeji, PhD, MBA, MPH, MS

Associate Professor, Department of Epidemiology and Population Health (Health Behavior Research & Implementation Science)

RESEARCH AREA: Behavioral Epidemiology, HIV/AIDS, Cancers

SELECTED PUBLICATIONS:

Lancaster KE, Hetrick A, Jaquet A, [Adedimeji A](#), Atwoli L, Colby DJ, Mayor AM, Parcesepe A, Syvertsen J. [Substance use and universal access to HIV testing and treatment in sub-Saharan Africa: implications and research priorities.](#) J Virus Erad. 2018 Nov 15;4(Suppl 2):26-32. PMID: 30515311

Enane LA, Davies MA, Leroy V, Edmonds A, Apondi E, [Adedimeji A](#), Vreeman RC. [Traversing the cascade: urgent research priorities for implementing the 'treat all' strategy for children and adolescents living with HIV in sub-Saharan Africa.](#) J Virus Erad. 2018 Nov 15;4(Suppl 2):40-46. PMID: 30515313

Parcesepe AM, Bernard C, Agler R, Ross J, Yotebieng M, Bass J, Kwobah E, [Adedimeji A](#), Goulet J, Althoff KN. [Mental health and HIV: research priorities related to the implementation and scale up of 'treat all' in sub-Saharan Africa.](#) J Virus Erad. 2018 Nov 15;4(Suppl 2):16-25. PMID: 30515310

Pierz AJ, Randall TC, Castle PE, [Adedimeji A](#), Ingabire C, Kubwimana G, Uwinkindi F, Hagenimana M, Businge L, Musabyimana F, Munyaneza A, Murenzi G. [A scoping review: Facilitators and barriers of cervical cancer screening and early diagnosis of breast cancer in Sub-Saharan African health settings.](#) Gynecol Oncol Rep. 2020 Jun 22;33:100605. doi: 10.1016/j.gore.2020.100605. eCollection 2020 Aug. PMID: 32637528

Tun W, Pulerwitz J, Shoyemi E, Fernandez A, Adeniran A, Ejiogu F, Sangowawa O, Granger K, Dirisu O, [Adedimeji AA](#). [A qualitative study of how stigma influences HIV services for transgender men and women in Nigeria.](#) J Int AIDS Soc. 2022 Jul;25 Suppl 1(Suppl 1):e25933. doi: 10.1002/jia2.25933. PMID: 35818868

Orumaa M, Campbell S, Støer NC, Castle PE, Sen S, Tropé A, [Adedimeji A](#), Nygård M. [Impact of the Mobile Game FightHPV on Cervical Cancer Screening Attendance: Retrospective Cohort Study.](#) JMIR Serious Games. 2022 Dec 13;10(4):e36197. doi: 10.2196/36197. PMID: 36512401

Logie CH, Toccalino D, Reed AC, Malama K, Newman PA, Weiser S, Harris O, Berry I, [Adedimeji A](#). [Exploring linkages between climate change and sexual health: a scoping review protocol.](#) BMJ Open. 2021 Oct 18;11(10):e054720. doi: 10.1136/bmjopen-2021-054720. PMID: 34663670

Walz EJ, Wanduragala D, [Adedimeji AA](#), Volkman HR, Gaines J, Angelo KM, Boumi AE, Coyle C, Dunlop SJ, Stauffer WM. [Community-based participatory research in travel medicine to identify barriers to preventing malaria in VFR travellers.](#) J Travel Med. 2019 Jan 1;26(1):10.1093/jtm/tay148. doi: 10.1093/jtm/tay148. PMID: 30535124

Parcesepe AM, Remch M, Dzudie A, Ajeh R, Nash D, Anastos K, Yotebieng M, [Adedimeji A](#), Pefura-Yone E, Lancaster K. [Depressive Symptoms, Gender, Disclosure, and HIV Care Stage Among People Living with HIV in Cameroon.](#) AIDS Behav. 2022 Mar;26(3):651-661. doi: 10.1007/s10461-021-03425-3. Epub 2021 Aug 17.

Knittel AK, Shook-Sa BE, Rudolph J, Edmonds A, Ramirez C, Cohen M, [Adedimeji A](#), Taylor T, Michel KG, Milam J, Cohen J, Donohue J, Foster A, Fischl M, Konkle-Parker D, Adimora AA. [Incarceration and Number](#)

- [of Sexual Partners After Incarceration Among Vulnerable US Women, 2007-2017.](#) Am J Public Health. 2020 Jan;110(S1):S100-S108. doi: 10.2105/AJPH.2019.305410. PMID: 31967873
- Chandran A, Edmonds A, Benning L, Wentz E, Adedimeji A, Wilson TE, Blair-Spence A, Palar K, Cohen M, Adimora A. [Longitudinal Associations Between Neighborhood Factors and HIV Care Outcomes in the WIHS.](#) AIDS Behav. 2020 Oct;24(10):2811-2818. doi: 10.1007/s10461-020-02830-4. PMID: 32170507
- Munyaneza A, [Adedimeji A](#), Kim HY, Shi Q, Hoover DR, Ross J, Murchison L, Murenzi G, Kabahizi J, Gasana J, Nsengiyumva B, Kubwimana G, Kanyabwisha F, Muhoza B, Ingabire C, Mutesa L, Castle PE, Palefsky JM, Anastos K, Patel VV. [Awareness and Willingness to Use HIV Pre-exposure Prophylaxis Among Men Who Have Sex With Men in Rwanda: A Cross-Sectional Descriptive Survey.](#) J Assoc Nurses AIDS Care. 2021 Nov-Dec 01;32(6):693-700. doi: 10.1097/JNC.000000000000228. PMID: 33449579
- Chandran A, Bhondoekhan F, Wilson TE, Milam J, Cohen MH, Adimora AA, [Adedimeji A](#), Cocohoba J, Parish C, Holstad M, Kassaye S, Kempf MC. [Intensity of Social Support Matters: A Latent Class Analysis to Identify Levels of Social Support Associated with Optimal Health Outcomes Among Women Living with HIV.](#) AIDS Behav. 2022 Jan;26(1):243-251. doi: 10.1007/s10461-021-03377-8. Epub 2021 Jul 21. PMID: 34287753
- [Adedimeji A](#), Ajeh R, Pierz A, Nkeng R, Ndenkeh JJ, Fuhngwa N, Nsame D, Nji M, Dzudie A, Anastos KM, Castle PE. Challenges and opportunities associated with cervical cancer screening programs in a low income, high HIV prevalence context. BMC Womens Health. 2021 Feb 18;21(1):74. doi: 10.1186/s12905-021-01211-w. PMID: 33602194
- Rogers A, Brazier E, Dzudie A, Adedimeji A, Yotebieng M, Muhoza B, Twizere C, Lelo P, Nsonde D, Mafoua A, Munyaneza A, Gateretse P, Diafouka M, Murenzi G, Niyongabo T, Anastos K, Nash D. [COVID-19 associated changes in HIV service delivery over time in Central Africa: Results from facility surveys during the first and second waves of the pandemic.](#) PLoS One. 2022 Nov 30;17(11):e0275429. doi: 10.1371/journal.pone.0275429. eCollection 2022. PMID: 36449454
- Murenzi G, Kim HY, Munyaneza A, Tuyisenge P, Zawadi TM, Buteera AM, Adedimeji A, Mutesa L, Castle PE, Anastos K, Palefsky JM. [Anogenital Human Papillomavirus and HIV Infection in Rwandan Men Who Have Sex With Men.](#) J Acquir Immune Defic Syndr. 2020 Aug 15;84(5):463-469. doi: 10.1097/QAI.0000000000002376. PMID: 32692104
- Poku OB, Eschliman EL, Entaile P, Rampa S, Mehta H, Tal D, Silvert L, Li T, Becker TD, Govindasamy D, Stockton MA, [Adedimeji A](#), Ho-Foster A, Blank MB, Dangerfield DT 2nd, Yang LH, Murray SM. ["It's Better If I Die Because Even in the Hospital, There is a Stigma, People Still Gossip": Gossip as a Culturally Shaped Labeling Process and Its Implications for HIV-Related Stigma in Botswana.](#) AIDS Behav. 2023 Aug;27(8):2535-2547. doi: 10.1007/s10461-023-03980-x. Epub 2023 Jan 17. PMID: 36646928
- Ross J, Ingabire C, Umwiza F, Gasana J, Munyaneza A, Murenzi G, Nsanzimana S, Remera E, Akiyama MJ, Anastos KM, [Adedimeji A](#). [How early is too early? Challenges in ART initiation and engaging in HIV care under Treat All in Rwanda-A qualitative study.](#) PLoS One. 2021 May 13;16(5):e0251645. doi: 10.1371/journal.pone.0251645. eCollection 2021. PMID: 33984044
- Shaikh MA, Abio AP, Adedimeji AA, Lowery Wilson M. [Involvement in Physical Fights among School Attending Adolescents: A Nationally Representative Sample from Kuwait.](#) Behav Sci (Basel). 2020 Jan 8;10(1):29. doi: 10.3390/bs10010029. PMID: 31936281
- Fujita AW, Ramakrishnan A, Mehta CC, Yusuf OB, Wilson T, Shoptaw S, Carrico AW, Adimora AA, Eaton E, Cohen MH, Cohen J, [Adedimeji A](#), Plankey M, Jones D, Chandran A, Colasanti JA, Sheth AN. [Substance Use](#)

[Treatment Utilization Among Women With and Without Human Immunodeficiency Virus.](#) Open Forum Infect Dis. 2022 Dec 21;10(1):ofac684. doi: 10.1093/ofid/ofac684. eCollection 2023 Jan. PMID: 36655189

[Adedimeji A, Ajeh R, Dzudie A, Kendowo E, Fuhngwa N, Nsame D, Simo-Wambo AG, Orock E, Hebert TM, Pierz AJ, Murokora D, Anastos K, Castle PE. Cervical human papillomavirus DNA detection in women living with HIV and HIV-uninfected women living in Limbe, Cameroon.](#) J Clin Virol. 2020 Jul;128:104445. doi: 10.1016/j.jcv.2020.104445. Epub 2020 May 19. PMID: 32470891

SELECTED GRANTS:

H6N1ZF5HJ2G3

Anastos (PI); Adedimeji, Mutesa, Yotebieng (Co-PI)

9/1/20 – 5/31/24

Einstein/Rwanda/DRC Consortium for Research HIV/HPV/Malignancies

National Cancer Institute



Julia Arnsten, MD, PhD or MPH

Professor, Department of Medicine (General Internal Medicine)

RESEARCH AREA: Behavioral medicine, including adherence with medication-taking, nicotine dependence, and substance abuse.

SELECTED PUBLICATIONS:

Berg KM, Litwin A, Li X, Heo M, **Arnsten JH**. Directly observed antiretroviral therapy improves adherence and viral load in drug users attending methadone maintenance clinics: a randomized controlled trial. *Drug Alcohol Depend*. 2011;113(2-3):192-9. PubMed PMID: [20832196](#); PubMed Central PMCID: [PMC3003759](#).

Brust JC, Litwin AH, Berg KM, Li X, Heo M, **Arnsten JH**. Directly observed antiretroviral therapy in substance abusers receiving methadone maintenance therapy does not cause increased drug resistance. *AIDS Res Hum Retroviruses*. 2011;27(5):535-41. PubMed PMID: [20854173](#); PubMed Central PMCID: [PMC3083727](#).

Berg KM, Litwin AH, Li X, Heo M, **Arnsten JH**. Lack of sustained improvement in adherence or viral load following a directly observed antiretroviral therapy intervention. *Clin Infect Dis*. 2011;53(9):936-43. PubMed PMID: [21890753](#); PubMed Central PMCID: [PMC3189166](#).

Nahvi S, Litwin AH, Heo M, Berg KM, Li X, **Arnsten JH**. Directly observed antiretroviral therapy eliminates adverse effects of active drug use on adherence. *Drug Alcohol Depend*. 2012;120(1-3):174-80. PubMed PMID: [21885212](#); PubMed Central PMCID: [PMC3245772](#).

Arnsten JH, Demas PA, Farzadegan H, Grant RW, Gourevitch MN, Chang CJ, Buono D, Eckholdt H, Howard AA, Schoenbaum EE. Antiretroviral therapy adherence and viral suppression in HIV-infected drug users: comparison of self-report and electronic monitoring. *Clin Infect Dis*. 2001;33(8):1417-23. PubMed PMID: [11550118](#); PubMed Central PMCID: [PMC2692641](#).

Arnsten JH, Demas PA, Grant RW, Gourevitch MN, Farzadegan H, Howard AA, Schoenbaum EE. Impact of active drug use on antiretroviral therapy adherence and viral suppression in HIV-infected drug users. *J Gen Intern Med*. 2002;17(5):377-81. PubMed PMID: [12047736](#); PubMed Central PMCID: [PMC1495042](#).

Berg KM, Demas PA, Howard AA, Schoenbaum EE, Gourevitch MN, **Arnsten JH**. Gender differences in factors associated with adherence to antiretroviral therapy. *J Gen Intern Med*. 2004;19(11):1111-7. PubMed PMID: [15566440](#); PubMed Central PMCID: [PMC1196356](#).

Cooperman NA, Heo M, Berg KM, Li X, Litwin AH, Nahvi S, **Arnsten JH**. Impact of adherence counseling dose on antiretroviral adherence and HIV viral load among HIV-infected methadone maintained drug users. *AIDS Care*. 2012;24(7):828-35. PubMed PMID: [22272732](#); PubMed Central PMCID: [PMC3380183](#).

Genberg BL, Wilson IB, Bangsberg DR, **Arnsten J**, Goggin K, Remien RH, Simoni J, Gross R, Reynolds N, Rosen M, Liu H. Patterns of antiretroviral therapy adherence and impact on HIV RNA among patients in North America. *AIDS*. 2012 Jul 17;26(11):1415-23. PubMed PMID: [22767342](#); PubMed Central PMCID: [PMC3655551](#).

Batchelder AW, Brisbane M, Litwin AH, Nahvi S, Berg KM, **Arnsten JH**. "Damaging what wasn't damaged already": psychological tension and antiretroviral adherence among HIV-infected methadone-maintained

drug users. *AIDS Care*. 2013;25(11):1370-4. PubMed PMID: [23406479](#); PubMed Central PMCID: [PMC3740002](#).

Simoni JM, Huh D, Wang Y, Wilson IB, Reynolds NR, Remien RH, Goggin K, Gross R, Rosen MI, Schneiderman N, **Arnsten J**, Golin CE, Erlen JA, Bangsberg DR, Liu H. The validity of self-reported medication adherence as an outcome in clinical trials of adherence-promotion interventions: Findings from the MACH14 study. *AIDS Behav*. 2014;18(12):2285-90. PubMed PMID: [25280447](#).

Bachhuber M, **Arnsten A**, Wurm, G. Use of cannabis to relieve pain and promote sleep by customers at an adult use dispensary. *J Psychoactive Drugs*. 2019. PubMed PMID: 31264536. PubMed Central ID pending.

Adams TR, **Arnsten JH**, Ning Y, Nahvi S. Feasibility and preliminary effectiveness of varenicline for treating co-occurring cannabis and tobacco Use. *J Psychoactive Drugs*. 2018;50(1):12-18. PubMed PMID: 28952897; PubMedCentral PMCID: PMC5871554

Bachhuber MA, **Arnsten JH**, Starrels JL, Cunningham CO. Willingness to participate in longitudinal research among people with chronic pain who take medical cannabis: a cross-sectional survey. *Cannabis Cannabinoid Res*. 2018;3(1):45-53. PubMed PMID:29607410; PubMed Central PMCID: PMC5870058

Sohler NL, Starrels JL, Khalid L, Bachhuber MA, **Arnsten JH**, Nahvi S, Jost J, Cunningham CO. Cannabis use is associated with lower odds of prescription opioid analgesic use among HIV-infected individuals with chronic pain. *Subst Use Misuse*. 2018;53(10):1602-1607. PubMed PMID: 29338578; PubMed Central PMCID: PMC6037547.

SELECTED GRANTS:

Title: Does medical cannabis reduce opioid analgesics in HIV+ and HIV- adults with pain?

Major Goals: Our overarching goal is to understand how medical cannabis use affects opioid analgesic use over time, with attention to THC/CBD content, HIV outcomes, and adverse events.

Project Number: 5R01DA044171-02

PD/PI: Arnsten, J.

Source of Support: NIH/NIDA

Project/Proposal Start and End Date: 7/1/2017 – 6/30/2024 (NCE)

Total Award Amount (including Indirect Costs): \$3,845,698

Title: Does medical cannabis reduce opioid use? A randomized controlled trial

Major Goals: Specific Aims: In a 4-arm randomized controlled trial, we will examine how medical cannabis use affects opioid analgesic use (Aim 1) and adverse events (Aim 2). We hypothesize that (a) medical cannabis use (vs. no use) will reduce opioid analgesic use; (b) the effect of medical cannabis use on opioid analgesic use will differ by THC/CBD content; (c) medical cannabis use (vs. no use) will have more adverse events (cannabis use disorder, illicit drug use, diversion, accidents, hospitalizations/ER visits); and (4) the effect of medical cannabis use on adverse events will differ by (THC/CBD content).

PD/PI: Arnsten, J.

Source of Support: Laura and John Arnold Foundation

Project/Proposal Start and End Date: 11/01/18-10/31/23

Total Award Amount (including Indirect Costs): \$2,054,259

Title: Integrated Care for Chronic Pain and Opioid Use Disorder: The IMPOWR Research Center at Montefiore/Einstein (IMPOWR-ME)

Major Goals: The aims of IMPOWR-ME are to: 1) create a robust and sustainable research infrastructure to rigorously test and disseminate integrated and cost-effective evidence-based practices for people with chronic pain and opioid use disorder; 2) partner with people with lived experience with chronic pain and opioid use disorder and diverse stakeholders in all stages of the research; and 3) provide opportunities for multidisciplinary early stage investigators to become independent researchers focusing on chronic pain and opioid use disorder.

Project Number: 1RM1DA055437

PD/PI: MPI Starrels / Arnsten / Gabbay

Source of Support: NIH/NIDA

Project/Proposal Start and End Date: 9/30/2021 – 7/31/2026

Total Award Amount (including Indirect Costs): \$13,941,307



Joan Berman, PhD

Professor, Department of Pathology

RESEARCH AREA: CNS HIV infection and neuroAIDS

SELECTED PUBLICATIONS:

Barbaro JM, Sidoli S, Cuervo AM, **Berman JW**. Methamphetamine Dysregulates Macrophage Functions and Autophagy to Mediate HIV Neuropathogenesis. *Biomedicines*. 2022 May 27;10(6). doi: 10.3390/biomedicines10061257. PubMed PMID: 35740279.

Veenhuis RT, Williams DW, Shirk EN, Abreu CM, Ferreira EA, Coughlin JM, Brown TT, Maki PM, Anastos K, **Berman JW**, Clements JE, Rubin LH. (2021) Higher circulating intermediate monocytes are associated with cognitive function in women with HIV. *JCI Insight*. 1 Jun8;6(11):e146215:doi: 10.1172/jci.insight.146215.PMID: 33914710

Cheney L, Barbaro JM, **Berman JW**. Antiretroviral Drugs Impact Autophagy with Toxic Outcomes. *Cells*. 2021 Apr 15;10(4). doi: 10.3390/cells10040909. Review. PubMed PMID: 33920955; PubMed Central PMCID: PMC8071244.

Barbaro JM, Cuervo AM, **Berman JW**. HIV Increases the Inhibitory Impact of Morphine and Antiretrovirals on Autophagy in Primary Human Macrophages: Contributions to Neuropathogenesis. *Cells*. 2021 Aug 24;10(9). doi: 10.3390/cells10092183. PubMed PMID: 34571832; PubMed Central PMCID: PMC8470112.

Chilunda V, Martinez-Aguado P, Xia LC, Cheney L, Murphy A, VekslerV, Ruiz V, Calderon TM, **Berman JW**. Transcriptional Changes in CD16+ Monocytes May Contribute to the Pathogenesis of COVID-19. *Front Immunol*. 2021 May 24;12:665773. doi: 10.3389/fimmu.2021.665773. PMID: 34108966; PMCID: PMC8181441.

Cheney,L.,Guzik ,H., Macaluso, F., Macian,F., A.M. Cuervo, A.M., **Berman, J.W.** (2020) HIV Nef and ART have an Inhibitory Effect on Autophagy in Human Astrocytes that may contribute to HIV associated Neurocognitive disorders. *Cells*. 2020:9, 1426. PMCID: PMC7349791

Murphy A*, Barbaro J*, Martínez-Aguado P, Chilunda V, Jaureguiberry-Bravo M, **Berman JW**. The Effects of Opioids on HIV Neuropathogenesis. *Front Immunol*. 2019;10:2445. doi: 10.3389/fimmu.2019.02445. eCollection 2019. Review. PubMed PMID: 31681322; PubMed Central PMCID: PMC6813247. * co-first authors

Chilunda V, Calderon TM, Martinez-Aguado P, **Berman JW**. The impact of substance abuse on HIV-mediated neuropathogenesis in the current ART era. *Brain Res*. 2019 Dec 1;1724:146426. doi: 10.1016/j.brainres.2019.146426. Epub 2019 Aug 29. PMID: 31473221; PMCID: PMC6889827

Veenstra, M., Byrd, D.A., Inglese, M., Buyukturkoglu, K., Williams, D.W., Fleysher, L., Li, M., Gama, L., Leon-Rivera, R., Calderon, T.M., Clements, J.E., Morgello, S. and **Berman, J.W.** (2018). CCR2 on peripheral blood CD14⁺CD16⁺ monocytes correlates with neuronal damage, HIV-associated neurocognitive disorders, and peripheral HIV DNA: reseeding of CNS reservoirs? *J Neuroimmune Pharmacol*. In Press. PMCID: PMC6320730.

Matias Jauregui-Bravo, Lillie Lopez, and **Joan W. Berman** (2018) Buprenorphine decreases CCL2-mediated migration of CD14⁺CD16⁺ monocytes. Accepted, Journal of Leukocyte Biology.

Bezawit W. Megra, Eliseo A. Eugenin, and **Joan W. Berman**. (2018) Inflammatory mediators reduce surface PrP^c on human BMVEC resulting in decreased barrier integrity. Accepted, Laboratory Investigation.

SELECTED GRANTS:

R01 DA041931

Berman/Volsky (MPI)

04/15/2017-02/28/20223 (NCE)

Effect of Buprenorphine on Monocytes in the Context of NeuroAIDS and Opioid Abuse

R01 MH112391

Berman/Morgello (MPI)

07/19/2017-04/30/2023 (NCE)

Monocyte CNS HIV Entry & Neurodegeneration: Translational Studies in the CART Era

R01 DA044584

Berman/Goldstein (MPI)

07/01/2017-05/31/2023(NCE)

Impact of Illicit Drugs, HIV, and ART on Neuroinflammation and BBB Disruption

R01 DA048609

Berman/Goldstein (MPI)

05/01/2019-04/30/2024

Mechanisms of Opioid-mediated HIV Neuropathogenesis

P30 AI124414

Goldstein (PI)

05/01/2022-04/30/2027

Einstein-Rockefeller-CUNY Center for AIDS Research

Advanced Technology and Biomarkers Core, Core Director, Joan W. Berman



Helena Blumen, PhD, MS

Associate Professor, Department of Medicine (Geriatrics) and Neurology (Cognitive and Motor Aging). Associate director: Resnick Gerontology Center. Director: Neuroimaging of Gait and Cognition Lab.

RESEARCH AREA: Brain health and the interrelationship between social, cognitive, and physical functions in aging and dementia – including lifestyle interventions that promote neuroplasticity and improve such functions.

SELECTED PUBLICATIONS:

Tripathi, S., Verghese, J., & **Blumen, H. M.** (2019). Gray matter volume covariance networks associated with dual-task cost during walking-while-talking. *Human Brain Mapping*. doi: 10.1002/hbm.24520*

* First author is CRTP mentee

Blumen, H. M., Schwartz, E., Allali, G., Beauchet, O., Callisaya, M., Doi, T., Shimada, H., Srikanth, V., & Verghese, J. (2021). Cortical Thickness, Volume and Surface Area in the Motoric Cognitive Risk Syndrome. *Journal of Alzheimer's Disease*, 8(2), 651-665.

Jayakody, O., Breslin, M., Ayers, E., Verghese, J., Barzilai, N., Milman, S., Weiss, E. & **Blumen H.M.** (2022). Relative Trajectories of Gait and Cognitive Decline in Aging. *The Journals of Gerontology. Series A, Biological sciences and medical sciences*. doi.org/10.1093/gerona/glab346. **

** First author is postdoctoral mentee

Felix, N., Ayers, E., Verghese, J., & **Blumen, H. M.** (2022). Increased Social Support Reduces the Incidence of Motoric Cognitive Risk Syndrome. *Innovation in Aging*. ***

*** First author is medical student mentee

Blumen, H.M., Ayers E, Wang, C., Ambrose A.F., Jayakody & Verghese J. (2023). A Randomized-Controlled Trial of Social Ballroom Dancing and Treadmill-Walking: Preliminary Findings on Executive Function and Neuroplasticity from Dementia-At-Risk Older Adults. *Journal of Aging and Physical Activity*.

SELECTED GRANTS:

2020-2025 1R01AG062659-01A1, NIH/NIA. Blumen, H.M. (PI). Trajectories and Modifiable Risk factors of Brain, Gait and Cognitive decline in Aging and Pre-dementia Role: PI

2020-2025 1R01AG068167-01, Verghese, J & Knotkova, H (Co-PIs). Non-Invasive Home Neurostimulation for Mild to Moderate Alzheimer's Disease: Double-Blind, Sham Controlled Randomized Clinical Trial. Role: Co-Investigator.

2020-2025 R01AG057548-01A1, NIH/NIA. Verghese, J (PI) "The biological underpinnings of Motoric Cognitive Risk syndrome: a multi-center study". Role: Co-investigator



Robert D. Burk, MD

Professor and Vice Chair for Translational Research, Department of Pediatrics (Pediatric Genetic Medicine); Professor, Departments of Microbiology & Immunology; Epidemiology & Population Health; and, Obstetrics, Gynecology & Women's Health.

RESEARCH AREAS:

- Translational Research combining large cohort studies with laboratory based cutting-edge technologies.
- Defining the evolution and causality of human papillomaviruses (HPVs) and cancer.
- Developing and analyzing the human microbiome (stool, oral and cervicovaginal samples) as etiological variables in human disease.

SELECTED PUBLICATIONS:

Usyk, M., Peters, B.A., Karthikeyan, S., McDonald, D., Sollecito, C.C., Vazquez-Baeza, Y., Shaffer, J.P., Gellman, M.D., Talavera, G.A. . . **Burk, R.D.** (2023). Comprehensive evaluation of shotgun metagenomics, amplicon sequencing, and harmonization of these platforms for epidemiological studies. *Cell reports methods* 3, 100391.

Schiffman, M., Mirabello, L., Egemen, D., Befano, B., Xiao, Y., Wentzensen, N., Raine-Bennett, T., Nayar, R., Cheung, L.C., Rositch, A. . . **Burk, R.D.** (2023). The combined finding of HPV 16, 18, or 45 and cytologic Atypical Glandular Cells (AGC) indicates a greatly elevated risk of in situ and invasive cervical adenocarcinoma. *Gynecol Oncol* 174, 253-261.

Peters, B.A., Xing, J., Chen, G.C., Usyk, M., Wang, Z., McClain, A.C., Thyagarajan, B., Daviglius, M.L., Sotres-Alvarez, D., Hu, F.B., et al. . . **Burk, R.D.**, Qi, Q. (2023). Healthy dietary patterns are associated with the gut microbiome in the Hispanic Community Health Study/Study of Latinos. *The American journal of clinical nutrition* 117, 540-552.

Gradissimo, A., Clarke, M.A., Xue, X., Castle, P.E., Raine-Bennett, T.R., Schiffman, M., Wentzensen, N., Strickler, H.D., and **Burk, R.D.** (2023). A Novel HPV/Host DNA Methylation-Score and Detection of Cervical Adenocarcinoma. *J Natl Cancer Inst.*

Usyk, M., Schlecht, N.F., Pickering, S., Williams, L., Sollecito, C.C., Gradissimo, A., Porras, C., Safaeian, M., Pinto, L., Herrero, R., et al. . . **Burk, R.D.** (2022). molBV reveals immune landscape of bacterial vaginosis and predicts human papillomavirus infection natural history. *Nat Commun* 13, 233.

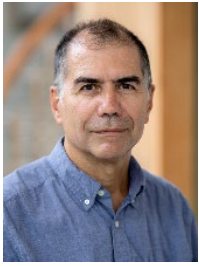
Schlecht, N.F., Diaz, A., Nucci-Sack, A., Shyhalla, K., Shankar, V., Guillot, M., Hollman, D., Strickler, H.D., and **Burk, R.D.** (2021). Incidence and Types of Human Papillomavirus Infections in Adolescent Girls and Young Women Immunized With the Human Papillomavirus Vaccine. *JAMA Netw Open* 4, e2121893.

Kurilshikov, A., Medina-Gomez, C., Bacigalupe, R., Radjabzadeh, D., Wang, J., Demirkan, A., Le Roy, C.I., Raygoza Garay, J.A., Finnicum, C.T., Liu, X., **Burk, R.D.**, et al. (2021). Large-scale association analyses identify host factors influencing human gut microbiome composition. *Nat Genet* 53, 156-165.

Gressel, G.M., Usyk, M., Frimer, M., Kuo, D.Y.S., and **Burk, R.D.** (2021). Characterization of the endometrial, cervicovaginal and anorectal microbiota in post-menopausal women with endometrioid and serous endometrial cancers. *PLoS One* 16, e0259188.

SELECTED GRANTS:

- PI: Burk, R.D. Investigations Into The Molecular Pathogenesis Of Cervical Glandular Neoplasias. CA238592, 07/2020 – 06/2025.
- MPI: Burk, R.D., Schlecht, N. and Diaz, P. Impact of HIV, Oral Microbiome and Mycobiome on Oral HPV Persistence. DE032242, 09/2022 – 08/2027.
- MPI: Burk, R.D., Schlecht, N. and Diaz, A. Cervical, Anal, and Oral HPV Persistence and Risk Factors Among Adolescent Girls. AI072204, 05/2007 – 01/2028.
- MPI: Burk, R.D., Strickler, H. D. Next Generation of HPV and Cervical Cancer Research in HIV+ Women. CA230331, 07/2018 – 06/2024.
- PI: Burk, R.D. Associations of *BRCA1/2 mutations* and genetic variations with Prostate Cancer Risk and Mortality. Nate Gantcher Family Foundation, 07/2022 – 06/2024.



Pablo E. Castillo, MD, PhD

Professor, Department of Neuroscience, Department of Psychiatry and Behavioral Sciences

RESEARCH AREA: Experience-dependent brain plasticity and its dysregulation in disease.

SELECTED PUBLICATIONS:

Lituma PJ, Singer RH, Das S, Castillo PE. (2022) Real-time imaging of Arc/Arg3.1 transcription ex vivo reveals input-specific immediate early gene dynamics. **Proc Natl Acad Sci U S A.** 119(38):e2123373119. doi: 10.1073/pnas.2123373119.

Monday HR, Kharod SC, Yoon YJ, Singer RH, Castillo PE (2022) Presynaptic FMRP and local protein synthesis support structural and functional plasticity of glutamatergic axon terminals. **Neuron** 110(16):2588-2606.e6. doi: 10.1016/j.neuron.2022.05.024.

Nasrallah K, Frechou MA, Yoon YJ, Persaud S, Gonçalves JT, Castillo PE (2022) Seizure-induced strengthening of a recurrent excitatory circuit in the dentate gyrus is pro-convulsant. **Proc Natl Acad Sci U S A.** 119(32):e2201151119. doi: 10.1073/pnas.2201151119.

Hashimotodani Y, Nasrallah K, Jensen KR, Chávez AE, Carrera D, Castillo PE. (2107) LTP at Hilar Mossy Cell-Dentate Granule Cell Synapses Modulates Dentate Gyrus Output by Increasing Excitation/Inhibition Balance. **Neuron** 95:928-9.

Younts TJ, Monday HR, Dudok B, Klein ME, Jordan BA, Katona I, Castillo PE. (2016) Presynaptic Protein Synthesis Is Required for Long-Term Plasticity of GABA Release. **Neuron** 92:479-492.

SELECTED GRANTS:

R01 NS113600 Activity-dependent plasticity in an associative hippocampal circuit: mechanisms, synaptic learning rules and involvement in disease.

R01 MH 125772 Presynaptic forms of long-term plasticity in the CNS.

R01 MH116673 Synaptic Mechanisms for Contextual Memory Formation

R01 NS115543 Activity-dependent Transcriptional Pathways Underlying Synaptic Mechanisms for Memory Discrimination and Generalization



Earle Chambers, PhD, MPH

Professor, Department of Family & Social Medicine
Professor, Department of Epidemiology and Population Health
Professor, Department of Psychiatry and Behavioral Sciences

RESEARCH AREA: Intersection of social epidemiology and social medicine

SELECTED PUBLICATIONS:

Llabre MM, Arguelles W, Schneiderman N, Gallo LC, Daviglius ML, **Chambers EC**, Sotres-Alvarez D, Chirinos DA, Talavera GA, Castaneda SF, Roesch SC, Heiss G. Do all components of the metabolic syndrome cluster together in U.S. Hispanics/Latinos? Results from the Hispanic Community Health study/Study of Latinos. *Ann Epidemiol*. 2015 Jul;25(7):480-5. PubMed Central PMCID: [PMC4457574](#).

Chambers EC, Rosenbaum E. Cardiovascular health outcomes of Latinos in the Affordable Housing as an Obesity Mediating Environment (AHOME) study: a study of rental assistance use. *J Urban Health*. 2014 Jun;91(3):489-98. PubMed Central PMCID: [PMC4074325](#).

Chambers EC, Tull ES, Fraser HS, Mutunhu NR, Sobers N, Niles E. The relationship of internalized racism to body fat distribution and insulin resistance among African adolescent youth. *J Natl Med Assoc*. 2004 Dec;96(12):1594-8. PubMed Central PMCID: [PMC2568670](#).

Chambers EC, Hanna DB, Hua S, Duncan DT, Camacho-Rivera M, Zenk SN, McCurley JL, Perreira K, Gellman MD, Gallo LC. Relationship between area mortgage foreclosures, homeownership, and cardiovascular disease risk factors: The Hispanic Community Health Study/Study of Latinos. *BMC Public Health*. 2019 Jan 17;19(1):77. PubMed Central PMCID: [PMC6335763](#).

Heller CG, Parsons AS, **Chambers EC**, Fiori KP, Rehm CD. Social Risks Among Primary Care Patients in a Large Urban Health System. *Am J Prev Med*. 2020 Apr;58(4):514-525. PubMed Central PMCID: [PMC7362999](#).

Chambers, E.C., Heller, C., Fiori, K., McAuliff, K. and Rehm, C.D., 2020. Chronic pediatric health conditions among youth living in public housing and receiving care in a large hospital system in Bronx, NY. *Global Pediatric Health*, 7, p.2333794X20971164.

Chambers EC, Rehm CD. Brief Report: Characterizing the Burden of Cardiometabolic Disease among Public Housing Residents Served by an Urban Hospital System. *Ethn Dis*. 2019 Summer;29(3):463-468. PubMed Central PMCID: [PMC6645723](#).

Chambers EC, Wong BC, Riley RW, Hollingsworth N, Blank AE, Myers C, Bedell J, Selwyn PA. Combining clinical and population-level data to understand the health of neighborhoods. *Am J Public Health*. 2015 Mar;105(3):510-2. PubMed Central PMCID: [PMC4323686](#).

Chambers EC, Gonzalez JS, Marquez ME, Parsons A, Rehm CD. The Reach of an Urban Hospital System-Based Diabetes Prevention Program: Patient Engagement and Weight Loss Characteristics. *Diabetes Educ*. 2019 Dec;45(6):616-628. PubMed Central PMCID: [PMC7328524](#).

Heo M, Meissner P, Litwin AH, Arnsten JH, McKee MD, Karasz A, McKinley P, Rehm CD, **Chambers EC**, Yeh MC, Wylie-Rosett J. Preference option randomized design (PORD) for comparative effectiveness research: Statistical power for testing comparative effect, preference effect, selection effect, intent-to-treat effect, and overall effect. *Stat Methods Med Res*. 2019 Feb;28(2):626-640. PubMed Central PMCID: [PMC6834113](#).

Chambers EC, Rehm CD, Correria J, Garcia LE, Marquez ME, Wylie-Rosett J, Parsons A. Factors in Placement and Enrollment of Primary Care Patients in YMCA's Diabetes Prevention Program, Bronx, New York, 2010-2015. *Prev Chronic Dis.* 2017 Mar 30;14:E28. PubMed Central PMCID: [PMC5386615](#).

Chambers EC, Wylie-Rosett J, Blank AE, Ouziel J, Hollingsworth N, Riley RW, Selwyn PA. Increasing Referrals to a YMCA-Based Diabetes Prevention Program: Effects of Electronic Referral System Modification and Provider Education in Federally Qualified Health Centers. *Prev Chronic Dis.* 2015 Nov 5;12:E189. PubMed Central PMCID: [PMC4651145](#).

Chambers EC, McAuliff KE, Heller CG, Fiori K, Hollingsworth N. Toward Understanding Social Needs Among Primary Care Patients With Uncontrolled Diabetes. *J Prim Care Community Health.* 2021 Jan-Dec;12:2150132720985044. PubMed PMID: [33467953](#).

Chambers EC, Heller C, Fiori K, McAuliff K, Rehm CD. Chronic pediatric health conditions among youth living in public housing and receiving care in a large hospital system in Bronx, NY. *Glob Pediatr Health.* 2020;7:2333794X20971164. PubMed Central PMCID: [PMC7672759](#).

Ashby-Thompson M, Ji Y, Wang J, Yu W, Thornton JC, Wolper C, Weil R, **Chambers EC**, Laferrère B, Pi-Sunyer FX, Gallagher D. High-Resolution Three-Dimensional Photonic Scan-Derived Equations Improve Body Surface Area Prediction in Diverse Populations. *Obesity (Silver Spring).* 2020 Apr;28(4):706-717. PubMed Central PMCID: [PMC7375836](#).

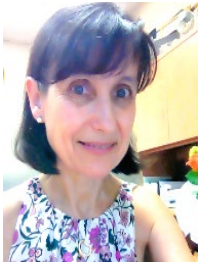
Chambers EC, Wong BC, Riley RW, Hollingsworth N, Blank AE, Myers C, Bedell J, Selwyn PA. Combining clinical and population-level data to understand the health of neighborhoods. *Am J Public Health.* 2015 Mar;105(3):510-2. PubMed Central PMCID: [PMC4323686](#).

SELECTED GRANTS:

R01 HL166318-01, National Heart, Lung, And Blood Institute
Chambers, Earle C (PI)
01/01/23-12/31/26
Bronx Neighborhood Redevelopment and CVD in mid-life and older adults

R01 DK121896-01, National Institute of Diabetes and Digestive and Kidney Diseases
Chambers, Earle C (MPI)
09/16/19-08/31/24
Power-Up: An Effectiveness Trial of the Diabetes Prevention Program Tailored for Black and Latino Men

P30 DK111022, National Institute of Diabetes and Digestive and Kidney Diseases
Gonzalez (PI)
Role: Director, Population Health and Health Systems Core
Role: Director, Enrichment Program
09/2021- 08/2026



Ana Maria Cuervo, MD, PhD

Professor, Department of Developmental and Molecular Biology
Professor, Department of Medicine (Hepatology)
Co-Director Institute for Aging Research

RESEARCH AREA: Molecular basis of malfunctioning of autophagy (cellular quality control system) with age and the contribution of defects on this cellular pathway to age-related disorders such as neurodegeneration, metabolic disorders, and cancer.

Our group is interested in understanding how altered proteins can be eliminated from the cells and their components recycled. We have linked alterations in lysosomal protein degradation (autophagy) with different neurodegenerative diseases including Parkinson's, Alzheimer's, and Huntington's disease. We have also proven that restoration of normal lysosomal function prevents accumulation of damaged proteins with age, demonstrating this way that removal of these toxic products is possible. We have pioneered studies demonstrating a tight link between autophagy and metabolism, whereby autophagy coordinates glucose and lipid metabolism and failure of different autophagic pathways with age contributes to important metabolic disorders such as diabetes or obesity.

SELECTED PUBLICATIONS:

Kaushik S, Juste YR, Lindenau K, Dong S, Macho-Gonzales A, Santiago-Fernandez O, McCabe M, Singh R, Gavathiotis E, **Cuervo AM**. Chaperone-mediated autophagy regulates adipocyte differentiation. *Sci. Adv.* 8 (46) DOI: 10.1126/sciadv.abq2733 , 2022

Madrigal-Matute J, de Bruijn J, van Kuijk K, Riascos-Bernald DF, Diaz A, Tasset I, Martín-Segura A, Gijbel MJJ, Sander B, Kaushik S, Biessen EAL, Tiano S, Bourdenx M, Krause GJ, McCracken I, Baker A, Jin H, Sibinga N, Bravo-Cordero JJ, Macian F, Singh R, Rensen PCN, Berbée JFP, Pasterkamp G, Sluimer JC, **Cuervo AM**. Protective role of chaperone-mediated autophagy against atherosclerosis. *Proc. Nat. Acad. Sci. Inaugural Paper*, 2022 119(14):e2121133119. doi: 10.1073/pnas.2121133119, 2022

Bourdenx M, Martin-Segura A, Scrivo A, Rodriguez-Navarro J, Kaushik S, Tasset I, Diaz A, Strom NJ, Xin Q, Juste YR, Stevenson E, Luengo E, Clement C, Choi SJ, Krogan NJ, Mosharov EV, Santambrogio L, Grueninger F, Collin L, Swaney DL, Sulzer D, Gavathiotis E, **Cuervo AM**. Chaperone-mediated autophagy prevents collapse of the neuronal metastable proteome. *Cell* 184: 1-19 doi: 10.1016/j.cell.2021.03.048, 2021

Kaushik, S. **Cuervo AM***. Degradation of lipid droplet-associated proteins by chaperone-mediated autophagy facilitates lipolysis. *Nat. Cell. Biol.* 17: 759-70, 2015

Schneider JL, Suh Y, **Cuervo AM***. Deficient chaperone-mediated autophagy in liver leads to metabolic dysregulation. *Cell Metab.* 20:417-432, 2014

Zhang, C., **Cuervo, AM***. Restoration of chaperone-mediated autophagy in aging improves cellular maintenance and organ function. *Nat. Med.* 14: 959-65, 2008

Kaushik S, Tasset I, Arias E, Pampliega O, Wong E, Martinez-Vicente M, **Cuervo AM**. Autophagy and the Hallmarks of Aging. *Ageing Res Rev.* doi: 10.1016/j.arr.2021.101468, 2022

Scrivo A, Bourdenx M, Pampliega O, **Cuervo AM**. Selective autophagy as a potential therapeutic target for neurodegenerative disorders. *Lancet Neurol* 17(9):802-815, 2018

Kaushik S, **Cuervo AM**. Proteostasis and aging. *Nat Med*. 21:1406-15, 2015

SELECTED GRANTS:

5P01 AG031782-13A1 NIH/NIA: Autophagy in aging: testing geroscience in Alzheimer's disease

R37 AG21904-20 NIH/NIA: Decreased Protein Degradation in Aging

Research Grant - The Rainwaters Foundation: Targeting chaperone-mediated autophagy and endosomal microautophagy in Tau pathology

Research Grant - The JPB Foundation: Selective autophagy and Parkinson's Disease



Johanna Daily, MD, MS

Professor, Department of Medicine (Infectious Disease)

RESEARCH AREA: Biology and host response to Plasmodium falciparum infection

I am a physician scientist, trained in Infectious Diseases and Epidemiology and study human cohorts to address basic immunology, pathogenesis and refine clinical models of disease in malaria and more recently in COVID-19. My core research program in malaria studies host and parasite factors associated with cerebral malaria, through the study of naturally infected cohorts and in animal models of malaria over the past two decades. Recently we identified pipelicolic acid as a putative mechanism of coma in cerebral malaria using combined population cohort studies and animal models of experimental cerebral malaria. During the pandemic, I contributed to COVID-19 projects including recruiting COVID-19 patients for convalescent plasma studies used in our Expanded Access Treatment Program and our RCT of convalescent plasma versus placebo. I have mentored three medical students toward their Clinical Research Training Program (CRTP), and multiple graduate students, post-doctoral fellows and K funded physician scientists in the area of infectious diseases. I am the career development associate program director for the Department of Medicine Internal Medicine Residents and serve the same role with the Master students in the CRTP. My skills in clinical and translational research and education will serve me well as a co-mentor to Dr. Sy in the area of cohort studies and arboviral epidemiology and clinical research

SELECTED PUBLICATIONS:

Keswani T, Obeidallah A, Nieves E, Sidoli S, Fazzari M, Terrie Taylor T, Seydel K, **Daily JP**, Pipelicolic acid, a putative mediator of the encephalopathy of cerebral malaria and the experimental model of cerebral malaria, *The Journal of Infectious Diseases*, Volume 225, Issue 4, 15 February 2022, Pages 705–714.

Yoon HA, Bartash R, Gendlina I, Rivera J, Nakouzi A, Bortz RH 3rd, Wirchnianski AS, Paroder M, Fehn K, Serrano-Rahman L, Babb R, Sarwar UN, Haslwanter D, Laudermilch E, Florez C, Dieterle ME, Jangra RK, Fels JM, Tong K, Mariano MC, Vergnolle O, Georgiev GI, Herrera NG, Malonis RJ, Quiroz JA, Morano NC, Krause GJ, Sweeney JM, Cowman K, Allen S, Annam J, Applebaum A, Barboto D, Khokhar A, Lally BJ, Lee A, Lee M, Malaviya A, Sample R, Yang XA, Li Y, Ruiz R, Thota R, Barnhill J, Goldstein DY, Uehlinger J, Garforth SJ, Almo SC, Lai JR, Gil MR, Fox AS, Chandran K, Wang T, **Daily JP**, Pirofski LA. Treatment of severe COVID-19 with convalescent plasma in Bronx, NYC. *JCI Insight*. 2021 Feb 22;6(4):142270. doi: 10.1172/jci.insight.142270. PMID: 33476300

Lakshmanan V, Rhee K, Wang W, Yu Y, Khafizov K, Fiser A, Wu P, Ndir O, Mboup S, Ndiaye D, **Daily J**. (2012). Metabolomic analysis of patient plasma yields evidence of plant-like α -linolenic acid metabolism in *Plasmodium falciparum*. *Journal of Infectious Diseases*;206:238-48. PMID: 22566569 PMCID: PMC3490690

Feintuch CM, Saidi A, Seydel K, Chen G, Goldman-Yassen A, Mita N, Kim RS, Frenette PS, Taylor T, **Daily JP**. (2016). Activated neutrophils are associated with pediatric cerebral malaria vasculopathy in Malawian children. *mBio*; 16 February, vol 7. No 1 e01300-15. PMID: 26884431 PMCID: PMC4791846

Daily JP, Minuti A, Khan N. Diagnosis, Treatment, and Prevention of Malaria in the US: A Review. *JAMA*. 2022 Aug 2;328(5):460-471. doi: 10.1001/jama.2022.12366. PMID: 35916842.

SELECTED GRANTS:

NIAID 1 R01 AI164864-01 Daily (PI) 2022-2027 15%
Defining the mechanism of coma in cerebral malaria. Testing the role of metabolites identified in plasma screen in human cerebral malaria and the experimental model of cerebral malaria.

NIAID 1 R21 AI162007-01 Daily (PI) 2021-2023 15%
Identifying adjunctive therapy in the experimental model of malaria to improve cerebral malaria outcomes.

NINDS 1R01 NS123445-01 Daily, Lipton (MPI) 2022-2027 15%
Characterizing persistent subclinical neurobehavioral effects of COVID-19 in a diverse urban population.



Sofia de Oliveira, PhD

Assistant Professor, Department of Developmental & Molecular Biology, and Department of Medicine

RESEARCH AREA: Aging and diet impact on Neutrophils and their role in disease progression (Polytraumatic injury, Non-alcoholic fatty liver disease, liver cancer).

SELECTED PUBLICATIONS:

de Oliveira S, Reyes-Aldasoro CC, Candel S, Renshaw SA, Mulero V, Calado A. "Cxcl8 (IL-8) mediates neutrophil recruitment and behavior in the zebrafish inflammatory response." *J Immunol.* 190(8):4349-59. 2013.

de Oliveira S, López-Muñoz A, Candel S, Pelegrín P, Calado Â, Mulero V. "ATP modulates acute inflammation in vivo through dual oxidase 1-derived H₂O₂ production and NF-κB activation." *J Immunol.* 192(12):5710-9. 2014.

de Oliveira S, Lopez-Muñoz A, Martínez-Navarro FJ, Galindo-Villegas J, Mulero V, Calado Â. "Cxcl8-I1 and Cxcl8-I2 are required in the zebrafish defense against Salmonella Typhimurium." *Dev Comp Immunol.* 49(1):44-8. 2015.

de Oliveira S, Boudinot P, Calado Â, Mulero V. "Duox1-Derived H₂O₂ Modulates Cxcl8 Expression and Neutrophil Recruitment via JNK/c-JUN/AP-1 Signaling and Chromatin Modifications." *J Immunol.* 194(4):1523-33. 2015.

de Oliveira S*, Rosowski EE*, Huttenlocher A. (2016) Neutrophil migration in infection and wound repair: going forward in reverse. *Nat Rev Immunol.* 16(6):378-91. * These authors contributed equally.

de Oliveira S*, Houseright RA, Graves AL, Golenberg N, Korte BJ, Miskolci V and Huttenlocher A*. (2019) Macrophages contribute to early progression in a zebrafish model of NAFLD/NASH-associated hepatocellular carcinoma. *Journal of Hepatology.* 70(4):710-721. *These authors are co correspondents.

de Oliveira S*, Houseright RA, Korte BJ and Huttenlocher A*. (2020) DnaJ-PKAc fusion induces liver inflammation in a zebrafish model of Fibrolamellar Carcinoma. *Disease Models & Mechanisms.* pii: dmm.042564. doi: 10.1242/dmm.042564. *These authors are co-correspondents.

Michael C, Martinez-Navarro F, **de Oliveira S**. (2021) Analysis of Liver Microenvironment during Early Progression of Non-Alcoholic Fatty Liver Disease-Associated Hepatocellular Carcinoma in Zebrafish. *Journal of visualized experiments: JoVE.* doi: 10.3791/62457.

Feliz-Norberto, M, Michael, C, **de Oliveira S**. (2021) Neutrophil reverse migration from liver fuels neutrophilic inflammation to tissue injury in Nonalcoholic Steatohepatitis. *BioRxiv.* pii: dmm.042564. doi.org/10.1101/2021.10.03.462893.

Michael C, DiCristofano A, **de Oliveira S**. (2023) A zebrafish xenotransplant model of anaplastic thyroid cancer to study the tumor microenvironment and innate immune cell interactions in vivo. *BioRxiv.* doi.org/10.1101/2023.05.29.541816.

SELECTED GRANTS:

NIH/NIGMS R35GM147416-01; PI: de Oliveira, S. **Neutrophils in polytrauma – from recruitment to phenotypic and functional reprogramming.** Trauma is a major public health crisis worldwide, and the number one leading cause of death from age 1 to 46. Neutrophils play a crucial pathological role in posttraumatic inflammatory response. Importantly, dysregulation of neutrophil responses and function due to pre-existent metabolic syndrome and associated meta-inflammation, contribute to increased susceptibility to develop posttraumatic complications in high-risk groups. Therefore, the goal of this work is to determine the mechanisms governing neutrophil responses in polytrauma in healthy and meta-inflammation conditions.

P&F Award from Marion Bessin Liver Research Center. PI: de Oliveira, S. **Investigating the role of innate immune cells in the liver microenvironment during NASH progression.**

Andrew McDonough B+ Foundation. PI: de Oliveira, S.; **The role of inflammation in the liver microenvironment of a Fibrolamellar Carcinoma zebrafish model.**

P&F Award from Einstein's Nathan Shock Center in the Basic Biology of Aging. PI: de Oliveira, S.; **Understanding neutrophil function in age-related immunometabolic dysfunction.**



Carol Derby, PhD

Professor, Department of Neurology

RESEARCH AREA: Relation of cardiovascular risk factors to the natural history of Alzheimer's Disease and Dementia

SELECTED PUBLICATIONS:

Anti-Müllerian Hormone Level Decline in Patients Undergoing Hysterectomy With and Without Oophorectomy Compared With Natural Menopause

Santoro, N., Flyckt, R., Davis, A., Finkelstein, J., Crawford, S., Sun, F., **Derby, C.**, Morrison, A., Sluss, P. & Zhang, H., Feb 1 2023, In: Obstetrics and gynecology. 141, 2, p. 331-340 10 p.

Research output: Contribution to journal › Article › peer-review

Availability of healthy foods, fruit and vegetable consumption, and cognition among urban older adults
Hyun, J., Katz, M. J., **Derby, C.** A., Roque, N., Muñoz, E., Sliwinski, M. J., Lovasi, G. S. & Lipton, R. B., Dec 2023, In: BMC Geriatrics. 23, 1, 302.

Research output: Contribution to journal › Article › peer-review

Carotid intima media thickness and white matter hyperintensity volume among midlife women

Thurston, R. C., Wu, M., Barinas-Mitchell, E., Chang, Y., Aizenstein, H., **Derby, C.** A. & Maki, P. M., 2023, (Accepted/In press) In: Alzheimer's and Dementia.

Research output: Contribution to journal › Article › peer-review

Discrimination and Education Quality Moderate the Association of Sleep With Cognitive Function in Older Black Adults: Results From the Einstein Aging Study

Ji, L., Zhaoyang, R., Jiao, J. L., Schade, M. M., Bertisch, S., **Derby, C.** A., Buxton, O. M. & Gamaldo, A. A., Apr 1 2023, In: Journals of Gerontology - Series B Psychological Sciences and Social Sciences. 78, 4, p. 596-608 13 p.

Research output: Contribution to journal › Article › peer-review

Dose-response relationship between late-life physical activity and incident dementia: A pooled analysis of 10 cohort studies of memory in an international consortium

for Cohort Studies of Memory in an International Consortium (COSMIC), Jan 2023, In: Alzheimer's and Dementia. 19, 1, p. 107-122 16 p.

Research output: Contribution to journal › Article › peer-review

Menopausal Vasomotor Symptoms and White Matter Hyperintensities in Midlife Women

Thurston, R. C., Wu, M., Chang, Y. F., Aizenstein, H. J., **Derby, C.** A., Barinas-Mitchell, E. A. & Maki, P., Jan 10 2023, In: Neurology. 100, 2, p. E133-E141

Research output: Contribution to journal › Article › peer-review

Psychosocial impacts of the COVID-19 pandemic on women with trauma histories: Study of Women's

Health Across the Nation (SWAN) Jakubowski, K. P., Koffer, R. E., Matthews, K. A., Burnett-Bowie, S. A. M., **Derby, C.** A., Yu, E. W., Green, R. & Thurston, R. C., Feb 2023, In: Journal of Traumatic Stress. 36, 1, p. 167-179 13 p.

Research output: Contribution to journal › Article › peer-review

Sleep timing, sleep regularity, and psychological health in early late life women: Findings from the Study of Women's Health Across the Nation (SWAN) Swanson, L. M., Hood, M. M., Hall, M. H., Avis, N. E., Joffe, H., Colvin, A., Ruppert, K., Kravitz, H. M., Neal-Perry, G., **Derby, C. A.**, Hess, R. & Harlow, S. D., Apr 2023, In: Sleep Health. 9, 2, p. 203-210 8 p.

Research output: Contribution to journal › Article › peer-review

The independent associations of anti-Müllerian hormone and estradiol levels over the menopause transition with lipids/lipoproteins: The study of women's health across the nation

El Khoudary, S. R., Chen, X., Qi, M., **Derby, C. A.**, Brooks, M. M., Thurston, R. C., Janssen, I., Crawford, S., Lee, J. S., Jackson, E. A., Chae, C. U., McConnell, D. & Matthews, K. A., 2023, (Accepted/In press) In: Journal of Clinical Lipidology.

Research output: Contribution to journal › Article › peer-review

The quantity and quality of cardiovascular fat at mid-life and future cognitive performance among women: The SWAN cardiovascular fat ancillary study

Qi, M., Janssen, I., Barinas-Mitchell, E., Budoff, M., Brooks, M. M., Karlamangla, A. S., **Derby, C. A.**, Chang, C. C. H., Shields, K. J. & El Khoudary, S. R., 2023, (Accepted/In press) In: Alzheimer's and Dementia.

Research output: Contribution to journal › Article › peer-review

Depressive symptoms mediate the relationship between diabetes and cognitive performance in a community-based sample of older adults

Hoogendoorn, C. J., Qin, J., Wang, C., Roque, N., Laurenceau, J. P., Katz, M. J., **Derby, C. A.**, Lipton, R. B. & Gonzalez, J. S., Jul 2022, In: Journal of Diabetes and Its Complications. 36, 7, 108183.

Research output: Contribution to journal › Article › peer-review

Education, Occupational Complexity, and Incident Dementia: A COSMIC Collaborative Cohort Study

Hyun, J., Hall, C. B., Katz, M. J., **Derby, C. A.**, Lipnicki, D. M., Crawford, J. D., Guaita, A., Vaccaro, R., Davin, A., Kim, K. W., Han, J. W., Bae, J. B., Röhr, S., Riedel-Heller, S., Ganguli, M., Jacobsen, E., Hughes, T. F., Brodaty, H., Kochan, N. A., Trollor, J., & 5 others, 2022, In: Journal of Alzheimer's Disease. 85, 1, p. 179-196 18 p.

Research output: Contribution to journal › Article › peer-review

Infertility, recurrent pregnancy loss, and risk of stroke: Pooled analysis of individual patient data of 618 851 women. Liang, C., Chung, H. F., Dobson, A. J., Hayashi, K., Van Der Schouw, Y. T., Kuh, D., Hardy, R., **Derby, C. A.**, El Khoudary, S. R., Janssen, I., Sandin, S., Weiderpass, E. & Mishra, G. D., Jun 22 2022, In: The BMJ. e070603.

Research output: Contribution to journal › Article › peer-review

Inflammatory biomarkers and motoric cognitive risk syndrome: Multicohort survey

Groeger, J. L., Ayers, E., Barzilai, N., Beauchet, O., Callisaya, M., Torossian, M. R., **Derby, C.**, Doi, T., Lipton, R. B., Milman, S., Nakakubo, S., Shimada, H., Srikanth, V., Wang, C. & Verghese, J., Jan 2022, In: Cerebral Circulation - Cognition and Behavior. 3, 100151.

Research output: Contribution to journal › Article › peer-review

Interpersonal Trauma and Risk of Incident Cardiovascular Disease Events Among Women

Thurston, R. C., Chang, Y., Matthews, K. A., Harlow, S., El Khoudary, S. R., Janssen, I. & **Derby, C.**, Apr 5 2022, In: Journal of the American Heart Association. 11, 7, e024724.

Research output: Contribution to journal › Article › peer-review

Longitudinal Associations of Air Pollution With Body Size and Composition in Midlife Women: The Study of Women's Health Across the Nation

Wang, X., Karvonen-Gutierrez, C. A., Gold, E. B., **Derby, C.**, Greendale, G., Wu, X., Schwartz, J. & Park, S. K., Nov 2022, In: Diabetes care. 45, 11, p. 2577-2584 8 p.

Research output: Contribution to journal › Article › peer-review

Menopause Is Associated with an Altered Gut Microbiome and Estrobolome, with Implications for Adverse Cardiometabolic Risk in the Hispanic Community Health Study/Study of Latinos

Kaplan, R. C., Peters, B. A., Lin, J., Qi, Q., Usyk, M., Isasi, C. R., Mossavar-Rahmani, Y., **Derby, C. A.**, Santoro, N., Perreira, K. M., Daviglius, M. L., Kominiarek, M. A., Cai, J., Knight, R. & Burk, R. D., Jun 2022, In: mSystems. 7, 3

Research output: Contribution to journal › Article › peer-review

Patterns of menstrual cycle length over the menopause transition are associated with subclinical atherosclerosis after menopause

El Khoudary, S. R., Qi, M., Chen, X., Matthews, K., Allshouse, A. A., Crawford, S. L., **Derby, C. A.**, Thurston, R. C., Kazlauskaitė, R., Barinas-Mitchell, E. & Santoro, N., Jan 11 2022, In: Menopause. 29, 1, p. 8-15 8 p.

Research output: Contribution to journal › Article › peer-review

Reliabilities of Intra-Individual Mean and Intra-Individual Variability of Self-Reported Pain Derived From Ecological Momentary Assessments: Results From the Einstein Aging Study

Hyun, J., Qin, J., Wang, C., Katz, M. J., Pavlovic, J. M., **Derby, C. A.** & Lipton, R. B., Apr 2022, In: Journal of Pain. 23, 4, p. 616-624 9 p.

Research output: Contribution to journal › Article › peer-review

Sexual assault and white matter hyperintensities among midlife women

Thurston, R. C., Jakubowski, K. P., Wu, M., Aizenstein, H. J., Chang, Y., **Derby, C. A.**, Koenen, K. C., Barinas-Mitchell, E. & Maki, P. M., Apr 2022, In: Brain Imaging and Behavior. 16, 2, p. 773-780 8 p.

Research output: Contribution to journal › Article › peer-review

SELECTED GRANTS:

Active

Einstein Aging Study

Buschke, H., Dickson, D. W., Hall, C. R., Lee, S. C., Lipton, R. B., Verghese, J., Derby, C. C. A., Derby, C. A., Hall, C. C. B., Wolfson, L. L. I., Lipton, M. L., Sliwinski, M. J., Chin, S. S. S., Wang, C., Zimmerman, M. E., Pavlovi, J. J., Katz, M. M., Derby, C. A., Cohen, D., Crystal, H. A., Crystal, H., Dickson, D., Golden, R., Grober, E., Hamerman, D., Katzman, R., Lipton, N. R., Marantz, P. R., Ritter, W., Wolfson, L. I. & Wolfson, L.

National Institute on Aging

9/1/85 → 3/31/24

Finished

The Study of Women's Health Across the Nation (SWAN): The Impact of Midlife and the Menopause Transition on Health and Functioning in Early Old Age

Derby, C. A.

9/30/20 → 8/31/21

Project: Research project

The Study of Women's Health Across the Nation (SWAN): The Impact of Midlife and the Menopause Transition on Health and Functioning in Early Old Age

Brooks, M. M., Burnett-bowie, S. M., Derby, C. A., Harlow, S. D., Hedderson, M. M., Janssen, I., Karlamangla, A. S., Karvonen-gutierrez, C. A., Mcconnell, D. S., Thurston, R. C. & Waetjen, E. L.
National Institute on Aging
9/30/20 → 8/31/22
Project: Research project

Application of ambulatory methods for assessing short- and long-term associations of sleep health with cognitive decline in older adults
Derby, C. A.
4/15/19 → 1/31/22
Project: Research project

Application of ambulatory methods for assessing short- and long-term associations of sleep health with cognitive decline in older adults
Derby, C. A. & Buxton, O. M.
National Institute on Aging
4/15/19 → 1/31/23
Project: Research project

Project 2: Autonomic Dysfunction and Early Cognitive Changes
Derby, C. A.
National Institute on Aging
4/1/16 → 5/31/20
Project: Research project

PREVENTION & DETECTION OF CHD IN WOMEN: A CD-ROM
Dunn, J. E. & Derby, C. A.
National Heart, Lung, and Blood Institute
8/17/00 → 7/31/01
Project: Research project

PREVENTION AND MANAGEMENT OF CHD IN WOMEN--A CD ROM
Derby, C. A., McKinlay, J. & Dunn, J.
4/1/99 → 10/31/03
Project: Research project

CATCH--A STUDY OF INSTITUTIONALIZATION
Derby, C. A. & Osganian, S. K.
National Heart, Lung, and Blood Institute
5/1/98 → 3/31/02
Project: Research project

CATCH--A STUDY OF INSTITUTIONALIZATION
Derby, C. A.
5/1/98 → 3/31/02
Project: Research project

CVD TRENDS 1980 TO 1991--A GENDER SPECIFIC PERSPECTIVE
Derby, C. A.

7/1/96 → 6/30/01
Project: Research project

CVD TRENDS 1980 TO 1991--A GENDER SPECIFIC PERSPECTIVE

Derby, C. A. & Derby, C. A.
National Heart, Lung, and Blood Institute
7/1/96 → 6/30/01
Project: Research project

GYNECOLOGIC IMPACT OF THE MENOPAUSAL TRANSITION

Derby, C. A., Weiss, G., Wildman, R., Santoro, N. F., Santoro, N. F., Rose, S. A., Rose, S. A., Rose, S. A. & Rose, S. A.
9/30/94 → 6/30/20
Project: Research project

The Study of Women Across a Lifespan: SWAN

Santoro, N. F., Derby, C. A., Wildman, R. P., Derby, C. A. & Weiss, G. G.
National Institute on Aging
9/30/94 → 6/30/20
Project: Research project

DEMENTIA IN THE ELDERLY--ALZHEIMER'S DISEASE OR ISCHEMIA

Ritter, W., Grober, E., Cohen, D., Hamerman, D., Katzman, R., Wolfson, L., Crystal, H., Dickson, D., Crystal, H., Sliwinski, M. J., Dickson, D. W., Golden, R., Sliwinski, M. J., Wang, C., Lipton, M. L., Derby, C. A., Buschke, H., Buschke, H., Buschke, H., Lipton, R. B. & Verghese, J.
1/1/01 → 5/31/21
Project: Research project



Teresa DiLorenzo, PhD

Professor, Department of Microbiology & Immunology

RESEARCH AREA: Autoimmune diseases and autoantigens; immunopathogenesis of type 1 diabetes

SELECTED PUBLICATIONS:

Gearty, S. V., F. Dundar, P. Zumbo, G. Espinosa-Carrasco, M. Shakiba, F. J. Sanchez-Rivera, N. D. Socci, P. Trivedi, S. W. Lowe, P. Lauer, N. Mohibullah, A. Viale, **T. P. DiLorenzo**, D. Betel, and A. Schietinger. 2022. An autoimmune stem-like CD8 T cell population drives type 1 diabetes. *Nature* 602:156-161.

Amdare, N., A. W. Purcell, and **T. P. DiLorenzo**. 2021. Non-contiguous T cell epitopes in autoimmune diabetes: from mice to men and back again. *J. Biol. Chem.* 297:100827.

James, E. A., R. Mallone, S. C. Kent, and **T. P. DiLorenzo**. 2020. T-cell epitopes and neo-epitopes in type 1 diabetes: a comprehensive update and reappraisal. *Diabetes* 69:1311-1335.

Schloss, J., R. Ali, J. Babad, I. Guerrero-Ros, J. Pongsachai, L. He, T. Keler, and **T. P. DiLorenzo**. 2019. Development and characterization of a preclinical model for the evaluation of CD205-mediated antigen delivery therapeutics in type 1 diabetes. *ImmunoHorizons* 3:236-253.

Lieberman, S. M., A. M. Evans, B. Han, T. Takaki, Y. Vinnitskaya, J. A. Caldwell, D. V. Serreze, J. Shabanowitz, D. F. Hunt, S. G. Nathenson, P. Santamaria, and **T. P. DiLorenzo**. 2003. Identification of the β cell antigen targeted by a prevalent population of pathogenic CD8⁺ T cells in autoimmune diabetes. *Proc. Natl. Acad. Sci. USA* 100:8384-8388.

SELECTED GRANTS:

NIH R01 DK135079

Multi-PI - **DiLorenzo, Teresa P.** and Purcell, Anthony 2/1/23 - 1/31/25
The "Dark Immunopeptidome" as a Source of CD8 T Cell Epitopes in Type 1 Diabetes

NIH R01 AI123730

Multi-PI - **DiLorenzo, Teresa P.** and Almo, Steven C. 2/1/18 - 1/31/24
Structural, Functional, and Mechanistic Analysis of Autoreactive CD8 T Cells

Diabetes Action Research and Education Foundation

PI - **DiLorenzo, Teresa P.** 1/1/23 - 12/31/23
Precision Biologics for the Treatment of Type 1 Diabetes

Beatson Foundation 2023-008

PI - **DiLorenzo, Teresa P.** 6/1/23 - 5/31/25
Immunotherapeutic Strategies for the Induction and Maintenance of Remission in Type 1 Diabetes

NIH P30 DK020541

PI - Pessin, Jeffrey E. 4/1/20 - 3/31/25
Regional Einstein-Mount Sinai Diabetes Research Center (ES-DRC)
Role: Co-director of the Immuno-technology Core



Tim Duong, PhD

Professor, Departments of Radiology, Neuroscience, Ophthalmology

RESEARCH AREA: MRI, Machine Learning in Radiology and Medicine, COVID-19

SELECTED PUBLICATIONS:

Lu JY, Wilson J, Hou W, Fleysher R, Herold BC, Herold KC, **Duong TQ**. [Incidence of new-onset in-hospital and persistent diabetes in COVID-19 patients: comparison with influenza](#). EBioMedicine. 2023 Apr;90:104487. doi: 10.1016/j.ebiom.2023.104487. Epub 2023 Feb 28. PMID: 36857969

Khan N, Adam R, Huang P, Maldjian T, **Duong TQ**. [Deep Learning Prediction of Pathologic Complete Response in Breast Cancer Using MRI and Other Clinical Data: A Systematic Review](#). Tomography. 2022 Nov 21;8(6):2784-2795. doi: 10.3390/tomography8060232. PMID: 36412691

Lu JQ, Lu JY, Wang W, Liu Y, Buczek A, Fleysher R, Hoogenboom WS, Zhu W, Hou W, Rodriguez CJ, **Duong TQ**. Clinical predictors of acute cardiac injury and normalization of troponin after hospital discharge from COVID-19. EBioMedicine. 2022 Feb;76:103821. doi: 10.1016/j.ebiom.2022.103821. Epub 2022 Feb 7. PMID: 35144887

Govindarajan ST, Liu Y, Parra Corral MA, Bangiyev L, Krupp L, Charvet L, **Duong TQ**. [White matter correlates of slowed information processing speed in unimpaired multiple sclerosis patients with young age onset](#). Brain Imaging Behav. 2021 Jun;15(3):1460-1468. doi: 10.1007/s11682-020-00345-z. PMID: 32748319

Ocasio E, **Duong TQ**. [Deep learning prediction of mild cognitive impairment conversion to Alzheimer's disease at 3 years after diagnosis using longitudinal and whole-brain 3D MRI](#). PeerJ Comput Sci. 2021 May 25;7:e560. doi: 10.7717/peerj-cs.560. eCollection 2021. PMID: 34141888

SELECTED GRANTS:

[R01 CA244768](#)

Duong (PI)

9/16/20-5/31/21

[MRI STUDY OF CHEMOBRAIN IN PEDIATRIC ONCOLOGY PATIENTS](#)

[R01 EY027751](#)

Duong (PI)

9/16/17-9/15/20

[MRI OF DIABETIC RETINOPATHY](#)

[R01 EY030996](#)

Duong (PI)

4/1/20 -2/28/21

[BRAIN MRI OF HUMAN GLAUCOMA](#)

R01 NS129936

Duong (PI)

1/1/23 -12/31/23

[MRI Study of Hydrogen Water and Minocycline Combination Therapy for Ischemic Stroke](#)



Emad Eskandar, MD

David Keidan Professor, Departments of Neurological Surgery, Neuroscience, and Psychiatry

RESEARCH AREA: We use microelectrode and electrochemical recordings to evaluate the role of the basal ganglia in experimental animals, and in some humans implanted with electrodes for the treatment of movement disorders or epilepsy, performing complex behavioral tasks. The goals are to understand the neural mechanisms and circuits underlying learning, decision-making, and motivation, how derangements in these processes contribute to disease, and translating these insights into novel neuro-modulatory treatments for neurological and behavioral disorders.

SELECTED PUBLICATIONS:

Sheth S, Mian M, Patel S, Asaad W, Williams Z, Dougherty D, Bush G, **Eskandar E**. *Human Dorsal Anterior Cingulate Neurons Mediate Behavioral Adaptation*. **Nature**. 2012 Aug 9;488(7410):218-21.

Sheth SA, Abuelem T, Gale JT, **Eskandar EN**. *Basal ganglia neurons dynamically facilitate exploration during associative learning*. **J Neurosci**. 2011. Mar 30;31(13):4878-85.

Asaad W, **Eskandar, E**. *Encoding of both Positive and Negative Reward Prediction Errors by Neurons of the Primate Lateral Prefrontal Cortex and Caudate Nucleus*. **J. Neurosci**. 2011 DEC 7;31(49):17772-87.

Williams ZM, **Eskandar EN**. *Selective enhancement of associative learning by microstimulation of the anterior caudate*. **Nature Neurosci**. 2006. 9(4):562-8.

Bick SK, Patel SR, Katnani HA, Peled N, Widge A, Cash SS, **Eskandar EN**. *Caudate stimulation enhances learning*. **Brain**. 2019 Oct 1;142(10):2930-2937.

Aronson JP, Katnani HA, Mulvaney G, Bader ER, Yang JC, **Eskandar EN**. *Phasic stimulation in the nucleus accumbens enhances learning after traumatic brain injury*. **Cereb Cortex Commun**. 2022 Apr 9;3(2).

SELECTED GRANTS:

Active

Combined Cortical and Subcortical Recording and Stimulation as a Circuit-Oriented Treatment for Obsessive-Compulsive Disorder

Dougherty, D. D. D., Widge, A. A. S. & Eskandar, E. N.

National Institute of Neurological Disorders and Stroke

9/30/16 → 11/30/23

Finished

Integrated Systems Neuroscience Studies of Anaesthesia

Brown, E. N., Eskandar, E. N., Kopell, N. & Solt, K.

2/10/17 → 1/31/22

Core B: Administrative Core

Eskandar, E. N.

1/1/17 → 1/31/22

Project 2: Non-Human Primate Studies of Anesthetic Action

Brown, E. N. & Eskandar, E. N.

National Institute of General Medical Sciences

1/1/17 → 1/31/22

Combined Cortical And Subcortical Recording And Stimulation As A Circuit-Oriented Treatment For Obsessive-Compulsive Disorder

Eskandar, E. N.

9/30/16 → 12/29/21

Striatal Stimulation for Augmentation of Recovery after Brain Injury

Eskandar, E. N.

National Institute of Neurological Disorders and Stroke

9/30/13 → 1/31/19

Striatal Stimulation for Augmentation of Recovery after Brain Injury

Eskandar, E. N. & Rose, S. A.

9/30/13 → 1/31/19

Transitioning Early Career Neurosurgeons to Scientific Independence

Eskandar, E. N.

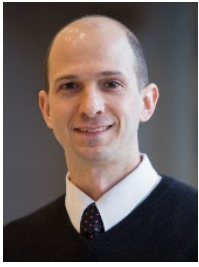
7/1/12 → 6/30/22

Neurosurgeon Research Career Development Program (NRCDP)

Eskandar, E. N. & Eskandar, E. N.

National Institute of Neurological Disorders and Stroke

7/1/12 → 6/30/23



Aaron Fox, MD, MS

Associate Professor, Department of Medicine (General Internal Medicine)

RESEARCH AREA: Opioid use disorder treatment in primary care, harm reduction, and criminal-legal settings

SELECTED PUBLICATIONS:

Jakubowski A, **Fox A**. Defining Low-threshold Buprenorphine Treatment. J Addict Med. 2020 Mar/Apr;14(2):95-98. PubMed Central PMCID: PMC7075734.

Joudrey PJ, Khan MR, Wang EA, Scheidell JD, Edelman EJ, McInnes DK, **Fox AD**. A conceptual model for understanding post-release opioid-related overdose risk. Addict Sci Clin Pract. 2019 Apr 15;14(1):17. Pubmed Central PMCID: PMC6463640.

Hagan BO, Wang EA, Aminawung JA, Albizu-Garcia CE, Zaller N, Nyamu S, Shavit S, Deluca J, **Fox AD**. History of Solitary Confinement Is Associated with Post-Traumatic Stress Disorder Symptoms among Individuals Recently Released from Prison. J Urban Health. 2018 Apr;95(2):141-148. PubMed Central PMCID: PMC5906377.

Fox AD, Maradiaga J, Weiss L, Sanchez J, Starrels JL, Cunningham CO. Release from incarceration, relapse to opioid use and the potential for buprenorphine maintenance treatment: a qualitative study of the perceptions of former inmates with opioid use disorder. Addict Sci Clin Pract. 2015 Jan 16;10:2. PubMed Central PMCID: PMC4410477.

SELECTED GRANTS:

R01DA057654

(PI: Behrends) Role: Co-Investigator

9/30/2022 – 9/29/2025

Expansion of mail-delivered harm reduction services in the US

Goal: Needle Exchange Technologies (NEXT) is the first formal internet-based mail-delivery syringe services program in the United States (US). This study will use policy analysis and longitudinal research designs to investigate the opportunities for expanding NEXT's services.

RM1DA055437

(MPI: Starrels, Arnsten, Gabbay)

9/30/2021 - 7/31/2023

Integrated Care for Chronic Pain and Opioid Use Disorder: The IMPOWR Research Center at Montefiore/Einstein (IMPOWR-ME)

Goal: To create a robust and sustainable research infrastructure to rigorously test and disseminate integrated and cost-effective evidence-based practices for people with chronic pain and opioid use disorder

Role: PI for Project 3: Randomized trial of buprenorphine microdose inductions during hospitalization

R01MD016744

(PI: Akiyama), Role: Co-Investigator

09/21/21-05/31/26

Leveraging community health workers to improve SARS-CoV-2 testing and mitigation among criminal justice-involved individuals accessing a corrections-focused community-based organization

Goal: To test an onsite Point-of-Care SARS-CoV-2 testing and education strategy in a corrections-focused

community-based organization

R01DA044878

(PI: Fox), Role: PI

08/01/17-02/28/24

Buprenorphine treatment at syringe exchanges to reduce opioid misuse and HIV risk

Goal: To test in a randomized controlled trial the efficacy, safety, and cost-effectiveness of buprenorphine treatment initiation at syringe exchange programs



Vilma Gabbay, MD

Professor, Department of Psychiatry and Behavioral Sciences

RESEARCH AREA: Multimodal studies of adolescent depression and reward deficits, the comorbidity of depression and substance use people living with HIV, and neuropsychiatric sequelae of COVID-19

SELECTED PUBLICATIONS:

Liu Q, Ely BA, Stern ER, Xu J, Kim JW, Alonso CM, **Gabbay V.** Detailed Examination Of Neural Function During Reward Expectancy And Attainment In Adolescents With Diverse Psychiatric Symptoms. *Neuroimage Clinical*. 2022; 36: 103258. Published online 2022 November 15. doi: 10.1016/j.nicl.2022.103258

Nguyen TNB, Ely BA, Pick DS, Patel M, Xie H, Kim-Schulze D, **Gabbay V.** Clenbuterol Attenuates Immune Reaction to Lipopolysaccharide and Its Relationship to Anhedonia in Adolescents Brain Behavior Immunity, November 2022, Volume 106, 89-99.

Rubinstein TB, Breslow AS, Zayde A, Ding O, Alpert JE, **Gabbay V.** Psychological Impact of the COVID-19 Pandemic on Healthcare Worker Parents. *Journal of Psychosomatic Research. Journal of Psychosomatic Research*. 2023 Jul;170:111359. doi: 10.1016/j.jpsychores.2023.111359. Epub 2023 May 6.

Liu Q, Ely BA, Simkovic, SJ, Alonso, CM, **Gabbay V.** Lack of Associations Between C-Reactive Protein and Mood and Anxiety Symptoms in Adolescents. *J Child and Adolescent Psychopharmacology* 2021 Aug;31(6):404-410.

Bortolato M, Coffey B, **Gabbay V,** Scheggi S. Allopregnanolone: The Missing Link To Explain The Effects Of Stress On Tic Exacerbation? *Journal of Neuroendocrinology*. 2022 Feb;34(2):e13022. doi: 10.1111/jne.13022.

SELECTED GRANTS:

R01 NIMH

Gabbay (contact), Sharma (PI), Berman (PI)

09/2022 - 08/2027

\$3,849,104

Project title: Inflammation, BBB disruption, and Reward Function in the Pathogenesis of Depression among PWH

R01 NIMH

Gabbay (Contact), Sharma (PI)

10/2021-10/2026

\$4,223,247

Project title: The Neuroimmunology of Depression in Women Living With HIV

R01 NIMH

Gabbay (contact), Alpert (PI)

06/2021-05/2026

\$4,199,975

Project title: A Multimodal Parent-Focused Intervention for Vulnerable Populations in the Bronx

R01 NIDA

Gabbay (PI), Starrels (PI), Sharma (PI)

09/2021-09/2026

\$4,199,997

Project title: Neural Underpinnings of Cannabis Use and Depression in Young PLWH

R01 NIMH

Gabbay (PI)

04/2020-01/2025

\$3,964,686

Project title: Biobehavioral Predictors of Illness Progression in Adolescent Depression



Evripidis Gavathiotis, PhD

Professor, Department of Biochemistry

RESEARCH AREA: chemical biology, structural biology, medicinal chemistry, drug discovery, cell death, apoptosis, mitochondria, autophagy, oncogenic signaling, cancer, aging

SELECTED PUBLICATIONS:

Glytsou C, Chen X, Zacharioudakis E, Al-Santli W, Zhou H, Nadorp B, Lee S, Lasry A, Sun Z, Papaioannou D, Cammer M, Wang K, Zal T, Zal MA, Carter BZ, Ishizawa J, Tibes R, Tsirigos A, Andreeff M, **Gavathiotis E***, Aifantis I*. Mitophagy Promotes Resistance to BH3 Mimetics in Acute Myeloid Leukemia. **Cancer Discov.** 2023;13(7):1656-77.

Zacharioudakis E, Agianian B, Kumar Mv V, Biris N, Garner TP, Rabinovich-Nikitin I, Ouchida AT, Margulets V, Nordstrom LU, Riley JS, Dolgalev I, Chen Y, Wittig AJH, Pekson R, Mathew C, Wei P, Tsirigos A, Tait SWG, Kirshenbaum LA, Kitsis RN, **Gavathiotis E**. Modulating mitofusins to control mitochondrial function and signaling. **Nat. Commun.** 2022;13(1):3775.

Lopez A, Reyna DE, Gitego N, Kopp F, Zhou H, Miranda-Roman MA, Nordstrom LU, Narayanagari SR, Chi P, Vilar E, Tsirigos A, **Gavathiotis E**. Co-targeting of BAX and BCL-XL proteins broadly overcomes resistance to apoptosis in cancer. **Nat. Commun.** 2022;13(1):1199.

Gomez-Sintes R, Xin Q, Jimenez-Loygorri JI, McCabe M, Diaz A, Garner TP, Cotto-Rios XM, Wu Y, Dong S, Reynolds CA, Patel B, de la Villa P, Macian F, Boya P*, **Gavathiotis E***, Cuervo AM*. Targeting retinoic acid receptor alpha-corepressor interaction activates chaperone-mediated autophagy and protects against retinal degeneration. **Nat. Commun.** 2022;13(1):4220.

Bourdenx M, Martin-Segura A, Scrivo A, Rodriguez-Navarro JA, Kaushik S, Tasset I, Diaz A, Storm NJ, Xin Q, Juste YR, Stevenson E, Luengo E, Clement CC, Choi SJ, Krogan NJ, Mosharov EV, Santambrogio L, Grueninger F, Collin L, Swaney DL, Sulzer D, **Gavathiotis E***, Cuervo AM*. Chaperone-mediated autophagy prevents collapse of the neuronal metastable proteome. **Cell.** 2021;184(10):2696-714 e25.

Spitz AZ, Zacharioudakis E, Reyna DE, Garner TP, **Gavathiotis E**. Eltrombopag directly inhibits BAX and prevents cell death. **Nat. Commun.** 2021;12(1):1134.

Cotto-Rios XM, Agianian B, Gitego N, Zacharioudakis E, Giricz O, Wu Y, Zou Y, Verma A, Poulikakos PI, **Gavathiotis E**. Inhibitors of BRAF dimers using an allosteric site. **Nat Commun.** 2020;11(1):4370.

Amgalan D, Garner TP, Pekson R, Jia XF, Yanamandala M, Paulino V, Liang FG, Corbalan JJ, Lee J, Chen Y, Karagiannis GS, Sanchez LR, Liang H, Narayanagari SR, Mitchell K, Lopez A, Margulets V, Scarlata M, Santulli G, Asnani A, Peterson RT, Hazan RB, Condeelis JS, Oktay MH, Steidl U, Kirshenbaum LA, **Gavathiotis E***, Kitsis RN*. A small-molecule allosteric inhibitor of BAX protects against doxorubicin-induced cardiomyopathy. **Nat Cancer.** 2020;1(3):315-28.

Garner TP, Amgalan D, Reyna DE, Li S, Kitsis RN, **Gavathiotis E**. Small-molecule allosteric inhibitors of BAX. **Nat Chem Biol.** 2019;15(4):322-30.

Reyna DE, Garner TP, Lopez A, Kopp F, Choudhary GS, Sridharan A, Narayanagari SR, Mitchell K, Dong B, Bartholdy BA, Walensky LD, Verma A, Steidl U, **Gavathiotis E**. Direct Activation of BAX by BTSA1 Overcomes Apoptosis Resistance in Acute Myeloid Leukemia. **Cancer Cell.** 2017;32(4):490-505 e10.

SELECTED GRANTS:

NIH/NCI R01CA178394 6/1/2020 - 5/30/2025
Title: Small Molecule Activators of Pro-apoptotic BAX for Cancer Therapy
Role: Principal Investigator

NIH/NCI R01CA223243 12/2/2019 - 12/1/2024
Title: Allosteric inhibitors targeting oncogenic BRAFV600E
Role: Principal Investigator

NIH/NIA P01AG03178 4/1/2020 - 3/31/2025
Title: Autophagy In Aging: Testing Geroscience In Alzheimer's Disease
Role: Core Leader, Chemical Biology and Therapeutics Innovation Core

DOD/ PR191593P1 7/1/2020 - 6/30/2023
Title: Development of Small Molecule BAX Inhibitors to Prevent Cancer Therapy-Induced Cardiomyopathy
Role: Co-Principal Investigator



Michelle Gong, MD, MS

Professor, Department of Medicine (Critical Care)

RESEARCH AREA: Critical care delivery and management of acute respiratory failure and acute respiratory distress syndrome (ARDS), clinical trials, sepsis.

SELECTED PUBLICATIONS:

Gong MN, Thompson BT, Pothier L, Boyce P, Christiani DC. Clinical predictors of and mortality in acute respiratory distress syndrome: Potential role of red cell transfusion. *Crit Care Med*. 2005;33(6):1191-8.

Gong, MN, Bajwa EK, Thompson BT, Christiani, DC. Body mass index is associated with the development of acute respiratory distress syndrome. *Thorax*. 2009;65(1):44-50. PMID: PMC3090260

Soto GJ, Frank AJ, Christiani DC, Gong MN. Body mass index and acute kidney injury in the acute respiratory distress syndrome. *Crit Care Med*. 2012;40(9):2601-2608. PMID: PMC3423468

Yu S, Christiani DC, Thompson BT, Bajwa EK, Gong MN. Role of diabetes in the development of acute respiratory distress syndrome. *Crit Care Med*. 2013;41(12):2720-32. PMID:PMC4007199

Kor DJ, Carter RE, Park PK, Festic E, Banner-Goodspeed VM, Hinds R, Talmor D, Gajic O, Ware L, Gong MN. Effect of Aspirin on Development of ARDS in At-Risk Patients Presenting to the Emergency Department: The LIPS-A Randomized Clinical Trial. *JAMA*. 2016;315(22):2406-14. PMID:27179988

Abdulnour RE, Gunderson T, Barkas I, Timmons JY, Barnig C, Gong M, Kor DJ, Gajic O, Talmor D, Carter RE, Levy BD. Early Intravascular Events Are Associated with Development of Acute Respiratory Distress Syndrome. A Substudy of the LIPS-A Clinical Trial. *Am J Respir Crit Care Med*. 2018 Jun 15;197(12):1575-1585. PMID: PMC6006404

National Heart, Lung, and Blood Institute PETAL Clinical Trials Network, Moss M, Huang DT, Brower RG, Ferguson ND, Ginde AA, Gong MN, Grissom CK, Gundel S, Hayden D, Hite RD, Hou PC, Hough CL, Iwashyna TJ, Khan A, Liu KD, Talmor D, Thompson BT, Ulysse CA, Yealy DM, Angus DC. Early Neuromuscular Blockade in the Acute Respiratory Distress Syndrome. *N Engl J Med*. 2019 May 23;380(21):1997-2008. PMID: PMC6741345

Self WH, Semler MW, Leither LM, Casey JD, Angus DC, Brower RG, Chang SY, Collins SP, Eppensteiner JC, Filbin MR, Files DC, Gibbs KW, Ginde AA, Gong MN, Harrell FE Jr, Hayden DL, Hough CL, Johnson NJ, Khan A, Lindsell CJ, Matthay MA, Moss M, Park PK, Rice TW, Robinson BRH, Schoenfeld DA, Shapiro NI, Steingrub JS, Ulysse CA, Weissman A, Yealy DM, Thompson BT, Brown SM; National Heart, Lung, and Blood Institute PETAL Clinical Trials Network, et al. Effect of Hydroxychloroquine on Clinical Status at 14 Days in Hospitalized Patients With COVID-19: A Randomized Clinical Trial. *JAMA*. 2020 Dec 1;324(21):2165-2176. PMID: PMC7653542

Hua M, Wunsch H, Gong MN, Brady JE. Early and late unplanned rehospitalizations for survivors of critical illness. *Crit Care Med*. 2015 Feb;43(2):430-438.

Hsieh SJ, Soto GJ, Hope AA, Ponea A, Gong MN. The association between ARDS, delirium and in-hospital mortality in ICU patients. *Am J Respir Crit Care Med*. 2015 Jan 1;191(1):71-8.

Hope AA, Gong MN, Guerra C, Wunsch H. Frailty Before Critical Illness and Mortality for Elderly Medicare Beneficiaries. *J Am Geriatr Soc*. 2015 Jun;63(6):1121-8.

Han JH, Ginde AA, Brown SM, Baughman A, Collar EM, Ely EW, [Gong MN](#), Hope AA, Hou PC, Hough CL, Iwashyna TJ, Jackson JC, Khan A, Orun OM, Patel MB, Raman R, Rice TW, Ringwood N, Semler MW, Shapiro NI, Talmor DS, Self WH; Vitamin D to Improve Outcomes by Leveraging Early Treatment Network Investigators. Effect of Early High-Dose Vitamin D3 Repletion on Cognitive Outcomes in Critically Ill Adults. *Chest*. 2021 Sep;160(3):909-918. PMID: PMC8449000

Beitler JR, Thompson BT, Baron RM, Bastarache JA, Denlinger LC, Esserman L, [Gong MN](#), LaVange LM, Lewis RJ, Marshall JC, Martin TR, McAuley DF, Meyer NJ, Moss M, Reineck LA, Rubin E, Schmidt EP, Standiford TJ, Ware LB, Wong HR, Aggarwal NR, Calfee CS. Advancing precision medicine for acute respiratory distress syndrome. *Lancet Respir Med*. 2022 Jan;10(1):107-120. PMID: PMC8302189

Sarge T, Baedorf-Kassis E, Banner-Goodspeed V, Novack V, Loring SH, [Gong MN](#), Cook D, Talmor D, Beitler JR; EPVent-2 Study Group. Effect of Esophageal Pressure-guided Positive End-Expiratory Pressure on Survival from Acute Respiratory Distress Syndrome: A Risk-based and Mechanistic Reanalysis of the EPVent-2 Trial. *Am J Respir Crit Care Med*. 2021 Nov 15;204(10):1153-1163. PMID: PMC8759303

Semler MW, Bernard GR, Aaron SD, Angus DC, Biros MH, Brower RG, Calfee CS, Colantuoni EA, Ferguson ND, [Gong MN](#), Hopkins RO, Hough CL, Iwashyna TJ, Levy BD, Martin TR, Matthay MA, Mizgerd JP, Moss M, Needham DM, Self WH, Seymour CW, Stapleton RD, Thompson BT, Wunderink RG, Aggarwal NR, Reineck LA. Identifying Clinical Research Priorities in Adult Pulmonary and Critical Care: NHLBI Working Group Report. *Am J Respir Crit Care Med*. 2020 Mar 9;202(4):511-23.

ATTACC Investigators; ACTIV-4a Investigators; REMAP-CAP Investigators, Lawler PR, Goligher EC, Berger JS, Neal MD, McVerry BJ, Nicolau JC, [Gong MN](#), Carrier M, Rosenson RS, Reynolds HR, Turgeon AF, Escobedo J, Huang DT, Bradbury CA, Houston BL, Kornblith LZ, Kumar A, Kahn SR, Cushman M, McQuilten Z, Slutsky AS, Kim KS, Gordon AC, Kirwan BA, Brooks MM, Higgins AM, Lewis RJ, Lorenzi E, Berry SM, Berry LR, Aday AW, Al-Beidh F, Annane D, Arabi YM, Aryal D, Baumann Kreuziger L, Beane A, Bhimani Z, Bihari S, Billett HH, Bond L, Bonten M, Brunkhorst F, Buxton M, Buzgau A, Castellucci LA, Chekuri S, Chen JT, Cheng AC, Chkhikvadze T, Coiffard B, Costantini TW, de Brouwer S, Derde LPG, Detry MA, Duggal A, Džavík V, Effron MB, Estcourt LJ, Everett BM, Fergusson DA, Fitzgerald M, Fowler RA, Galanaud JP, Galen BT, Gandotra S, García-Madróna S, Girard TD, Godoy LC, Goodman AL, Goossens H, Green C, Greenstein YY, Gross PL, Hamburg NM, Haniffa R, Hanna G, Hanna N, Hegde SM, Hendrickson CM, Hite RD, Hindenburg AA, Hope AA, Horowitz JM, Horvat CM, Hudock K, Hunt BJ, Husain M, Hyzy RC, Iyer VN, Jacobson JR, Jayakumar D, Keller NM, Khan A, Kim Y, Kindzelski AL, King AJ, Knudson MM, Kornblith AE, Krishnan V, Kutcher ME, Laffan MA, Lamontagne F, Le Gal G, Leeper CM, Leifer ES, Lim G, Lima FG, Linstrum K, Litton E, Lopez-Sendon J, Lopez-Sendon Moreno JL, Lothar SA, Malhotra S, Marcos M, Saud Marínez A, Marshall JC, Marten N, Matthay MA, McAuley DF, McDonald EG, McGlothlin A, McGuinness SP, Middeldorp S, Montgomery SK, Moore SC, Morillo Guerrero R, Mouncey PR, Murthy S, Nair GB, Nair R, Nichol AD, Nunez-García B, Pandey A, Park PK, Parke RL, Parker JC, Parnia S, Paul JD, Pérez González YS, Pompilio M, Prekker ME, Quigley JG, Rost NS, Rowan K, Santos FO, Santos M, Olombrada Santos M, Satterwhite L, Saunders CT, Schutgens REG, Seymour CW, Siegal DM, Silva DG Jr, Shankar-Hari M, Sheehan JP, Singhal AB, Solvason D, Stanworth SJ, Tritschler T, Turner AM, van Bentum-Puijk W, van de Veerdonk FL, van Diepen S, Vazquez-Grande G, Wahid L, Wareham V, Wells BJ, Widmer RJ, Wilson JG, Yuriditsky E, Zampieri FG, Angus DC, McArthur CJ, Webb SA, Farkouh ME, Hochman JS, Zarychanski R. Therapeutic Anticoagulation with Heparin in Noncritically Ill Patients with Covid-19. *N Engl J Med*. 2021 Aug 26;385(9):790-802. PMID: PMC8362594

Olchanski N, Dziadzko MA, Tiong IC, Daniels CE, Peters SG, O'Horo JC, [Gong MN](#). Can a Novel ICU Data Display Positively Affect Patient Outcomes and Save Lives? *J Med Syst*. 2017 Sep 18;41(11):171.
Dziadzko MA, Novotny PJ, Sloan J, Gajic O, Herasevich V, Mirhaji P, Wu Y, [Gong MN](#). Multicenter derivation and validation of an early warning score for acute respiratory failure or death in the hospital. *Crit Care*. 2018 Oct 30;22(1):286. PMID: PMC6206729

Lanspa MJ, Gong MN, Schoenfeld DA, Lee KT, Grissom CK, Hou PC, Serpa-Neto A, Brown SM, Iwashyna TJ, Yealy DM, Hough CL, Brower RG, Calfee CS, Hyzy RC, Matthay MA, Miller RR 3rd, Steingrub JS, Thompson BT, Miller CD, Clemmer TP, Hendey GW, Huang DT, Mathews KS, Qadir N, Tidswell M; National Heart, Lung, and Blood Institute Prevention and Early Treatment of Acute Lung injury (PETAL) Clinical Trials Network. Prospective Assessment of the Feasibility of a Trial of Low Tidal Volume Ventilation for Patients with Acute Respiratory Failure. Ann Am Thorac Soc. 2019

Sjoding M, Gong MN, Haas C, Iwashyna TJ. Evaluating delivery of low tidal volume ventilation in six ICUs using electronic health record data. Crit Care Med. 2019 Jan;47(1):56-61. PMID: PMC6298798

SELECTED GRANTS:

U01 HL122998; U01 HL123009

Gong (PI); Thompson (PI)

6/17/14-12/31/23

Clinical Trials Research Network for the Prevention and Early Treatment of Acute Lung Injury (PETAL Network) – Clinical Center

R18 HS026188

Gong (PI)

9/1/18-6/30/22

TREAT ECARDS: Translating Evidence into Action: Electronic Clinical Decision Support in ARDS

OT2 HL156812

Thomas (PI), Role: Co-Investigator, Site PI, Network lead

9/1/20-12/31/23

A Multicenter, Adaptive, Randomized Controlled Platform Trial of the Safety and Efficacy of Antithrombotic Strategies in Hospitals Adults with COVID-19

75D30122C14944

Self (PI), Role: Site PI

9/1/22-8/31/23

Surveillance of Acutely Ill Adults with Respiratory Viruses, including SARS-CoV-2 (IVY5)

R61 HL162980

Moskowitz (PI), Role: Co-Investigator

9/1/22-8/31/27

Hospital Airway Resuscitation Trial

75N91019D00024; OT2 HL156812

Neaton (PI); Thomas (PI), Role: Co-Investigator, Site PI

5/1/22-4/30/24

Strategies and Treatments for Respiratory and Viral Emergencies Study (STRIVE)

UH3HL147001

Boeckh (PI), Role: Site PI

9/16/20-8/31/26

1/2 Ganciclovir to Prevent Reactivation of Cytomegalovirus in Patients with Acute Respiratory Failure and Sepsis

U01 HL123009

Schoenfeld (PI); Thompson (PI), Role: Site PI

8/1/21-12/31/23

PETAL ASTER: CCC for NHLBI Prevention and Early Treatment of Acute Lung Injury PETAL Network

OT2HL156812

Thomas (PI), Role: Site PI

3/1/21-12/31/23

A Multicenter, Adaptive, Randomized, Blinded Controlled Trial of the Safety and Efficacy of Investigational Therapeutics for Hospitalized Patients with COVID-19 (ACTIV-4D RAAS NECTAR)

OT2HL156812

Thomas (PI), Role: Site PI

9/1/20-9/30/23

A Multicenter, Adaptive, Randomized, Blinded Controlled Trial of the Safety and Efficacy of Investigational Therapeutics for Hospitalized Patients with COVID-19 (ACTIV-3A TICO)

OT2HL156812

Thomas (PI), Role: Site PI

9/1/20-5/31/23

A Multicenter, Adaptive, Randomized, Blinded Controlled Trial of the Safety and Efficacy of Investigational Therapeutics for Hospitalized Patients with COVID-19 (ACTIV-3B TESICO)



John Greally, DMed, PhD

Professor, Departments of Genetics and Pediatrics

RESEARCH AREA: Medical genomics

SELECTED PUBLICATIONS:

Wattacheril JJ, Raj S, Knowles DA, Greally JM. Using epigenomics to understand cellular responses to environmental influences in diseases. *PLoS Genet*. 2023 Jan 19;19(1):e1010567. doi: 10.1371/journal.pgen.1010567. PMID: 36656803; PMCID: PMC9851565.

Ulahannan N, Cutler R, Doña-Termine R, Simões-Pires CA, Wijetunga NA, Croken MM, Johnston AD, Kong Y, Maqbool SB, Suzuki M, Greally JM. Genomic insights into host and parasite interactions during intracellular infection by *Toxoplasma gondii*. *PLoS One*. 2022 Sep 30;17(9):e0275226. doi: 10.1371/journal.pone.0275226. PMID: 36178892; PMCID: PMC9524707.

Pearson NM, Stolte C, Shi K, Beren F, Abul-Husn NS, Bertier G, Brown K, Diaz GA, Odgis JA, Suckiel SA, Horowitz CR, Wasserstein M, Gelb BD, Kenny EE, Gagnon C, Jobanputra V, Bloom T, Greally JM. GenomeDiver: a platform for phenotype-guided medical genomic diagnosis. *Genet Med*. 2021 Oct;23(10):1998-2002. doi:10.1038/s41436-021-01219-5. Epub 2021 Jun 10. PMID: 34113009; PMCID: PMC8488006.

Rastogi D, Johnston AD, Nico J, Loh LN, Jorge Y, Suzuki M, Macian F, Greally JM. Functional Genomics of the Pediatric Obese Asthma Phenotype Reveal Enrichment of Rho-GTPase Pathways. *Am J Respir Crit Care Med*. 2020 Jul 15;202(2):259-274. doi: 10.1164/rccm.201906-1199OC. PMID: 32255672; PMCID: PMC7365356.

Johnston AD, Simões-Pires CA, Thompson TV, Suzuki M, Greally JM. Functional genetic variants can mediate their regulatory effects through alteration of transcription factor binding. *Nat Commun*. 2019 Aug 2;10(1):3472. doi:10.1038/s41467-019-11412-5. PMID: 31375681; PMCID: PMC6677801.

Sato H, Wu B, Delahaye F, Singer RH, Greally JM. Retargeting of macroH2A following mitosis to cytogenetic-scale heterochromatic domains. *J Cell Biol*. 2019 Jun 3;218(6):1810-1823. doi: 10.1083/jcb.201811109. Epub 2019 May 20. PMID: 31110057; PMCID: PMC6548134.

Kong Y, Berko ER, Marcketta A, Maqbool SB, Simões-Pires CA, Kronn DF, Ye KQ, Suzuki M, Auton A, Greally JM. Detecting, quantifying, and discriminating the mechanism of mosaic chromosomal aneuploidies using MAD-seq. *Genome Res*. 2018 Jul;28(7):1039-1052. doi: 10.1101/gr.226282.117. Epub 2018 May 17. PMID: 29773658; PMCID: PMC6028128.

Greally JM. A user's guide to the ambiguous word 'epigenetics'. *Nat Rev Mol Cell Biol*. 2018 Apr;19(4):207-208. doi: 10.1038/nrm.2017.135. Epub 2018 Jan 17. PMID: 29339796.

SELECTED GRANTS:

NIH 1R01AG057422

Greally, John (PI), Lappalainen, Tuuli (PI)

9/15/18–5/31/24

Understanding Cellular and Transcriptional Regulatory Changes in Human Aging

NIH 1R21HG012404

Greally, John (PI)

8/23/22-7/31/23

A Clinical Trial of GenomeDiver for Improved Diagnosis of Pediatric Rare Diseases



Kira Gritsman, MD, PhD

Associate Professor, Department of Medicine (Medical Oncology)

RESEARCH AREA: Hematopoietic stem cell self-renewal and differentiation

The Gritsman laboratory focuses on the role of signal transduction pathways in the developmental decisions made by stem cells and progenitors during adult hematopoiesis, as well as in the initiation and progression of myeloid malignancies. The goals of our research are to understand the mechanisms by which signaling pathways, such as the PI3 kinase pathway, influence the self-renewal and differentiation of hematopoietic stem cells, as well as pre-leukemic and leukemic stem cells. We also aim to identify new therapeutic strategies to prevent the progression from premalignant to malignant conditions, or to reduce the risk of relapse after initial therapy, with a better therapeutic window. We use murine retroviral bone marrow transplantation murine models, genetically modified murine models, and patient-derived xenotransplantation models to investigate the roles of the PI3 kinase/AKT pathway and other signaling pathways in hematopoiesis and in myeloid neoplasms, including acute myeloid leukemia, myelodysplastic syndrome and myeloproliferative neoplasms. Some of this research has generated new potential treatment approaches for myeloid leukemia that have been tested in the clinic. In addition, we investigate the roles of kinase signaling pathways in the interactions between hematopoietic stem cells and leukemic stem cells with the bone marrow microenvironment, and mechanisms of resistance to kinase inhibitors.

SELECTED PUBLICATIONS:

Kharas, M.G., Okabe, R., Ganis, J.J., Gozo, M., Khandan, T., Paktinat, M., Gilliland, D.G., and **Gritsman, K.** Constitutively Active AKT Depletes Hematopoietic Stem Cells and Induces Leukemia in Mice. *Blood* 2010; 115(7): 1406-15

Gritsman, K., Yuzugullu, H., Von, T., Yan, H., Clayton, L., Fritsch, C., Maira, S.-M., Hollingworth, G., Choi, C., Khandan, T., Paktinat, M., Okabe, R.O., Roberts, T.M., and Zhao, J.J. Hematopoiesis and RAS-driven myeloid leukemia differentially require PI3K isoform p110alpha. *Journal of Clinical Investigation* 2014;124(4):1794–1809. doi: 10.1172/JCI69927

Hemmati, S., Sinclair, T., Tong, M., Bartholdy, B., Okabe, R.O., Ames, K., Ostrodka, L., Haque, T., Kaur, I., Mills, T. S., Agarwal, A., Pietras, E.M., Zhao, J.J., Roberts, T.M., and **Gritsman, K.**, PI3 kinase alpha and delta promote hematopoietic stem cell activation, *JCI Insight* 2019. doi.org/10.1172/jci.insight.125832

Gurska, L.M., Okabe, R., Schurer, A., Tong, M.M., Soto, M., Choi, D., Ames, K., Glushakow-Smith, S., Montoya, A., Tein, E., Miles, L.A., Cheng, H., Hankey-Giblin, P., Levine, R.L., Goel, S., Halmos, B., and **Gritsman, K.**, Crizotinib has Preclinical Efficacy in Philadelphia-negative Myeloproliferative Neoplasms, *Clinical Cancer Research* Dec 20:CCR-22-1763. doi: 10.1158/1078-0432.CCR-22-1763. PMID: 36537918

Ames, K., Kaur, I., Shi, Y., Tong, M., Sinclair, T., Hemmati, S., Glushakow-Smith, S.G., Tein, E., Gurska, L., Steidl, U., Dubin, R., Shan, J., Montagna, C., Pradhan, K., Verma, A., and **Gritsman, K.**, Deletion of PI3-Kinase Promotes Myelodysplasia Through Dysregulation of Autophagy in Hematopoietic Stem Cells, *Science Advances* 2023. doi: [10.1126/sciadv.ade8222](https://doi.org/10.1126/sciadv.ade8222), PMID: 36812307

Folgado Marco, V., Ames, K., Chuen, J., **Gritsman, K.** & Baker, N., Haploinsufficiency of the essential gene *RpS12* causes defects in erythropoiesis and hematopoietic stem cell maintenance, *eLife* 2023 Jun 5;12:e69322. doi: 10.7554/eLife.69322. PMID: 37272618

SELECTED GRANTS:

1/1/20-12/31/23 Research Scholar Grant 134154-RSG-19-130-01-DCC (Gritsman, K)
American Cancer Society
RON Kinase as a Therapeutic Target in Myeloproliferative Neoplasms

9/1/2022-5/31/2026 R01DK130895 (Gritsman, K.)
NIH/NIDDK
PI3 Kinase Inactivation in Myelodysplastic Syndrome

1/1/2022-12/31/2023 5R01 DK056638-22 (Gritsman, K.)
NIH/NIDDK
Regulation and Function of Hematopoietic Stem Cell Niches

9/1/21-8/31/24 CA200503 (Shechter, D.) Role: co-PI
DoD - CDMRP Idea Award
NPM1c Posttranslational Glutamylation in Leukemogenesis



Chandan Guha, MBBS, PhD

Professor, Department of Radiation Oncology

RESEARCH AREA: Radiation Therapy, Low-intensity focused ultrasound (LOFU), Cancer Immunotherapy, acute radiation syndrome (ARS), Delayed effects of acute radiation exposure (DEARE), Radiation mitigators, Stem cells, Cell therapy, Immune dysfunction, Carbon ion radiation therapy, Hepatocyte transplantation

PROJECTS:

Radiation-based Immune Priming Therapy: *In situ* tumor vaccines

Radiation therapy (RT) has been used as a standard treatment modality for many solid tumors. While tumoricidal properties of RT are instrumental for standard clinical application, irradiated tumors can potentially serve as a source of tumor antigens *in vivo*, where dying tumor cells would release various tumor antigens slowly over time. However, RT alone may not generate sufficient anti-tumoral immune responses, which results in cancer recurrence in the primary site or distant organs. Therefore, supplemental treatments are needed to enhance immune cell activity against tumors. Our laboratory has developed several strategies in combination with RT for cancer treatment and evaluated various cancer types in mouse models. For example, low-intensity focused ultrasound (LOFU) treatment generates thermal and physical stress to the cancer cells and enhances the exposure of tumor antigens. LOFU combined with RT, reverses immune anergy of T cells in tumor draining lymph nodes and promotes the induction of anti-tumoral immunity. Another strategy is to stimulate presentation of tumor antigens released from irradiated tumor cells by professional antigen presenting cells in the tumor microenvironment. Our laboratory has identified that Fms-like tyrosine kinase 3 ligand (Flt3L) and anti-CD40 antibody can expand and activate dendritic cells, respectively. In this project, we are examining the timing of immune cell infiltration into the tumor after LOFU±RT and optimizing the schedule of each treatment in combination. The goal is to translate these pre-clinical studies to human clinical trials to treat various forms of cancer.

Stem cell- and Immune- based regenerative approaches to mitigate Radiation-induced Organ Injury

In the event of nuclear plant leakage or nuclear terrorist attack, victims are exposed to high dose ionizing radiation in a short period of time and will experience acute radiation syndrome (ARS), which can lead to death. Furthermore, the surviving victims may suffer from delayed effects of acute radiation exposure (DEARE) in many organs. Radiation is also commonly used in treating cancer patients with the possibility of developing radiation-induced toxicity in the surrounding normal tissue. Although there are several drugs approved by FDA to treat hematopoietic ARS (H-ARS), not many therapeutic agents are available to mitigate damage to other sensitive organs after radiation exposure. The goal of this project is to have a better understating of molecular mechanisms by which high dose radiation causes organ damage and mortality, leading to the development of novel radiation protectors, mitigators, or medical countermeasures. The highly proliferative stem and progenitor cells that regenerate blood cells in bone marrow and intestinal stem cells in the crypts of the digestive system are particularly susceptible to damage by ionizing radiation. Our laboratory has established several mouse models and radiation regimens to study radiation-induced organ injury, such as whole-body irradiation (WBI) for H-ARS, partial body irradiation (PBI) for gastrointestinal ARS (GI-ARS), whole thoracic irradiation (WTI) to examine pneumonitis and fibrosis with lung injury, and targeted irradiation to the rectum for radiation proctitis. Our laboratory has identified several growth factors, chemical compounds, and specific stem cell populations as radiation mitigators in various mouse models. We will further evaluate their effectiveness and mechanism(s) of action, ultimately leading to FDA approval for radiation exposure in humans. We are also studying the functional immuno-radiobiology of the regenerative immune system after WBI in mice and whether T-cell immune senescence and dysfunction of myeloid population contributes to DEARE. These studies will provide a blueprint for developing optimized immuno-conditioning regimens for immunization protocols in radiation survivors that can be extended to immunocompromised and elderly

population.

Carbon Ion Radiation Therapy for Pancreatic Cancer

Carbon ion radiotherapy (CIRT) is currently the world's most advanced radiotherapeutic technique. With its physical characteristics, CIRT causes less toxicity of normal tissue and organs surrounding the tumor and is more effective at killing tumor compared to photon radiotherapy, like X-ray. Carbon ion stops at a depth inside our body and releases all its energy in the form of a peak dose in the tumor. Since the track stops at a depth, the particle beam of carbon ion does not go through the body, thereby causing less harm to surrounding normal tissues. Carbon ions cause DNA damage in the irradiated cells resembling infection by a DNA virus which provokes the body's anti-viral defense system. In this project, we will study the immunological response of tumor, particularly in pancreatic cancer, and its microenvironment after CIRT in animal models with comparison to traditional X-ray therapy. This information will enhance the planning and usage of CIRT to cancer patients.

Hepatocyte Transplantation for Treating Inherited and Chronic Liver Diseases

Hepatocyte transplantation is a very attractive alternative for liver transplant to treat patients with inherited and chronic liver diseases in consideration of the limited number of liver donors. However, benefits of hepatocyte transplantation are hindered by the low efficacy of the transplanted hepatocytes to engraft and proliferate in the host liver. Our laboratory has pioneered the development of preparative hepatic irradiation in combination with growth factors to enhance the engraftment and repopulation of transplanted hepatocytes using rodent model. To mimic the clinical operation, a state-of-the-art image-guided hepatic irradiation model is utilized by using the small animal radiation research platform (SARRP). We are currently investigating several potential growth factors combined with irradiation to enhance the replaced area of transplanted hepatocytes in the host liver. We are also interested in exploring the use of progenitor cells as alternatives for hepatocytes for transplantation.

SELECTED PUBLICATIONS:

Orthovoltage X-Rays Exhibit Increased Efficacy Compared with γ -Rays in Preclinical irradiation. Bell BI, Vercellino J, Brodin NP, Velten C, Nanduri LSY, Nagesh PKB, Tanaka KE, Fang Y, Wang Y, Macedo R, English J, Schumacher MM, Duddempudi PK, Asp P, Koba W, Shajahan S, Liu L, Tomé WA, Yang WL, Kolesnick R, Guha C. *Cancer Res.* 2022. 82(15):2678-2691.

Mitigation of total body irradiation-induced mortality and hematopoietic injury of mice by a thrombopoietin mimetic (JNJ-26366821). Kumar VP, Holmes-Hampton GP, Biswas S, Stone S, Sharma NK, Hritzo B, Guilfoyle M, Eichenbaum G, Guha C, Ghosh SP. *Sci Rep.* 2022. 12(1):3485.

Normal Tissue Injury Induced by Photon and Proton Therapies: Gaps and Opportunities. Prasanna PG, Rawojc K, Guha C, Buchsbaum JC, Miszczyk JU, Coleman CN. *Int J Radiat Oncol Biol Phys.* 2021. 110(5):1325-1340.

Evaluating dosimetric constraints for carbon ion radiotherapy in the treatment of locally advanced pancreatic cancer. Lin LC, Jiang GL, Ohri N, Wang Z, Lu JJ, Garg M, Guha C, Wu X. *Radiat Oncol.* 2020. 15(1):101.
Nestin+NG2+ Cells Form a Reserve Stem Cell Population in the Mouse Prostate. Hanoun M, Arnal-Estapé A, Maryanovich M, Zahalka AH, Bergren SK, Chua CW, Leftin A, Brodin PN, Shen MM, Guha C, Frenette PS. *Stem Cell Reports.* 2019. 12(6):1201-1211.

Radiation-primed hepatocyte transplantation in murine monogenic dyslipidemia normalizes cholesterol and prevents atherosclerosis. Barahman M, Zhang W, Harris HY, Aiyer A, Kabarriti R, Kinkhabwala M, Roy-Chowdhury N, Beck AP, Scanlan TS, Roy-Chowdhury J, Asp P, Guha C. *J Hepatol.* 2019. 70(6):1170-1179.
Macrophage-derived extracellular vesicle-packaged WNTs rescue intestinal stem cells and enhance survival after radiation injury. Saha S, Aranda E, Hayakawa Y, Bhanja P, Atay S, Brodin NP, Li J, Asfaha S, Liu L, Tailor Y, Zhang J, Godwin AK, Tome WA, Wang TC, Guha C, Pollard JW. *Nat Commun.* 2016. 7:13096.

doi: 10.1038/ncomms13096.

Low-Intensity Focused Ultrasound Induces Reversal of Tumor-Induced T Cell Tolerance and Prevents Immune Escape. Bandyopadhyay S, Quinn TJ, Scanduzzi L, Basu I, Partanen A, Tomé WA, Macian F, Guha C. *J Immunol.* 2016. 196(4):1964-76.

An autologous in situ tumor vaccination approach for hepatocellular carcinoma. 2. Tumor-specific immunity and cure after radio-inducible suicide gene therapy and systemic CD40-ligand and Flt3-ligand gene therapy in an orthotopic tumor model. Kawashita Y, Deb NJ, Garg MK, Kabarriti R, Fan Z, Alfieri AA, Roy-Chowdhury J, Guha C. *Radiat Res.* 2014. 182(2):201-10.

SELECTED GRANTS:

NCI R01 CA226861: Use of focused ultrasound to increase melanoma immunogenicity and inhibit tumor-induced T cell tolerance.

NCI R01 CA228275: An integrated theranostic system for breast cancer.

NCI R44 CA192435: Immunomodulation of radiation therapy with Flt3L.

NIAID U01 AI170032: Regeneration of the immune system after radiation exposure.

NIAID U01 AI138324: Stromal cell therapy as a treatment against Gastrointestinal Acute Radiation Syndrome (GI-ARS).

NIAID U01 AI133608: Development of thrombopoietin mimetic (TPOm) as a mitigator against radiation-induced endovascular injuries.

NIDDK U01 DK103155: Understanding stem cell heterogeneity and niche function in intestinal regeneration after irradiation.

NCI R01 CA257509: Relative immunological effectiveness (RIE) of carbon ion radiation therapy (CIRT) for pancreatic cancer.



Meredith Hawkins, MD, MS

Professor, Department of Medicine (Endocrinology)
Harold and Muriel Block Chair in Medicine
Associate Director, Einstein-Mt. Sinai Regional Diabetes Center
Director, Global Diabetes Institute

RESEARCH AREAS: Delineating central regulation of glucose metabolism (first studies to be performed in humans to address these questions). Adipose tissue inflammation: impact of nutrients in recruiting and activating inflammatory cells to infiltrate adipose tissue. Malnutrition-Modulated Diabetes Mellitus and other forms of diabetes that are unique to low and middle income settings. Hypoglycemia- Associated Autonomic Failure.

SELECTED PUBLICATIONS:

Lontchi-Yimagou E, DasGupta R, Kehlenbrink S, Koppaka S, Carey M, Stein DT, Thomas N, **Hawkins M**. An Atypical form of diabetes in low BMI individuals. *Diabetes Care* 2022 45(6):1428-1437. doi: 10.2337/dc21-1957. PMID: 35522035 (This represents the results of a 12 year collaboration in India to investigate a poorly understood form of diabetes. To date, the paper has received over 9,000 reads and has been picked up by 94 news outlets.)

Cook J, **Hawkins M**, Pajvani UB. Liver insulinization as a driver of triglyceride dysmetabolism. *Nature Medicine*. 2023 (e-publication 17 July 2023)

Lontchi-Yimagou E, Kang S, Goyal A, You J-Y, Carey M, Rosen E, Kishore P, **Hawkins M**. Insulin Sensitizing Effects of Vitamin D Mediated through Reduced Adipose Tissue Inflammation and Fibrosis in Humans and Mice. *Molecular Metabolism* 2020 Dec;42:101095. doi: 10.1016/j.molmet.2020.101095. Epub 2020 Oct 10. PMID:33045433

Carey M, Lontchi-Yimagou E, Mitchell W, Reda S, Zhang K, Kehlenbrink S, Koppaka S, Maginley SR, Aleksic S, Bhansali S, Huffman DM, **Hawkins M**. Central KATP channels modulate glucose effectiveness in humans and rodents. *Diabetes*. 2020 Jun;69(6):1140-1148. doi: 10.2337/db19-1256. PMID: 32217610 (Selected as Editor's Choice by Science Translational Medicine, 29 Apr 2020: Vol. 12, Issue 541, eabb5677).

Lontchi-Yimagou E, Aleksic S, Hulkower R, Gospin R, Goyal A, Kuo B, Mitchell WG, You JY, Upadhyay L, Carey M, Sandu OA, Gabriely I, Shamon H, **Hawkins M**. Plasma epinephrine contributes to the development of experimental hypoglycemic-associated autonomic failure. *Journal of Clinical Endocrinology and Metabolism* 2020 Nov 1;105(11):dgaa539. doi: 10.1210/clinem/dgaa539.PMID: 32915987

SELECTED GRANTS:

R01 DK069861 (Hawkins)

06/01/06- 04/30/27

Restoring Central Regulation of Glucose Production in Type 2 Diabetes

Role: Principal Investigator

This is the continued funding of a project that has been funded by NIH since 2006. The goals of the current funding period are to determine whether lowering free fatty acid (FFA) concentrations can restore central regulation of glucose metabolism in humans with type 2 diabetes and in appropriate animal models.

P30DK020541 (Pessin) 04/01/2020-03/31/2025
Regional Einstein-Mount Sinai Diabetes Research Center (ES-DRC)

This award is for a regional diabetes research center through the combined efforts of the Albert Einstein College of Medicine, Mount Sinai School of Medicine and affiliated faculty institutions. This award is focused on basic, pre-clinical, clinical and community levels. The funds from this award are used to support biomedical core facilities.

Roles: Associate Director of Center; Director of Enrichment Program; Consultant on Translational Research Core

R01AR077042-01A1 (Abramowitz) 07/01/2021-06/30/2026
Preserving physical function in patients with kidney disease

Role: Co-Investigator



Betsy, Herold, MD

Professor, Department of Pediatrics and Department of Microbiology & Immunology

RESEARCH AREA: Prevention of HIV and HSV and other sexually transmitted infections

SELECTED PUBLICATIONS:

Demirhan, S., Munoz, F.M., Valencia-Deray, K., Bocchini, C., Danziger-Isakov, L., Blum, S., Sharma, T.S., Sherman, G., Boguniewicz, J., Bacon, S., Ardura, M.I., Maron, G.M., Ferrolino, J., Foca, M* and Herold, B.C.* (*contributed equally). Body surface area compared to body weight dosing of valganciclovir is associated with increased toxicity in pediatric solid organ transplantation recipients. *American Journal of Transplantation*, 2023 (In press).

Pierce, C.A., Loh, L.N., Steach, H.R., Cheshenko, N.C., Preston-Hurlburt, P., Zhang, F., Stransky, S., Kravets, L., Sidoli, S., Philbrick, W.M., Nassar, M.N., Krishnaswamy, S., Herold, K.C.*, Herold, B.C.* (*contributed equally). HSV-2 triggers upregulation of *Malat1* in CD4+ T cells and promotes HIV latency reversal. *JCI*, 2023, June 1; 133(11):e16531 PMC10232005.

Cheshenko, N. Bonanno, J.B., Hoffmann, H-H., Jangra, R.K., Chandran, K., Rice, C.M., Almo, S.C. and Herold, B.C. Cell-impermeable staurosporine analog targets extracellular kinases to inhibit HSV and SARS-CoV-2. *Nature Communications Biology*, 2022;5(1):1096. PMC9569420.

Kuraoka, M., **Burn Achner, C.**, Windsor I.W., **Mahant, A.M.**, Garforth, Sc., Kong, S.L., Achkar, J.M., Almo, S.C., Kelsoe, G., and Herold, B.C. A non-neutralizing glycoprotein B monoclonal antibody protects against herpes simplex virus disease in mice. *JCI* 2023 Feb 1;133(3):e161968 PMC9888390

Mahant, A.M., Guerguis, S., Blevins, T., **Cheshenko, N.**, Gao, W., Anastos, K., Belshe, R. and Herold, B.C. Herpes Simplex Virus Glycoprotein D Antibodies Fail to Elicit Antibody-Dependent Cell-Mediated Cytotoxicity: Implications for Future Vaccines. *Journal of Infectious Diseases*, Nov 1;226(9):1489-1498 PMID:35834278

Pierce CA, Sy S, Galen B, Goldstein DY, Orner E, Keller M, Herold KC*, **Herold B.C*** (*contributed equally). Natural mucosal barriers and COVID-19 in children. *JCI Insight* 2021.May10;6(9):e148694.PMC8262299

Burn Aschner, C., Loh, L.N., Galen, B., Delwel, I., Jangra, R.K., Garforth, S.J., Chandran, K., Almo, S.C., Jacobs, W.R., Ware, C. F., and Herold, B.C. HVEM signaling promotes ADCC vaccine responses to herpes simplex viruses. *Science Immunology*, 2020, Aug 14;5(50): eaax2454. doi: 10.1126 PMC7673108

Pierce, C.A., Preston-Hurlburt, P, Dai, Y, **Burn Aschner, C., Cheshenko, N.**, Galen, B., Garforth, S.J., Herrera, N.G., Jangra, R.K., Morano, N., Orner, E., Sy, S., Chandran, K., Dziura, J., Almo, S.C. Ring, A., Keller, M.J., Herold, K.C*. and Herold, B.C.*(*contributed equally). Immune responses to SARS-CoV-2 infection in hospitalized pediatric and adult patients. *Sci Transl Med* 2020 Sep 21;eabd5487do10.1126/ PMC7658796

Taneva, E., Sinclair, S., **Mesquita, P.M.M.**, Weinrick, B., Cameron, S.A., Cheshenko, N., Reagle, K., Frank, B., Srinivasan, S., Fredricks, D., Keller, M.J. and Herold, B.C. Vaginal microbiome modulates topical antiretroviral drug pharmacokinetics. *JCI Insight*, 2018 Jul 12;3(13). pii: 99545. doi: 10.1172/jci.insight.99545 PMC6124523

Ramsey, N., Visciano, M., Hunte, R. Loh, L.N., Burn Aschner, C., Jacobs, W.R., and Herold, B.C. A single-cycle glycoprotein D deletion viral vaccine candidate, delta gD-2, elicits polyfunctional antibodies that protect against ocular herpes simplex virus, *Journal of Virology* 2020 Jun 16;94(13):e00335-20. doi: 10.1128/JVI.00335-20. Print 2020 Jun 16 PMC7307146

Cheshenko, N., Pierce, C., and Herold, B.C. Herpes simplex viruses activate phospholipid scramblase to redistribute phosphatidylserines and Akt to the outer leaflet of the plasma membrane and promote viral entry. *PLoS Pathog.* 2018 Jan.2;14(1):e1006766 [PMc5766253](#)

SELECTED GRANTS:

Active

Optimizing the Generation of Monoclonal Antibodies for Prevention and Treatment of HSV Disease

Herold, B. & Kuraoka, M.

National Institute of Allergy and Infectious Diseases

6/6/23 → 5/31/28

Multi-center Evaluation of the Threat of Established and Emerging Respiratory Viral Infections in Pediatric Transplant Recipients

Steinbach, W. W. J., Herold, B., Tuomanen, E. E. I., Englund, J. J. A., Englund, J. A., Herold, B. C.,

Steinbach, W. J. & Tuomanen, E. I.

National Institute of Allergy and Infectious Diseases

9/17/21 → 8/31/23

Impact of the vaginal microbiome on topical HIV pre-exposure prophylaxis (PrEP)

Herold, B.

National Institute of Child Health and Human Development

4/12/19 → 3/31/24

Finished

Impact of the vaginal microbiome on topical HIV pre-exposure prophylaxis (PrEP)

Herold, B.

4/12/19 → 3/31/22

Mechanisms Underlying the HIV-HSV-2 Syndemic

Herold, B.

12/5/17 → 11/30/21

Mechanisms Underlying the HIV-HSV-2 Syndemic

Herold, B. & Herold, B. C.

National Institute of Allergy and Infectious Diseases

12/5/17 → 11/30/22

Attenuated HSV Vaccines That Induce Protective Mucosal Antibodies

Jacobs Jr., W. R., Herold, B., Kelsoe, G. H. & Jacobs, W. R.

National Institute of Allergy and Infectious Diseases

3/1/16 → 2/28/21

Attenuated HSV Vaccines That Induce Protective Mucosal Antibodies

Herold, B.

3/1/16 → 2/28/21

Drug at the Right Place & Concentration: Optimizing Combination Vaginal Ring PrEP

Herold, B., Kiser, P. F., Keller, M. J., Mitchnick, M., Herold, B. C. & Keller, M. J.

National Institute of Allergy and Infectious Diseases

1/18/13 → 12/31/19

Impact of Mucosal Immune Environment and semen on PrEP and PD

Herold, B.

National Institute of Allergy and Infectious Diseases

1/18/13 → 12/31/19

Administrative Core

Herold, B.

National Institute of Allergy and Infectious Diseases

1/18/13 → 12/31/19

Administrative Core

Herold, B., Kiser, P. F., Mitchnick, M., Keller, M., Rose, S. A., Rose, S. A., Rose, S. A., Rose, S. A., Rose, S. A., Rose, S. A., Rose, S. A. & Rose, S. A.

12/1/12 → 12/31/19



Dean Hosgood, PhD

Associate Professor, Department of Epidemiology and Population Health

RESEARCH AREA: Cancer epidemiology, environmental health, global health

SELECTED PUBLICATIONS:

Hosgood HD, 3rd, Chapman R, Shen M, Blair A, Chen E, Zheng T, Lee KM, He X, Lan Q. Portable stove use is associated with lower lung cancer mortality risk in lifetime smoky coal users. *British journal of cancer*. 2008/12/02;99(11):1934-9. Epub 2008/11/27. doi: 10.1038/sj.bjc.6604744. PubMed PMID: 19034286; PMCID: PMC2600700

Hosgood HD, 3rd, Liu CS, Rothman N, Weinstein SJ, Bonner MR, Shen M, Lim U, Virtamo J, Cheng WL, Albanes D, Lan Q. Mitochondrial DNA copy number and lung cancer risk in a prospective cohort study. *Carcinogenesis*. 2010/5/01;31(5):847-9. Epub 2010/02/24. doi: 10.1093/carcin/bgq045. PubMed PMID: 20176654; PMCID: PMC2864414.

Hsiung CA, Lan Q, Hong YC, Chen CJ, **Hosgood HD**, Chang IS, Chatterjee N, Brennan P, Wu C, Zheng W, Chang GC, Wu T, Park JY, Hsiao CF, Kim YH, Shen H, Seow A, Yeager M, Tsai YH, Kim YT, Chow WH, Guo H, Wang WC, Sung SW, Hu Z, Chen KY, Kim JH, Chen Y, Huang L, Lee KM, Lo YL, Gao YT, Kim JH, Liu L, Huang MS, Jung TH, Jin G, Caporaso N, Yu D, Kim CH, Su WC, Shu XO, Xu P, Kim IS, Chen YM, Ma H, Shen M, Cha SI, Tan W, Chang CH, Sung JS, Zhang M, Yang TY, Park KH, Yuenger J, Wang CL, Ryu JS, Xiang Y, Deng Q, Hutchinson A, Kim JS, Cai Q, Landi MT, Yu CJ, Park JY, Tucker M, Hung JY, Lin CC, Perng RP, Boffetta P, Chen CY, Chen KC, Yang SY, Hu CY, Chang CK, Fraumeni JF, Jr., Chanock S, Yang PC, Rothman N, Lin D. The 5p15.33 locus is associated with risk of lung adenocarcinoma in never-smoking females in Asia. *PLoS genetics*. 2010/8/01;6(8). Epub 2010/08/1. doi: 10.1371/journal.pgen.1001051. PubMed PMID: 20700438; PMCID: PMC2916850.

Hosgood HD, 3rd, Boffetta P, Greenland S, Lee YC, McLaughlin J, Seow A, Duell EJ, Andrew AS, Zaridze D, Szeszenia-Dabrowska N, Rudnai P, Lissowska J, Fabianova E, Mates D, Bencko V, Foretova L, Janout V, Morgenstern H, Rothman N, Hung RJ, Brennan P, Lan Q. In-home coal and wood use and lung cancer risk: a pooled analysis of the International Lung Cancer Consortium. *Environmental health perspectives*. 2010/12/01;118(12):1743-7. Epub 2010/09/18. doi: 10.1289/ehp.1002217. PubMed PMID: 20846923; PMCID: Pmc3002194.

Hosgood HD, 3rd, Purdue MP, Wang SS, Zheng T, Morton LM, Lan Q, Menashe I, Zhang Y, Cerhan JR, Grulich A, Cozen W, Yeager M, Holford TR, Vajdic CM, Davis S, Leaderer B, Krickler A, Schenk M, Zahm SH, Chatterjee N, Chanock SJ, Rothman N, Hartge P, Armstrong B. A pooled analysis of three studies evaluating genetic variation in innate immunity genes and non-Hodgkin lymphoma risk. *British journal of haematology*. 2011/3/01;152(6):721-6. Epub 2011/01/22. doi: 10.1111/j.1365-2141.2010.08518.x. PubMed PMID: 21250972; PMCID: Pmc3253820.

Hosgood HD, 3rd, Wei H, Sapkota A, Choudhury I, Bruce N, Smith KR, Rothman N, Lan Q. Household coal use and lung cancer: systematic review and meta-analysis of case-control studies, with an emphasis on geographic variation. *International journal of epidemiology*. 2011/6/01;40(3):719-28. Epub 2011/02/01. doi: 10.1093/ije/dyq259. PubMed PMID: 21278196; PMCID: PMC3147068.

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Kim YT, Wu W, Zhao Z, Chow WH, Zhu X, Lo YL, Sung SW, Chen KY, Yuenger J, Kim JH, Huang L, Chen YH, Gao YT, Kim JH, Huang MS, Jung TH, Caporaso N, Zhao X, Huan Z, Yu D, Kim CH, Su WC, Shu XO, Kim IS, Bassig B, Chen YM, Cha SI, Tan W, Chen H, Yang TY, Sung JS, Wang CL, Li X, Park KH, Yu CJ, Ryu JS, Xiang Y, Hutchinson A, Kim JS, Cai Q, Landi MT, Lee KM, Hung JY, Park JY, Tucker M, Lin CC, Ren Y, Perng RP, Chen CY, Jin L, Chen KC, Li YJ, Chiu YF, Tsai FY, Yang PC, Fraumeni JF, Jr., Seow A, Lin D, Zhou B, Chanock S, Hsiung CA, Rothman N, Lan Q. Genetic variant in TP63 on locus 3q28 is associated with risk of lung adenocarcinoma among never-smoking females in Asia. *Human genetics*. 2012/7/13;131(7):1197-203. Epub 2012/03/01. doi: 10.1007/s00439-012-1144-8. PubMed PMID: 22367405; PMCID: PMC3875137.

Lan Q, Hsiung CA, Matsuo K, Hong YC, Seow A, Wang Z, **Hosgood HD**, 3rd, Chen K, Wang JC, Chatterjee N, Hu W, Wong MP, Zheng W, Caporaso N, Park JY, Chen CJ, Kim YH, Kim YT, Landi MT, Shen H, Lawrence C, Burdett L, Yeager M, Yuenger J, Jacobs KB, Chang IS, Mitsudomi T, Kim HN, Chang GC, Bassig BA, Tucker M, Wei F, Yin Z, Wu C, An SJ, Qian B, Lee VH, Lu D, Liu J, Jeon HS, Hsiao CF, Sung JS, Kim JH, Gao YT, Tsai YH, Jung YJ, Guo H, Hu Z, Hutchinson A, Wang WC, Klein R, Chung CC, Oh JJ, Chen KY, Berndt SI, He X, Wu W, Chang J, Zhang XC, Huang MS, Zheng H, Wang J, Zhao X, Li Y, Choi JE, Su WC, Park KH, Sung SW, Shu XO, Chen YM, Liu L, Kang CH, Hu L, Chen CH, Pao W, Kim YC, Yang TY, Xu J, Guan P, Tan W, Su J, Wang CL, Li H, Sihoe AD, Zhao Z, Chen Y, Choi YY, Hung JY, Kim JS, Yoon HI, Cai Q, Lin CC, Park IK, Xu P, Dong J, Kim C, He Q, Perng RP, Kohno T, Kweon SS, Chen CY, Vermeulen R, Wu J, Lim WY, Chen KC, Chow WH, Ji BT, Chan JK, Chu M, Li YJ, Yokota J, Li J, Chen H, Xiang YB, Yu CJ, Kunitoh H, Wu G, Jin L, Lo YL, Shiraishi K, Chen YH, Lin HC, Wu T, Wu YL, Yang PC, Zhou B, Shin MH, Fraumeni JF, Jr., Lin D, Chanock SJ, Rothman N. Genome-wide association analysis identifies new lung cancer susceptibility loci in never-smoking women in Asia. *Nature genetics*. 2012/12/01;44(12):1330-5. Epub 2012/11/13. doi: 10.1038/ng.2456. PubMed PMID: 23143601; PMCID: Pmc4169232.

Hosgood HD, 3rd, Farah C, Black CC, Schwenn M, Hock JM. Spatial and temporal distributions of lung cancer histopathology in the state of Maine. *Lung cancer (Amsterdam, Netherlands)*. 2013/10/01;82(1):55-62. Epub 2013/08/06. doi: 10.1016/j.lungcan.2013.06.018. PubMed PMID: 23910905.

Hosgood HD, 3rd, Pao W, Rothman N, Hu W, Pan YH, Kuchinsky K, Jones KD, Xu J, Vermeulen R, Simko J, Lan Q. Driver mutations among never smoking female lung cancer tissues in China identify unique EGFR and KRAS mutation pattern associated with household coal burning. *Respiratory medicine*. 2013/11/01;107(11):1755-62. Epub 2013/09/24. doi: 10.1016/j.rmed.2013.08.018. PubMed PMID: 24055406; PMCID: PMC3848251.

Hosgood HD, 3rd, Sapkota AR, Rothman N, Rohan T, Hu W, Xu J, Vermeulen R, He X, White JR, Wu G, Wei F, Mongodin EF, Lan Q. The potential role of lung microbiota in lung cancer attributed to household coal burning exposures. *Environmental and molecular mutagenesis*. 2014/10/01;55(8):643-51. Epub 2014/06/05. doi: 10.1002/em.21878. PubMed PMID: 24895247; PMCID: PMC4217127.

Hosgood HD, 3rd, Song M, Hsiung CA, Yin Z, Shu XO, Wang Z, Chatterjee N, Zheng W, Caporaso N, Burdette L, Yeager M, Berndt SI, Landi MT, Chen CJ, Chang GC, Hsiao CF, Tsai YH, Chien LH, Chen KY, Huang MS, Su WC, Chen YM, Chen CH, Yang TY, Wang CL, Hung JY, Lin CC, Perng RP, Chen CY, Chen KC, Li YJ, Yu CJ, Chen YS, Chen YH, Tsai FY, Kim C, Seow WJ, Bassig BA, Wu W, Guan P, He Q, Gao YT, Cai Q, Chow WH, Xiang YB, Lin D, Wu C, Wu YL, Shin MH, Hong YC, Matsuo K, Chen K, Wong MP, Lu D, Jin L, Wang JC, Seow A, Wu T, Shen H, Fraumeni JF, Jr., Yang PC, Chang IS, Zhou B, Chanock SJ, Rothman N, Lan Q. Interactions between household air pollution and GWAS-identified lung cancer susceptibility markers in the Female Lung Cancer Consortium in Asia (FLCCA). *Human genetics*. 2015/3/13;134(3):333-41. Epub 2015/01/08. doi: 10.1007/s00439-014-1528-z. PubMed PMID: 25566987 PMCID: PMC5537621

Josyula S, Lin J, Xue X, Rothman N, Lan Q, Rohan TE, **Hosgood HD**, 3rd. Household air pollution and cancers other than lung: a meta-analysis. *Environmental health : a global access science source*. 2015/3/15;14:24. doi: 10.1186/s12940-015-0001-3. PubMed PMID: 25890249; PMCID: PMC4377187.

Goedert JJ, **Hosgood HD**, Biggar RJ, Strickler HD, Rabkin CS. Screening for Cancer in Persons Living with HIV Infection. *Trends in cancer*. 2016;2(8):416-28. Epub 2016/11/29. doi: 10.1016/j.trecan.2016.06.007. PubMed PMID: 27891533. PMCID: PMC5120729.

Hosgood HD, Gunter MJ, Murphy N, Rohan TE, Strickler HD. The Relation of Obesity-Related Hormonal and Cytokine Levels With Multiple Myeloma and Non-Hodgkin Lymphoma. *Front Oncol*. 2018 Apr 16;8:103. doi: 10.3389/fonc.2018.00103. PMID: 29713614 PMCID: PMC5911620.

Wang T, **Hosgood HD**, Lan Q, Xue X. The Relationship Between Population Attributable Fraction and Heritability in Genetic Studies. *Front Genet*. 2018 Oct 1;9:352. doi: 10.3389/fgene.2018.00352. eCollection 2018. PMID: 30327663 PMCID: PMC6174220.

Hosgood HD, Hu W, Rothman N, Klugman M, Weinstein SJ, Virtamo J, Albanes D, Cawthon R, Lan Q. Variation in Ribosomal DNA copy number is associated with lung cancer risk in a prospective cohort study. *Carcinogenesis*. 2019 Mar 12. pii: bgz052. doi: 10.1093/carcin/bgz052. [Epub ahead of print]. PMID: 30859204.

Hosgood HD 3rd, Mongodin EF, Wan Y, Hua X, Rothman N, Hu W, Vermeulen R, Seow WJ, Rohan T, Xu J, Li J, He J, Huang Y, Yang K, Wu G, Wei F, Shi J, Sapkota AR, Lan Q. The Respiratory Tract Microbiome and Its Relationship to Lung Cancer and Environmental Exposures Found in Rural China. *Environ Mol Mutagen*. 2019 Apr 3. doi: 10.1002/em.22291. [Epub ahead of print] PMID: 30942501.

Cheng H*, **Hosgood HD***, Deng L, Ye K, Su C, Sharma J, Yang Y, Halmos B, Perez-Soler R. Survival Disparities in Black Patients With EGFR-mutated Non-small-cell Lung Cancer. *Clin Lung Cancer*. 2019 Jul 17. pii: S1525-7304(19)30207-4. doi: 10.1016/j.clcc.2019.07.003. [Epub ahead of print]. PMID: 31420240. *co-first authors.

Klugman M, Xue X, **Hosgood HD** 3rd. Race/ethnicity and lung cancer survival in the United States: a meta-analysis. *Cancer Causes Control*. 2019 Sep 14. doi: 10.1007/s10552-019-01229-4. [Epub ahead of print]. PMID: 31522320

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Hosgood HD, Slavkovich V, Hua S, Klugman M, Grau-Perez M, Thyagarajan B, Graziano J, Cai J, Shaw PA, Kaplan R, Navas-Acien A, Mossavar-Rahmani Y. Urinary Arsenic Species are Detectable in Urban Underserved Hispanic/Latino Populations: A Pilot Study from the Study of Latinos: Nutrition & Physical Activity Assessment Study (SOLNAS). *Int J Environ Res Public Health*. 2020 Mar 27;17(7). pii: E2247. doi: 10.3390/ijerph17072247. PMID: 32230710.

Blansky D, Mantzaris I, Rohan T, **Hosgood HD** 3rd. Influence of Rurality, Race, and Ethnicity on Non-Hodgkin Lymphoma Incidence. *Clin Lymphoma Myeloma Leuk*. 2020 May 16:S2152-2650(20)30238-X. doi: 10.1016/j.clml.2020.05.010. Online ahead of print. PMID: 32605898.

Blansky D, Fazzari M, Mantzaris I, Rohan T, **Hosgood HD**. Racial and ethnic differences in diffuse large B-cell lymphoma survival among an underserved, urban population. *Leuk Lymphoma*. 2021 Mar;62(3):581-

589. doi: 10.1080/10428194.2020.1839656. PMID: 33112182

Hosgood HD, Cai Q, Hua X, Long J, Shi J, Wan Y, Yang Y, Abnet C, Bassig BA, Hu W, Ji BT, Klugman M, Xiang Y, Gao YT, Wong JY, Zheng W, Rothman N, Shu XO, Lan Q. Variation in oral microbiome is associated with future risk of lung cancer among never-smokers. *Thorax*. 2021 Mar;76(3):256-263. doi: 10.1136/thoraxjnl-2020-215542. Online ahead of print. PMID: 33318237

Klugman M, Fazzari M, Xue X, Ginsberg M, Rohan TE, Halmos B, Hanna DB, Shuter J, **Hosgood HD** 3rd. The associations of CD4 count, CD4/CD8 ratio, and HIV viral load with survival from non-small cell lung cancer in persons living with HIV. *AIDS Care*. 2021 Jun 1:1-8. doi: 10.1080/09540121.2021.1934380. Online ahead of print. PMID: 34074183

Blansky D, Fazzari M, Mantzaris I, Rohan T, **Hosgood HD**. Racial and ethnic differences in all-cause mortality among Hispanics diagnosed with follicular lymphoma and chronic lymphocytic leukemia in the Bronx, NY. *Cancer Causes Control*. 2022 Jan;33(1):137-147. doi: 10.1007/s10552-021-01507-0. PMID: 34677741

Hosgood HD, Rahman ML, Blansky D, Hu W, Davitt M, Wen C, Huang Y, Tang X, Li L, Smith MT, Zhang L, Vermeulen R, Rothman N, Bassig BA, Lan Q. Targeted proteomic scan identifies alteration of serum proteins among workers occupationally exposed to low levels of trichloroethylene. *Environ Mol Mutagen*. 2022 Dec;63(8-9):423-428. doi: 10.1002/em.22518. PMID: 36346153

Davitt M, Gennarini L, Loeb D, Fazzari M, **Hosgood HD**. Impact of race/ethnicity and language preferences on pediatric ALL survival outcomes. *Cancer Med*. 2023 Apr 16. doi: 10.1002/cam4.5951. Online ahead of print. PMID: 37062075

Davitt M, Gennarini L, Loeb D, **Hosgood HD**. Drivers of Differential Time to Diagnosis in Pediatric ALL tied to Race and Ethnicity. *Journal of Pediatric Hematology/Oncology*. In press.

Hosgood HD, Davitt M, Cawthon R, Weinstein SH, Blechter B, Wong JYY, Rahman ML, Hu W, Mannisto S, Albanes D, Rothman N, Lan Q. Mitochondrial DNA Fragmentation and Risk of Non-Hodgkin Lymphoma. *JAMA Network Open*. In press.

SELECTED GRANTS:

MECC Pilot Project Award (MPI: Shastri, Hosgood) 09/15/2022 - 08/31/2023

Outdoor Air Pollution and Non-Small Cell Cancer (NSCLC) in the Bronx

The major goal of this project is (1) to study the relationship between the outdoor air pollution (OAP) exposures and progression-free and overall survival among NSCLC patients in the Bronx and (2) generate a novel murine model to provide mechanistic insights between OAP exposure and NSCLC.

Role: Principal Investigator

4UH3CA257869-03 (MPI: Alatisse, Fedorak, Kingham) 05/01/2020 - 06/30/2024

Point of Care, Real Time Urine Metabolomics Test To Diagnose Colorectal Cancers and Polyps in Low- and Middle-Income Countries

The research, development, and validation of a urine metabolomic test to diagnose colorectal cancer and polyps in high-risk patients such as those with bloody stools, first degree relatives of those diagnosed with colorectal cancer, and colorectal cancer survivors.

Role: Subcontract PI/Co-Investigator

1U01CA242740-01 (PI: Hosgood) 09/01/2020 - 08/31/2024

Assessing the Relative and Absolute Risk for Site-Specific Cancer Mortality Attributed to Household Air

Pollution

The major goal of this project is to study pivotal questions relating to the adverse health effects of household air pollution (HAP), including (1) if biomass (i.e., wood) use is associated with lung cancer mortality, and (2) if HAP is associated with increased risk of cancers other than lung cancer. Using 13 cohort studies for a combined sample size of >550,000 subjects, we will be the first to prospectively evaluate cancer site-specific mortality and HAP.

Role: Principal Investigator

D43CA260646-01A1 (MPI: Alatisé, Kingham)

03/01/2022 - 02/28/2027

Expanding Cancer Research Capacity in Nigeria with Team Science

The major goal of this project is to establish an international research training program aimed at creating a Cohort of highly skilled Nigerian Investigators able to lead independent oncology research programs, fostering team science, bolstering research administration capacity in Nigeria, and creating long-term research partnerships between Nigerian and US Cancer Researchers.

Role: Subcontract PI/Co-Investigator

2P01AG003949 (MPI: Derby, Katz)

04/01/2022 - 03/31/2027

Einstein Aging Study

The major goal of this project is to will apply novel methods to increase understanding of modifiable risk factors for Alzheimer's disease and associated dementias (ADRD) by examining their effects on cognitive performance and decline prior to ADRD onset. The project will provide new information regarding mechanisms linking exposures to cognitive outcomes and will inform future targeted interventions.

Role: Co-Investigator



Carmen R. Isasi, MD, PhD

Professor, Department of Epidemiology and Population Health & Department of Pediatrics

RESEARCH AREA: Socio-cultural and biological underpinnings of disparities in CVD and diabetes across the lifespan

SELECTED PUBLICATIONS:

Filigrana P, Moon JY, Gallo LC, Fernández-Rhodes L, Perreira KM, Daviglius ML, Thyagarajan B, Garcia-Bedoya OL, Cai J, Lipton RB, Kaplan RC, Gonzalez HM, **Isasi CR**. Childhood and life-course socioeconomic position and cognitive function in adult population of the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). *Am J Epidemiol*. 2023 Jul 7:kwad157. doi: 10.1093/aje/kwad157. Epub ahead of print. PMID: 37420108.

Isasi CR, Gallo LC, Cai J, Gellman MD, Xie W, Heiss G, Kaplan RC, Talavera GA, Daviglius ML, Pirzada A, Wassertheil-Smoller S, Llabre MM, Youngblood ME, Schneiderman N, Pérez-Stable EJ, Napoles AM, Perreira KM. Economic and psychosocial impact of COVID-19 in the Hispanic Community Health Study/Study of Latinos. *Health Equity* 2023;7:206-215 PMID: **37007686** PMCID: PMC10061327

Fernández-Rhodes L, McArdle CE, Rao H, Wang Y, Martinez-Miller EE, Ward JB, Cai J, Sofer T, **Isasi CR**, North KE. A Gene-Acculturation Study of Obesity Among US Hispanic/Latinos: The Hispanic Community Health Study/Study of Latinos. *Psychosom Med*. 2023 May 1;85(4):358-365. doi: 10.1097/PSY.0000000000001193. Epub 2023 Mar 15. PMID: 36917487; PMCID: PMC10159946.

Isasi CR, Moon JY, Gallo LC, Qi Q, Wang T, Sotres-Alvarez D, Llabre MM, Khambaty T, Daviglius M, Estrella ML, Cai J, Kaplan R. Chronic Stress, Genetic Risk, and Obesity in US Hispanic/Latinos: Results From the Hispanic Community Health Study/Study of Latinos. *Psychosom Med*. 2022 Sep 1;84(7):822-827 PMID: 35797158.

Maldonado LE, Sotres-Alvarez D, Mattei J, Perreira KM, McClain AC, Gallo LC, **Isasi CR**, Albrecht SS. Food Insecurity and Cardiometabolic Markers: Results From the Study of Latino Youth. *Pediatrics*. 2022 Apr 1;149(4):e2021053781. doi:10.1542/peds.2021-053781. PMID: 35292821; PMCID: PMC9595113.

LeCroy MN, Mossavar-Rahmani Y, Xue X, Wang T, Gallo LC, Perreira KM, Garcia ML, Clark TL, Daviglius ML, Van Horn L, Gonzalez F 2nd, **Isasi CR**. Diet quality comparisons in Hispanic/Latino siblings: Results from the Hispanic Community Children's Health Study/Study of Latino Youth (SOL Youth). *Appetite*. 2022 Feb 1;169:105809. doi: 10.1016/j.appet.2021.105809. Epub 2021 Nov 16. PMID:34798224; PMCID: PMC8963428.

Suglia SF, Crookes DM, Kaplan R, Sotres-Alvarez D, Llabre MM, Van Horn L, Carnethon MR, **Isasi CR**. Intergenerational Transmission of Childhood Adversity in Parents and their Children's BMI in the Hispanic Community Children's Health Study/Study of Latino Youth (HCHS/SOL Youth). *J Psychosom Res*. 2020 Feb 5;131:109956. doi: 10.1016/j.jpsychores.2020.109956. PMID: 32044520; PMCID: PMC7415479.

SELECTED GRANTS:

NIH/NHLBI HHSN268200625235C

Hispanic Community Health Study/Study of Latinos (HCHS/SOL) This a multicenter cohort study to examine the prevalence and development of disease in Hispanics, the role of acculturation, and to identify risk factors that play protective or harmful roles in Hispanics. The target population of 16,000 persons of Hispanic origin, specifically Cuban, Puerto Rican, Mexican, and Central American, to be recruited through four Field Centers affiliated with San Diego State University, Northwestern University in Chicago, Einstein College of Medicine in New York, and the University of Miami.

NIH/NIMHD R01 MD015204

Social stress, epigenetics and cardiometabolic health among Latino youth. Completion of this project would allow us to elucidate the impact social and economic stressors have on epigenetic and cardiometabolic markers that may help explain how stress shapes persistent population health disparities among young Latino populations.

NIH/NHLBI R01 HL152475

Nasal epithelial epigenomics and transcriptomics and asthma in Hispanic adults. This proposal will address an important, yet unstudied, aspect of asthma “omics”: the identification of epigenomic and transcriptomic markers and/or determinants of asthma outcomes among adults in two Hispanic groups at intermediate to high risk of asthma (of Dominican and Puerto Rican background).

NIH/NIA 1RF1AG077639

Early and life course socioeconomic adversity and dementia risk in Hispanic/Latinos. The goals of the study are to understand how early and sustained adverse socio-economic conditions shape risk of Alzheimer’s disease and related dementias (ADRSs) in a cohort of Hispanics/Latinos adults. We will learn about the most influential factors for ADRDs risk in a population in whom the traditional genetic and educational attainment factors do not predict ADRDs risk well.

NIH/NIDDK 1U01DK134988

Metabolic, behavioral and social determinants of youth onset T2D. This is a multicenter cohort study that will enroll 3000 children nationwide who are at risk of developing youth onset type 2 diabetes. The goals are to identify risk and protective factors associated with incident T2D during childhood. Findings will inform best screening and preventive approaches.



William R. Jacobs Jr., PhD

Professor, Department of Microbiology & Immunology

RESEARCH AREA: *Mycobacterium tuberculosis* genetics

SELECTED PUBLICATIONS:

Tiwari S, Casey R, Goulding CW, Hingley-Wilson S, Jacobs WR Jr. (2019) Infect and Inject: How *Mycobacterium tuberculosis* Exploits Its Major Virulence-Associated Type VII Secretion System, ESX-1. *Microbiol Spectr*. PMID: 31172908

Porcelli, S.S, Jacobs WR Jr. (2019). Eacting Edward Jenner's Revenge: The quest for a new tuberculosis vaccine. *Sci Transl Med*. PMID: 31043569

Vilcheze C, Jacobs WR Jr. (2019). The Isonizid Paradigm of Killing, Resistance, and Persistence in *Mycobacterium tuberculosis*. *J Mol Biol*. PMID: 30797860

O'Donnell MR, Larsen MH, Brown TS, Jain P, Munsamy V, Wolf A, Uccellini L, Karim F, D'Olivera T, Mathema B, Jacobs WR, Pym A. (2019). Early Detection of emergent drug resistant tuberculosis (XDR-TB) by flow cytometry-based phenotyping and whole genome sequencing. *Antimicrob Agents Chemother*. PMID: PMC6437479

Shen L., Frencher J., Huang D., Wang W., Yang E., Chen C.Y., Zhang Z., Wang R., Qaqish A., Larsen M.H., Shen H., Porcelli S.A., Jacobs W.R., Jr., Chen Z.W. (2019). Immunization of $V\gamma 2V\delta 2$ T cells programs sustained effector memory responses that control tuberculosis in nonhuman primates. *Proc Natl Acad Sci U.S.A.* 116 (13): 6371-6378. PMID: 30850538

Johndrow CT, Goldberg MF, Johnson AJ, Ng TW, Kunnath-Velayudhan S, Lauvau G, Kaplan DH, Gossel GH, Kadolsky UD, Yates AJ, Chan J, Jacobs WR Jr, Porcelli SA. (2018). Suppression of Th1 Priming by TLR2 Agonists during Cutaneous Immunization is Mediated by Recruited CCR2+ Monocytes. *J Immunol*. 201(12):3604-3616. PMID: 30455402

Bhatt K, Machado H, Osorio NS, Sousa J, Cardoso F, Magalhaes C, Chen B, Chen M, Kim J, Singh A, Ferreira CM, Castro AG, Torrado E, Jacobs WR Jr, Bhatt A, Saraiva M. (2018). A Nonribosomal Peptide Synthase Gene Driving Virulence in *Mycobacterium tuberculosis*. *mSphere*. 3(5). PMID: PMC6211224

Tiwari S, vanTonder AJ, Vilcheze C, Mendes V, Thomas SE, Malek A, Chen B, Chen M, Kim J, Blundell TL, Parkhill J, Weinrick B, Berney M, Jacobs WR Jr. (2018). Arginine-deprived-induced oxidative damage sterilizes *Mycobacterium tuberculosis*. *PNAS*. 115(39):9779-9784. PMID: PMC6166831

Kennedy SC, Johnson AJ, Bharrham S, Linderstam Arlehamn CS, XU J, Garforth SJ, Chan J, Jacobs WR Jr, Settle A, Almo SC, Porcelli SA. (2018). Identification of *Mycobacterial* Ribosomal Proteins as Targets for CD4+ T Cells that Enhance Protective Immunity in Tuberculosis. *Infection and Immunity*. 86(9). PMID: PMC6105890

Vilcheze C, Copelan J, Keiser, Weisbrod T, Washington J, Jain P, Malek A, Weinrick B, Jacobs WR Jr. (2018). Rational Design of Biosafety Level 2-Approved, Multidrug-Resistant Strains of *Mycobacterium tuberculosis* through Nutrient Auxotrophy. *MBio*. 9(3). PMID: PMC5974470

Harbut MB, Yang B, Liu R, Yano T, Vilcheze C, Cheng B, Lockner J, Guo H, Yu C, Franzblau SG, Petrassi HM, Jacobs WR Jr., Rubin H, Chatterjee AK, Wang F. (2018). Small Molecules Targeting *Mycobacterium tuberculosis* Type II NADH Dehydrogenase Exhibit Antimycobacterial Activity. *Angew Chem Int Ed Engl*. 57(13):3478-3482. PMID: PMC6066186

Vilcheze C, Weinrick B, Leung LW, Jacobs WR Jr. (2018). Plasticity of *Mycobacterium tuberculosis* NADH dehydrogenases and their role in virulence. *PNAS*. 115(7):1599-1604. PMID: PMC5816213
Vilcheze C, Kim J, Jacobs WR Jr. (2018). Vitamin C potentiates the killing of *Mycobacterium tuberculosis* by the first-line tuberculosis drugs isoniazid and rifampicin in mice. *Antimicrob Agents Chemother*. PMID: PMC5826150

Burn, C., Ramsey, N., Garforth, S.J., Almo, S., Jacobs, W.R., Jr. and Herold, B.C. (2018). An HSV-2 single-cycle candidate vaccine deleted in glycoprotein D, DeltagD-2, protects male mice from lethal skin challenge with clinical isolates of HSV-1 and HSV-2. *J Infect Dis*. PMID: PMC5853290

Retamal-Diaz, A., Weiss, K.A., Tognarelli, E.I., Freire, M., Bueno, S.M., Herold, B.C., Jacobs, W.R., Jr. and Gonzalez, P.A. (2017). US6 Gene Deletion in Herpes Simplex Virus Type 2 Enhances Dendritic Cell Function and T Cell Activation. *Front Immunol*. (8)1523. PMID: PMC5686121

SELECTED GRANTS:

ACTIVE

Title: Molecular Genetic Analysis of *Mycobacterium tuberculosis*

Notably, this grant just received a merit award and will be funded for the next 10 years

Major Goals: (1) Elucidate the genetic determinants for INH and AMK tolerance in vitro and in vivo. (2) Analyze the metabolic state of the *Mtb* persister CIMSAX mutant and the immune mechanisms required for its sterilization. (3) Determine the role of the structural maintenance of chromosome (SMC) gene in *Mtb* persistence.

*Status of Support: Active

Project Number: R01AI026170-38

Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: NIH

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/1/2019-8/31/2023

Total Award Amount (including Indirect Costs): \$2,766,749

Title: Genetic engineering of *Mycobacterium leprae* to Glow and Grow

Major Goals: (1) Develop a transformation system using a BRET-nanoLuc gene with an integration-proficient plasmid and *M.leprae* cells isolated from mouse foot pads. (2) Genetically complement *M. leprae* with *M. tb* genes encoding panBCD-irtAB-metC (PIM) or other potentially necessary genes to enable *M. leprae* to grow on artificial media. *Status of Support: Active

Project Number: 1R21AI68785-01

Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: NIH

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 05/20/2022-04/30/2024
Total Award Amount (including Indirect Costs): \$462,000

Title: Generation of Herpes Simplex Virus-2ΔgD Vaccines for Humans

Major Goals: (1) Improve complementing cell line for higher yields (2) Develop virus vectors and demonstrate their utility as multivalent vaccine platforms for the delivery of foreign viral or bacterial antigens (3) Explore utility of Δg(GDI)-1/-2 vectors to deliver therapeutic antibodies, or to mediate gene editing (4) Develop in vitro and in vivo models to measure antibody-dependent cell cytotoxicity (ADCC) effector mechanisms of vaccine protection.

*Status of Support: Active

Project Number: X-VAX Technology, Inc.

Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: Other

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 04/06/2021-04/05/2025

Total Award Amount (including Indirect Costs): \$2,652,740

PI has additional consulting agreement that is work outside of that being done in the research laboratory.

Title: Development of novel Mycobacterium tuberculosis challenge strain

Major Goals: (1) Generate a non-invasive system for sensitive and quantitative detection of CIMSAX.(2) Determine the ability of a CIMSAX strain expressing NIR-FP to predict vaccine efficacy.

*Status of Support: Active

Project Number: INV-035697

Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: Bill and Melinda Gates Foundation

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/07/2021-08/31/2023

*Total Award Amount (including Indirect Costs): \$593,919

Title: Rapid phenotypic detection of complex and emergent TB drug-resistance using a next-generation nanoluciferase reporter phage

Major Goals: (1) To establish correlates of resistance with *TM4::GeNL phage* and conventional culture-based diagnostics (2) Detect drug resistance to new and repurposed antimycobacterial agents in sputum of MDR-TB patients (3) Measure dynamic changes in treatment response and detect emergent resistance in sputum of MDR-TB patients

*Status of Support: Active

Project Number: 1R01AI176407-01

Name of PD/PI: O'Donnell, Max/ Jacobs, William R. Jr.

*Source of Support: NIH

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 03/01/2023-02/29/2028

Total Award Amount (including Indirect Costs): \$1,176,975

Title: Generation of a Complete Set of Precise Null Bar Coded Deletion Mutants of *Mycobacterium TB*

Major Goals: (1) Complete phasmid construction, quality control, and scaled-up production for distribution of the complete collection of PNBCD phasmid reagents. (2) Produce PNBCD phage lysates from phasmids at distribution scale. (3) Improve allelic exchange frequencies for gene knockouts to enable high throughput

construction of *Mtb* PNBCD strains.(4) Construct PNBCDs of high-value gene families in an attenuated BSL2-approved *Mtb* strains and in virulent *Mtb* H37Rv, Erdman, Beijing, and KZN strains. (5) Distribute PNBCD reagents, data, and protocols through BEI/ATCC

*Status of Support: Active

Project Number: R24AI134650

Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: NIH

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 05/01/2023-08/31/2028

* Total Award Amount (including Indirect Costs): \$2,045.224

Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: NIH

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/1/2023-8/31/2028

Total Award Amount (including Indirect Costs): \$3,901,995

Title: knockouts to enable high throughput construction of *Mtb* PNBCD strains.(4) Construct PNBCDs of high-value gene families in an attenuated BSL2-approved *Mtb* strains and in virulent *Mtb* H37Rv, Erdman, Beijing, and KZN strains. (5) Distribute PNBCD reagents, data, and protocols through BEI/ATCC

*Status of Support: Active

Project Number: R24AI134650

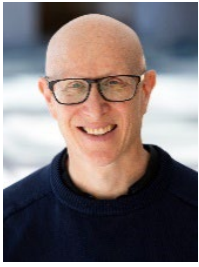
Name of PD/PI: Jacobs, William R. Jr.

*Source of Support: NIH

*Primary Place of Performance: Albert Einstein College of Medicine

Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/01/2023-08/31/2028

Total Award Amount (including Indirect Costs): \$2,045.224



Robert Kaplan, PhD

Professor, Department of Epidemiology and Population Health

RESEARCH AREA: Epidemiology of cardiovascular disease, diabetes

SELECTED PUBLICATIONS:

Kaplan RC et al. Predictors of incident diabetes in two populations: framingham heart study and hispanic community health study / study of latinos. BMC Public Health. 2022 May 26;22(1):1053. doi: 10.1186/s12889-022-13463-8. PMID: 35619100; PMCID: PMC9137165.

Kaplan RC et al. Gut microbiome composition in the Hispanic Community Health Study/Study of Latinos is shaped by geographic relocation, environmental factors, and obesity. Genome Biol. 2019 Nov 1;20(1):219. doi: 10.1186/s13059-019-1831-z. PMID: 31672155

SELECTED GRANTS:

Hispanic Community Health Study PI: Kaplan, NIH/NHLBI (HHSN268200625235C) The overall goal of this project is to recruit 4,000 Hispanic/Latino adults 18-74 years of age in Bronx NY and obtain long-term followup on CVD, asthma, COPD, diabetes, cancer, and other health outcomes, as part of the multicenter Hispanic Community Health Study.

Gut Origins of Latino Diabetes (GOLD) MPI: Kaplan/Burk/Knight, NIH/NIMHD/NIA (1R01MD011389-01) This proposal will examine the determinants and outcomes of gut microbiome alterations among Hispanic/Latino adults participating in the Hispanic Community Health Study / Study of Latinos.

Cardiometabolic Outcomes in Multi-ethnic Physical Activity & Sedentary Behavior Study (COMPASS) MPI: Mossavar-Rahmani/Kaplan/Vasan, NIH/NHLBI (5R01HL136266) This proposal will examine the patterns of exercise and sedentary behavior associated with cardiometabolic outcomes among a multiethnic population of Latinos from the HCHS-SOL cohort and non-Hispanics from the Framingham Heart Study Third Generation study.



Marla Keller, MD

Professor, Department of Medicine (Infectious Disease)

RESEARCH AREA: HIV and women, vaginal microbicides

SELECTED PUBLICATIONS:

Keller MJ, Mesquita PMM, Torres M, Cho S, Shust G, Madan RP, Cohen HW, Petrie J, Ford T, Soto-Torres L, Profy AT, Herold BC. Postcoital bioavailability and antiviral activity of 0.5% PRO 2000 gel: implications for future microbicide clinical trials. *PLoS One* 5:e8781, 2010.

Keller MJ, Madan RP, Torres NM, Fazzari MJ, Cho S, Kalyoussef S, Shust G, Mesquita PMM, Louissaint N, Chen J, Cohen HW, Diament EC, Lee AC, Soto-Torres L, Hendrix CH, Herold BC. A randomized trial to assess anti-HIV activity in female genital tract secretions & soluble mucosal immunity following application of 1% tenofovir gel. *PLoS One*, 6:e16475, 2011.

Herold BC, Mesquita PMM, Madan Rp, **Keller MJ**. Female genital tract secretions and semen impact the development of microbicides for the prevention of HIV and other sexually transmitted infections. *American Journal of Reproductive Immunology*, 65:325-333, 2011.

Keller MJ, Malone AM, Carpenter CA, Lo Y, Huang M, Corey L, Willis R, Nguyen C, Kennedy S, Gunawardana M, Guerrero D, Moss JA, Baum MM, Smith TJ, Herold BC. Safety and pharmacokinetics of aciclovir in women following release from a silicone elastomer vaginal ring. *Journal of Antimicrobial Chemotherapy*, 67:2005-12, 2012.

Keller MJ, Burk RD, Xie X, Anastos K, Massad LS, Minkoff H, Xue X, D'Souza G, Watts DH, Levine AM, Castle PE, Colie C, Palefsky JM, Strickler HD. Risk of cervical precancer and cancer among HIV-infected women with normal cytology and no evidence of oncogenic HPV infection. *JAMA*, 308:362-369, 2012.

Keller MJ, Madan RP, Shust G, Torres NM, Cho S, Khine H, Huang M, Corey L, Kim M, Herold BC. Changes in the soluble mucosal immune environment during genital herpes outbreaks. *Journal of Acquired Immune Deficiency Syndromes*, 61:194-202, 2012.

Keller MJ, Carpenter CA, Lo Y, Einstein MH, Lu C, Fredricks DN, Herold BC. Phase I randomized safety study of twice daily dosing of Acidform vaginal gel: candidate antimicrobial contraceptive. *PLoS One*, 7:e46901, 2012.

Keller MJ, Buckley N, Katzen LL, Walsh J, Friedland B, Littlefield S, Lin J, Xue X, Cornelison T, Herold BC, Einstein MH. Use of the dye stain assay and ultraviolet light test for assessing vaginal insertion of placebo-filled applicators before and after sex. *Sexually Transmitted Diseases*, 40:939-943, 2013

Herold BC, **Keller MJ**, Shi Q, Hoover DR, Carpenter CA, Parikh UM, Agnew KJ, Minkoff H, Colie C, Nowicki MJ, D'Souza G, Anastos K. Plasma and mucosal HIV viral loads are associated with genital tract inflammation in HIV-infected women. *Journal of Acquired Immune Deficiency Syndromes*, 63:485-493, 2013.

Ursell LK, Gunawardana M, Chang S, Mullen M, Moss JA, Herold BC, **Keller MJ**, McDonald D, Gonzalez A, Knight R, Baum MM. Comparison of the vaginal microbial communities in women with recurrent genital

HSV receiving acyclovir intravaginal rings. *Antiviral Research*, 102:87-94, 2014.

Dominguez-Villar M, Gautron A, de Marcken M, **Keller MJ**, Hafler DA. TLR7 induces anergy in human CD4(+) T cells. *Nature Immunology*, 16:118-128, 2015.

Keller MJ, Burk RD, Massad LS, Eltoun IE, Hessol NA, Castle PE, Anastos A, Xie X, Minkoff H, Xue X, D'Souza G, Flowers L, Levine AM, Colie C, Rahangdale L, Fischl MA, Palefsky JM, Strickler HD. Cervical precancer risk in HIV-infected women who test positive for oncogenic human papillomavirus despite a normal Pap test. *Clin Infect Dis*, 61:1573-1581, 2015.

Nakra NA, Madan RP, Buckley N, Huber AM, Freiemuth J, Espinoza L, Walsh J, Parikh UM, Penrose KJ, **Keller MJ**, Herold BC. Loss of innate host defense following unprotected vaginal sex. *Journal of Infectious Diseases*, 213:840-847, 2016.

Keller MJ, Mesquita PM, Marzinke MA, Teller R, Espinoza L, Atrio JM, Lo Y, Frank B, Srinivasan S, Fredricks DN, Rabe L, Anderson PL, Hendrix CW, Kiser PF, Herold BC. A phase 1 randomized placebo-controlled safety and pharmacokinetic trial of a tenofovir disoproxil fumarate vaginal ring. *AIDS*, 30:743-751, 2016.

Keller MJ, McGinn AP, Lo Y, Huber A, Espinoza L, Minkoff H, Colie C, Nowicki MJ, D'Souza G, Anastos K. Longitudinal assessment of systemic and genital tract inflammatory markers and endogenous genital tract *E. coli* inhibitory activity in HIV-infected and uninfected women. *American Journal of Reproductive Immunology*, 75:631-42, 2016.

Novetsky AP, **Keller MJ**, Gradissimo A, Chen Z, Morgan SL, Xue X, Strickler HD, Fernandez-Romero JA, Burk R, Einstein MH. In vitro inhibition of human papillomavirus following use of a carrageenan-containing vaginal gel. *Gynecologic Oncology*, 143:313-18, 2016.

Massad LS, **Keller MJ**, Xie X, Minkoff H, Palefsky J, D'Souza G, Colie C, Villacres MC, Strickler HD. Multitype infections with human papillomavirus: impact of HIV coinfection. *Sexually Transmitted Diseases*, 43:637-641, 2016.

Robbins HA, Strickler HD, Massad LS, Pierce CB, Darragh TM, Minkoff H, **Keller MJ**, Fischl M, Burk RD, Palefsky J, Flowers L, Rahangdale L, Milam J, Shrestha S, Colie C, D'Souza G. Cervical cancer screening intervals and management for women living with HIV: a risk benchmarking approach. *AIDS*, 31:1035-1044, 2017.

Mesquita PM, Preston-Hurlburt P, **Keller MJ**, Vudattu N, Espinoza L, Altrich M, Anastos K, Herold KC, Herold BC. Role of IL-32 in HIV reactivation and its link to HIV-HSV coinfection. *Journal of Infectious Diseases*, 215:614-622, 2017.

Watnick D, **Keller MJ**, Stein K, Bauman LJ. Acceptability of a tenofovir disoproxil fumarate vaginal ring for HIV prevention among women in New York City. *AIDS and Behavior*, 22:421-436, 2018.

Taneva E, Sinclair S, Mesquita PM, Weinrick B, Cameron SA, Cheshenko N, Reagle K, Frank B, **Keller MJ**, Srinivasan S, Fredricks D, Herold BC. Vaginal microbiome modulates topical antiretroviral drug pharmacokinetics. *JCI Insight* 3(13):e99545, 2018.

Keller MJ, Burk RD, Massad LS, Eltoun IE, Hessol NA, Anastos K, Xie X, Minkoff H, Xue X, Reimers LL, Kuniholm M, D'Souza G, Colie C, Palefsky JM, Strickler HD. Racial differences in HPV types among US women with HIV and cervical precancer. *AIDS*, 32:2821-2826, 2018.

Murphy K, **Keller MJ**, Anastos K, Sinclair S, Devlin JC, Shi Q, Hoover DR, Starkman B, McGillick J, Mullis C, Minkoff H, Dominguez-Bello MG, Herold BC. Impact of reproductive aging on the vaginal microbiome and soluble immune mediators in women living with and at-risk for HIV infection. *PLoS One*, 14:e0216049, 2019.

Keller MJ, Huber A, Espinoza L, Serrano MG, Parikh HI, Buck GA, Gold JA, Wu Y, Wang T, Herold BC. Impact of herpes simplex virus type 2 and human immunodeficiency virus dual infection on female genital tract mucosal immunity and the vaginal microbiome. *Journal of Infectious Diseases*, 220:852-861, 2019.

Keller MJ, Wood L, Billingsley JM, Ray LL, Goymer J, Sinclair S, McGinn AP, Marzinke M, Frank B, Srinivasan S, Liu C, Atrio JM, Espinoza L, Mugo NR, Spiegel HML, Anderson PL, Fredricks DN, Hendrix CW, Murrain J, Bosinger SE, Herold BC. Tenofovir disoproxil fumarate intravaginal ring for HIV pre-exposure prophylaxis in sexually active women: a phase 1, single-blind, randomized, controlled trial. *Lancet HIV*, 6:e498-e508, 2019.

Keller MJ, Kitsis EA, Arora S, Chen JT, Agarwal S, Ross MJ, Tomer Y, Southern W. Effect of systemic glucocorticoids on mortality or mechanical ventilation in patients with COVID-19. *Journal of Hospital Medicine*, 15:489-493, 2020.

Pierce CA, Preston-Hurlburt P, Dai Y, Aschner CB, Cheshenko N, Galen B, Garforth SJ, Herrera NG, Jangra RK, Morano NC, Orner E, Sy S, Chandran K, Dziura J, Almo SC, Ring A, **Keller MJ**, Herold KC, Herold BC. Immune responses to SARS-CoV-2 infection in hospitalized pediatric and adult patients. *Science Translational Medicine*, 12(564): eabd5487, 2020.

Strickler HD, **Keller MJ**, Hessol NA, Eltoun IE, Einstein MH, Castle PE, Massad LS, Flowers L, Rahangdale L, Atrio JM, Ramirez C, Minkoff H, Adimora AA, Ofofokun I, Colie C, Huchko MJ, Fischl M, Wright R, D'Souza G, Leider J, Diaz O, Sanchez-Keeland L, Shrestha S, Xie X, Xue X, Anastos K, Palefsky JM*, Burk RD*. Primary HPV and molecular cervical cancer screening in US women living with HIV. *Clinical Infectious Diseases*, 72:1529-1537, 2021.

Tomer Y, Gong MN, **Keller MJ**, Southern W, Kitsis EA, Kajita GR, Shapiro LI, Jariwala S, Epstein EJ. Teamwork and leadership under fire at the epicenter of the COVID-19 epidemic in the Bronx. *Frontiers in Medicine*, 8:610100, 2021.

Pierce CA, Sy S, Galen B, Goldstein DY, Orner E, **Keller MJ**, Herold KC, Herold BC. Natural mucosal barriers and COVID-19 in children. *JCI Insight*, 6(9):e148694, 2021.

Sultan JS, Wang T, Hunte R, Srinivasan S, McWalters J, Tharp GK, Bosinger SE, Fiedler TL, Atrio JM, Murphy K, Barnett R, Ray LR, Krows ML, Fredricks DN, Irungu E, Ngure K, Mugo N, Murrain J, **Keller MJ**, Herold BC. Differences in vaginal microbiota, host transcriptome and proteins in women with bacterial vaginosis are associated with metronidazole response. In press at *Journal of Infectious Diseases* 2021.

SELECTED GRANTS:

Einstein-Montefiore Clinical and Translational Science Award Hub

Keller, M. J. & Kim, M.

3/3/23 → 2/29/24

Modifies of PrEP Efficacy in US & African Women: Age, Hormones, Sex & Microbiota

Keller, M. J.

National Institute of Allergy and Infectious Diseases

1/1/19 → 12/31/19

Clinical and Translational Science Award

Keller, M. J., Kim, M. M. Y. & Shamoon, H.

National Center for Advancing Translational Sciences

3/22/18 → 2/28/23

Clinical and Translational Science Award

Shamoon, H., Shamoon, H. & Keller, M. J.

National Center for Advancing Translational Sciences

9/26/13 → 4/30/18

Drug at the Right Place & Concentration: Optimizing Combination Vaginal Ring PrEP

Herold, B., Kiser, P. F., Keller, M. J., Mitchnick, M., Herold, B. C. & Keller, M. J.

National Institute of Allergy and Infectious Diseases

1/18/13 → 12/31/19

Modifies of PrEP Efficacy in US & African Women: Age, Hormones, Sex & Microbiota

Keller, M. J.

National Institute of Allergy and Infectious Diseases

1/18/13 → 12/31/19

Clinical Study to Measure Pharmacokinetics, Pharmacodynamics and Safety of a TDF

Keller, M. J.

National Institute of Allergy and Infectious Diseases

9/1/11 → 8/31/13

Novel Mucosal Models Predictive of Microbicide Safety

Herold, B. & Keller, M. J.

National Institute of Allergy and Infectious Diseases

8/1/10 → 7/31/14

Safety of Non-Medicated Intravaginal Rings for Microbicide Delivery

Keller, M. J.

National Institute of Allergy and Infectious Diseases

7/1/10 → 6/30/12

Safety of Non-Medicated Intravaginal Rings for Microbicide Delivery

Keller, M. J. & Rose, S. A.

7/1/10 → 6/30/12

Intravaginal Ring Delivery of Safe & Effective Microbicides to Prevent HIV & HSV
Herold, B., Buckheit, R. W., Keller, M. J., Kiser, P. F. & Mitchnick, M.
National Institute of Allergy and Infectious Diseases
9/10/09 → 8/31/15

Novel Mucosal Models Predictive of Microbicide Safety
Herold, B. C., Keller, M. J. & Herold, B.
National Institute of Allergy and Infectious Diseases
9/1/08 → 8/31/09

Microbicide Effects on Efficacy, Safety, Innate Immunity
Keller, M. J. & Keller, M. J.
National Institute of Allergy and Infectious Diseases
9/1/05 → 2/29/12

Microbicide Effects on Efficacy, Safety, Innate Immunity
Keller, M. J. & Rose, S. A.
9/1/05 → 2/29/12

MULTITARGETED MICROBICIDE COMBINATIONS TO BLOCK HIV
Keller, M. J.
National Center for Research Resources
3/1/04 → 2/28/07

TO EVALUATE THE EFFICACY OF SAMMA AND ITS LEADING DERIVATIVES AGAINST HIV-1
Keller, M. J.
National Center for Research Resources
3/1/04 → 2/28/07

Multitargeted Microbicide Combinations to Block HIV
Herold, B., Keller, M. J. & Klotman, M. E.
National Institute of Child Health and Human Development
9/26/02 → 6/30/04

In Vivo Antiviral & Inflammatory Effects of Microbicides
Keller, M. J.
National Institute of Child Health and Human Development
10/1/01 → 9/30/02

Optimization of Microbicide Combinations Against HIV-1
Herold, B., Herold, B., Keller, M. J. & Rose, S. A.
1/1/01 → 6/30/07



Libusha Kelly, PhD

Associate Professor, Department of Systems and Computational Biology

RESEARCH AREA: Drug metabolism by the gut microbiome; microbial pharmacokinetics; phages; Sickle Cell Disease; microbial diversity

The microbiome is a personal and flexible ecosystem of bacteria, viruses, fungi, and small eukaryotes living in and on our bodies. I am interested in the microbiome as a sentinel of human physiology, constantly sensing, processing, and responding to signals from internal and external perturbations. My lab seeks to understand the processes and interactions that drive microbiome connections to, and influence over, human physiology by studying microbiomes as complex, interconnected systems using multi-disease, multi-ecosystem approaches. The broader goal of our work is to understand how to harness microbial ecology, from our bodies to the global oceans, to improve ecosystem health. Our publications have generated new insights into microbiome drug metabolism, discovered novel phage populations, pioneered computational approaches to improve analysis of microbiome data, and characterized novel connections between microbiome dynamics and disease.

SELECTED PUBLICATIONS:

Wolfson SJ, Hitchings R, Peregrina K, Cohen Z, Khan S, Yilmaz T, Malena M, Goluch ED, Augenlicht L, **Kelly L**. Bacterial hydrogen sulfide drives cryptic redox chemistry in gut microbial communities. *Nat Metab*. 2022 Oct;4(10):1260-1270. doi: 10.1038/s42255-022-00656-z. Epub 2022 Oct 20. PMID: 36266544.

Guthrie L, Wolfson S, **Kelly L**. The human gut chemical landscape predicts microbe-mediated biotransformation of foods and drugs. *Elife*. 2019 Jun 11;8. doi: 10.7554/eLife.42866. PubMed PMID: 31184303; PMCID: PMC6559788.

Kauffman KM[†], Chang WK[†], Brown JM, Hussain FA, Yang J, Polz MF*, **Kelly L***. Resolving the structure of phage-bacteria interactions in the context of natural diversity. *Nature Communications* 2022 Jan 18;13(1):372. PMID: 35042853; PMCID: PMC8766483.

Kauffman KM, Hussain FA, Yang J, Arevalo P, Brown JM, Chang WK, VanInsberghe D, Elsherbini J, Sharma RS, Cutler MB, **Kelly L***, Polz MF*. A major lineage of non-tailed dsDNA viruses as unrecognized killers of marine bacteria. *Nature*. 2018 Feb 1;554(7690):118-122. doi: 10.1038/nature25474. PubMed PMID: 29364876. (†= co-first author; *=co-corresponding author).

Complete List of Indexed Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/browse/collection/40068276/?sort=date&direction=descending>

SELECTED GRANTS:

NIH NHLBI R01HL069438

Kelly (PI)

09/30/21-08/31/25

In vivo mechanisms mediating sickle cell vaso-occlusion and organ damage.

Department of Defense Peer Reviewed Cancer Research Career Development Award CA171019

Kelly (PI)

06/01/18-06/01/22

Preventing adverse patient responses to cancer chemotherapeutics.

NSF Biological Oceanography 1435868

Kelly (PI)

09/01/14-02/28/18

Collaborative Research: How can bacterial viruses succeed in the marine environment?



Mimi Kim, ScD

Professor, Department of Epidemiology & Population Health

RESEARCH AREA: Clinical trials methodology; epidemiologic methods, clinical prediction models, survival analysis, misclassification and measurement error.

SELECTED PUBLICATIONS:

Kim, M.Y. Using the instrumental variables estimator to analyze non-inferiority trials with non-compliance. *Journal of Biopharmaceutical Statistics* 2010; 20:745-758.

Buyon, J., **Kim, M.**, Guerra, M., Laskin, C., Petri, M., Lockshin, M., Sammaritano, L., Branch, W., Porter, F., Sawitzke, A., Merrill, J., Stephenson, M., Cohn, E., Garabet, L., Salmon, J. Predictors of pregnancy outcome in a prospective multiethnic cohort of lupus patients. *Annals of Internal Medicine* 2015; 163:153-163

Kim, M., Buyon, J., Guerra, M., Rana, S., Zhang, D., Laskin, C., Petri, M., Lockshin, M., Sammaritano, L., Branch, W., Porter, T., Merrill, J., Stephenson, M., Gao, Q., Karumanchi, A., Salmon, J. Angiogenic factor imbalance early in pregnancy predicts adverse outcomes in patients with lupus and antiphospholipid antibodies. *American Journal of Obstetrics and Gynecology*. 2016; 214:108.e1-14

Kim, M., Merrill, J., Kalunian, K., Hahn, B., Roach, A., Izmirly, P. Longitudinal patterns of response to standard of care therapy for systemic lupus erythematosus: implications for clinical trial design. *Arthritis and Rheumatism*. 2017; 69:785-790.

Kim, M., Guerra, M., Kaplowitz, E., Laskin, C., Petri, M., Branch, W., Lockshin, M., Sammaritano, L., Merrill, J., Porter, F., Sawitzke, A., Lynch, A., Buyon, J., and Salmon, J. Complement Activation Predicts Adverse Pregnancy Outcome in Patients with Systemic Lupus Erythematosus and/or Anti-Phospholipid Antibodies. *Annals of Rheumatic Diseases*. 2018; 77:549-555.

Kim, M., Wang, C., Xue, X. Assessing the influence of treatment non-adherence on non-inferiority trials using the tipping point approach. *Statistics in Medicine* 2019; 38:650-659

Fazzari, M., and **Kim, M.** Subgroup discovery in non-inferiority trials. *Statistics in Medicine* 2021; 40: 5174-5187.

Choi, J., Xue, X., and **Kim, M.** Non-inferiority trials with time-to-event data: Clarifying the impact of censoring. *Journal of Biopharmaceutical Statistics* 2023; Apr 12:1-18.

SELECTED GRANTS:

Clinical and Translational Science Award (MPI)

National Center for Advancing Translational Sciences; 5/1/23-4/30/30

The mission of this award is to create a robust and collaborative research enterprise that is committed to advancing clinical and translational science and promoting health equity, catalyzing innovations to overcome research roadblocks across the translational spectrum, creating and maintaining a skilled and diverse research workforce, and accelerating the process of turning discoveries in the laboratory, clinic, and community, into health benefits for all.

Adverse Pregnancy Outcomes in Women with Systemic Lupus Erythematosus: Improving and Validating Risk Prediction (MPI)

NIH/National Institute of Arthritis, Musculoskeletal and Skin Diseases; 9/1/20-8/31/23

The goal of this project is to develop and externally validate an accurate and clinically useful prediction model for adverse pregnancy outcomes in SLE patients.

TNF-alpha Blockade with Certolizumab to Prevent Pregnancy Complications in High-Risk Patients with APS (Subcontract PI)

NIH/National Institute of Arthritis, Musculoskeletal and Skin Diseases; 8/15/16-8/31/24

This study is conducting the first trial of a biologic therapy to prevent adverse pregnancy outcomes (APOs) in high-risk antiphospholipid antibody syndrome (APS) pregnancies.

Surveillance and Treatment to Prevent Fetal Atrioventricular Block Likely to Occur Quickly (STOP BLOQ) (Subcontract PI)

NIH/ National Institute of Arthritis, Musculoskeletal and Skin Diseases; 9/01/20-6/30/25

This study aims to assess whether the level of anti-Ro/SSA can predict fetuses at greatest risk of atrioventricular block (AVB), if mothers can themselves identify reversible fetal cardiac injury by home monitoring, whether expeditious treatment of fetal incomplete AVB can restore normal rhythm, and if weekly echocardiographic testing is necessary to surveil for AVB.



David Loeb, MD, PhD

Professor, Department of Pediatrics (Pediatric Hematology-Oncology)

RESEARCH AREA: Understanding bone tumor metastasis.

SELECTED PUBLICATIONS:

Randolph, ME, Afifi, M, Gorthi, A, Weil, R, Wilky, BA, Weinreb, J, Ciero, P, Ter Hoeve, N, van Diest, PJ, Raman, V, Bishop, AJR, and **Loeb, DM**. RNA Helicase DDX3 Regulates RAD51 Localization and DNA Damage Repair in Ewing Sarcoma. *bioRxiv*. 2023 Jun 10;2023.06.10.544474.doi: 10.1101/2023.06.10.544474. Preprint

Geohagen, B, Zeldin, E, Reidy, K, Wang, T, Gavathiotis, E, Fishman, YI, LoPachin, R, **Loeb, DM**, and Weiser, D. Acetophenone Protection Against Cisplatin-Induced End-Organ Damage. *Transl Oncol*, 2023 Jan;27:101595. doi: 10.1016/j.tranon.2022.101595. Epub 2022 Dec 5. PMID: 36477009.

Hayashi M, Baker A, Goldstein SD, Albert CM, Jackson KW, McCarty G, Kahlert UD, **Loeb DM**. Inhibition of porcupine prolongs metastasis free survival in a mouse xenograft model of Ewing sarcoma. *Oncotarget*. 2017 Jul 21;8(45):78265-78276. doi: 10.18632/oncotarget.19432. eCollection 2017 Oct 3.

Goldstein SD, Trucco M, Guzman WB, Hayashi M, **Loeb DM**. A monoclonal antibody against the wnt signaling inhibitor dickkopf-1 inhibits osteosarcoma metastasis in a preclinical model. *Oncotarget*. 2016 Apr 19;7(16):21114-23. DOI: 10.18632/oncotarget.8522.

SELECTED GRANTS:

7/1/23 – 6/30/25

Treatment-Induced Metastasis in Ewing Sarcoma

Congressionally Directed Medical Research Program, US Department Of Defense

The goal of this work is to determine if chemotherapy or radiation therapy increases the dissemination of Ewing sarcoma cells from the primary tumor and, if so, whether targeted inhibition of this process can improve survival in preclinical models.

11/1/21 – 10/31/24

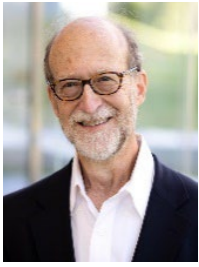
Targeting Urea Cycle Dysfunction to Prevent and Treat Ewing Sarcoma Metastasis V Foundation

The goals of this work are to characterize the Urea Cycle in Ewing sarcoma and to define the effects of DFMO on this and related metabolic pathways and to optimize the combination of DFMO with chemotherapy in preclinical models.

7/9/21 – 6/30/26

Targeting DKK-1 to Prevent Osteosarcoma Metastasis National Cancer Institute

The goals of this project are to define the Wnt signaling pathways regulated by DKK-1 in osteosarcoma, to optimize the application of differentiation therapy in osteosarcoma to prevent metastasis, and to determine the utility of plasma DKK-1 levels as a biomarker of prognosis and response to therapy in osteosarcoma.



Paul Marantz, MD, MPH

Professor, Department of Epidemiology and Population Health

RESEARCH AREA: Educational and training programs that provide research skills to health professionals and biomedical scientists

SELECTED PUBLICATIONS:

Rubio DM, Schoenbaum EE, Lee LS, Schteingart DE, **Marantz PR**, Anderson KE, Platt LD, Baez A, Esposito K. Defining translational research: implications for training. *Acad Med* 2010; 85: 470-5.

Marantz PR, Currie B, Shamooh H. Transforming the research environment through institutional partnership. *Clinical and Translational Science* 2010; 3: 12-3.

Santoro N, McGinn AP, Cohen HW, Kaskel F, **Marantz PR**, Mulvihill M, Schoenbaum EE. In it for the long-term: defining the mentor-protégé relationship in a clinical research training program. *Acad Med* 2010; 85: 1067-72.

Marantz PR, Strelnick AH, Currie B, Bhalla R, Blank A, Meissner P, Selywn P, Walker EA, Hsu DT, Shamooh H. Developing a multidisciplinary model of comparative effectiveness research within a Clinical and Translational Science Award. *Acad Med* 2011; 86: 712–717.

Marantz PR. Don't call that apple medicine just yet. Blog post: <http://blogs.einstein.yu.edu/dont-call-that-apple-medicine-just-yet-dangers-of-misleading-medical-journalism/>

Marantz PR. How do financial incentives influence doctors' judgment? Blog post: <http://blogs.einstein.yu.edu/how-do-financial-incentives-influence-doctors-judgments/>

Gonzalez CM, Kim MY, **Marantz PR**. Implicit bias and its relation to health disparities: a teaching program and survey of medical students. *Teach Learn Med*. 2014; 26(1): 64-71. PMID: 24405348

Marantz PR. Academia, applied research, and your tax dollars. Blog post: <http://blogs.einstein.yu.edu/academia-applied-research-and-your-tax-dollars/>

Anderson BJ, Kligler B, Taylor B, Cohen HW, **Marantz PR**. Faculty survey to assess research literacy and evidence-informed practice interest and support at Pacific College of Oriental Medicine. *J Altern Complement Med*. 2014 Sep; 20(9): 705-12. PMID: 25120170

Marantz PR. Balancing the patient experience with evidence-based medicine. Blog post: <http://blogs.einstein.yu.edu/balancing-the-patient-experience-with-evidence-based-medicine/>

Marantz PR. How to cause a measles epidemic in 5 easy steps. Blog post: http://www.huffingtonpost.com/dr-paul-marantz/cause-measles-epidemic_b_6624230.html

Gonzalez CM, Fox AD, **Marantz PR**. The evolution of an elective in health disparities and advocacy: description of instructional strategies and program evaluation. *Acad Med* July 2015; 90:1636-40. PMID: 26222321

Marantz PR. Personalizing medicine: considering preferences and values. Blog post:
<http://blogs.einstein.yu.edu/personalizing-medicine-considering-preferences-and-values/>

Anderson BJ, Kligler B, Cohen HW, **Marantz PR.** Survey of Chinese Medicine students to determine research and evidence-based medicine perspectives at Pacific College of Oriental Medicine. *Explore* 2016; 12: 366-374. PMID: 27473310.

Marantz PR, Selker HP, Meagher EA. Certification of clinical and translational researchers: an ill-conceived notion. *J Clin Transl Science* 2017; 1: 3-4.

Landsittel DP, Kessler L, Schmid CH, **Marantz P,** Suarez-Almazor ME. Training in patient-centered outcomes research for specific researcher communities. *J Clin Transl Science* 2017; 1: 278–284.
doi:10.1017/cts.2017.307. PMID: 29707248.

Gonzalez CM, Deno ML, Kintzer E, **Marantz PR,** Lyson ML, McKee MD. Patient perspectives on racial and ethnic implicit bias in clinical encounters: Implications for curriculum development. *Patient Educ Couns* 2018; 101:1669-75. PMID: 29843933.

Gonzalez CM, Garba RJ, Liguori AR, **Marantz PR,** McKee MD, Lyson ML. How to make or break implicit bias instruction: implications for curriculum development. *Acad Med* 2018; 93: S74-S81. PMID: 30365433.

Anderson B, Jurawanichkul S, Kligler B, **Marantz PR,** Evans R. Interdisciplinary relationship models for complementary and integrative Health: perspectives of Chinese Medicine practitioners in the United States. *J Alternative and Complementary Med* 2019; 25: 288-295. PMID: 30523704.

SELECTED GRANTS:

Active

CTSA Predoctoral T32 at Albert Einstein College of Medicine
Marantz, P. R. & Hosgood, H. D.
National Center for Advancing Translational Sciences
7/6/23 → 6/30/28

CTSA K12 Program at Einstein-Montefiore
Marantz, P. R. & Melamed, M. L.
National Center for Advancing Translational Sciences
7/1/23 → 6/30/28

The Center of Excellence in Promoting LHS Operations and Research at Einstein/Montefiore (EXPLORE)
Cunningham, C. O., Marantz, P. R. & Rinke, M. L.
9/30/18 → 9/29/23

Einstein Aging Study
Buschke, H., Dickson, D. W., Hall, C. R., Lee, S. C., Lipton, R. B., Verghese, J., Derby, C. C. A., Derby, C. A., Hall, C. C. B., Wolfson, L. L. I., Lipton, M. L., Sliwinski, M. J., Chin, S. S. S., Wang, C., Zimmerman, M. E., Pavlovi, J. J., Katz, M. M., Derby, C. A., Cohen, D., Crystal, H. A., Crystal, H., Dickson, D., Golden, R., Grober, E., Hamerman, D., Katzman, R., Lipton, N. R., Marantz, P. R., Ritter, W., Wolfson, L. I. & Wolfson, L.
National Institute on Aging
9/1/85 → 3/31/24

Finished

NRSA Training Core

Marantz, P. R.

3/22/18 → 2/28/22

Institutional Career Development Core

Marantz, P. R.

3/22/18 → 2/28/22

NRSA Training Core

Marantz, P. R. & Marantz, P. R.

National Center for Advancing Translational Sciences

3/22/18 → 2/28/23

Institutional Career Development Core

Stephenson-Hunter, C. S. & Marantz, P. R.

National Center for Advancing Translational Sciences

3/22/18 → 2/28/23

Education and training program in patient-centered outcomes research

Marantz, P. R., Marantz, P. R. & Marantz, P. R.

6/5/14 → 5/31/19

Strengthening Behavioral & Social Science in Medical School Education (R25)

Gruppuso, P. A., Pablo, J., Gruppuso, P. A., Pablo, J., Joo, P. A., Marantz, P. R., Rose, S. A., Rose, S. A., Rose, S. A., Rose, S. A. & Rose, S. A.

5/19/11 → 4/30/17

Strengthening Behavioral & Social Science in Medical School Education (R25)

Gruppuso, P. A., Joo, P. A., Marantz, P. R. & Joo, P. A.

National Institute of Child Health and Human Development

5/19/11 → 4/30/17

Become/Doctor/Albert Einstein/Medicine/Curriculum

Marantz, P. R.

9/27/05 → 8/31/11

Become/Doctor/Albert Einstein/Medicine/Curriculum

Marantz, P. R. & Marantz, P. R.

National Institute of Child Health and Human Development

9/27/05 → 8/31/11

Clinical Research Training Program at Einstein

Marantz, P. R.

9/19/05 → 5/31/08

Clinical Research Training Program at Einstein

Marantz, P. R. & Marantz, P. R.

National Center for Research Resources

9/19/05 → 5/31/07

CLINICAL RESEARCH CURRICULUM AWARD

Marantz, P. R.

6/1/99 → 5/31/00

CLINICAL RESEARCH CURRICULUM AWARD

Marantz, P. R. & Marantz, P. R.

National Heart, Lung, and Blood Institute

6/1/99 → 5/31/04

CLINICAL CONGESTIVE HEART FAILURE IN THE ELDERLY

Marantz, P. R.

National Institute on Aging

10/1/86 → 9/30/91



Michal Melamed, MD, MHS

Professor, Departments of Medicine (Nephrology), Pediatrics and Epidemiology & Population Health

RESEARCH AREA: Epidemiology of chronic kidney disease, racial and ethnic disparities in kidney disease, metabolic acidosis, vitamin D, clinical trials in kidney disease, mentorship and training programs

SELECTED PUBLICATIONS:

Levy RV, Brathwaite KE, Sarathy H, Reidy K, Kaskel FJ, **Melamed ML**. Analysis of Active and Passive Tobacco Exposures and Blood Pressure in US Children and Adolescents. JAMA Network Open. 2021 Feb 1; 4(2):e2037936.

Johns TS, Brown DD, Litwin AH, Goldson G, Buttar RS, Kreimerman J, Lo Y, Reidy KJ, Bauman L, Kaskel F, **Melamed ML**. Group-Based Care in Adults and Adolescents with Hypertension and CKD: A Feasibility Study. Kidney Medicine. May 1, 2020. Vol 2(3): 317-325.

Brown DD, Roem J, Ng DK, Reidy KJ, Kumar J, Abramowitz MK, Mak RH, Furth SL, Schwartz GJ, Warady BA, Kaskel FJ, **Melamed ML**. Low Serum Bicarbonate and CKD Progression in Children. Clin J Am Soc Nephrol. 2020 May 28.

Sochol KM, Johns TS, Buttar RS, Randhawa L, Sanchez E, Gal M, Lestrade K, Merzkani M, Abramowitz MK, Mossavar-Rahmani Y, **Melamed ML**. The Effects of Dairy Intake on Insulin Resistance: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. Nutrients 2019; 11(9):2237.

Kim JI, Zhu D, Davila J, Lee J, Chubak BM, **Melamed ML**, Abraham N. Female Sexual Dysfunction as Measured by Low Sexual Frequency is Associated with Lower Socioeconomic Status: An Analysis of the National Health and Nutrition Examination Survey (NHANES), 2007-2016. J Sex Med. 2022 Jan;19(1):90-97. PMID: 34696997.

Brown DD, Carroll M, Ng DK, Greenbaum LA, Kaskel FJ, Furth SL, Warady BA, **Melamed ML**, Dauber A for CKiD Investigators. Longitudinal Associations Between Low Serum Bicarbonate and Linear Growth In Children With Chronic Kidney Disease. Kidney360. 2022;10.34067/KID.0005402021. doi:10.34067/kid.0005402021.

Levy RV, Reidy KJ, Le TH, David V, Winkler C, Xu Y, Warady B, Furth S, Kaskel F, **Melamed ML** Association of GSTM1 Deletion with Progression of CKD in Children: Findings from the Chronic Kidney Disease in Children (CKiD) Study. Am J Kidney Dis. 2022 Jul;80(1):79-86. PMID:34871703.

Brathwaite KE, Levy RV, Sarathy H, Agalliu I, Johns TS, Reidy KJ, Fadrowski JJ, Schwartz GJ, Kaskel FJ, **Melamed ML**. Reduced kidney function and hypertension in adolescents with low birth weight, NHANES 1999-2016. Pediatric Nephrology. 2023 Apr 13. PMID 37052695.

Okada C, Kim JI, Roselli N, Kadam Halani P, **Melamed ML**, Abraham N. Food insecurity is Associated with Urge Urinary Incontinence: An Analysis of the 2005-2010 National Health and Nutrition Examination Survey. J Urology 2023 May 17. Online ahead of print. PMID: 37195821.

Brown DD, Roem J, Ng DK, Coghlan RF, Johnstone B, Horton W, Furth SL, Warady BA, **Melamed ML**, Dauber A: CKiD Study Investigators. Associations between collagen X biomarker and linear growth velocity in a pediatric chronic kidney disease cohort. Pediatric Nephrology 2023 July 19. PMID 37466864.

SELECTED GRANTS:

R01 DK 131811-01A1 (MPI: Melamed, Reidy, Nickolas, Kumar)

8/15/2022-7/31/2025

NIH/NIDDK

“Bone In CKD Alkali Response Pilot Trial (BICARb Pilot Trial)”

Major Goals: The major goal of this study is to conduct a pilot, double-blinded, randomized, placebo-controlled trial in 15 children and 88 adults evaluating the skeletal effects of potassium alkali therapy.

R01 DK132823-01 (MPI: Raphael, Melamed)

8/24/2022-7/31/2026

NIH/NIDDK

“Cardiovascular effects of oral bicarbonate in CKD”

Major goals: To study the effects of oral bicarbonate in almost 400 participants from 3 randomized placebo controlled trials on 1) volume status and 2) vascular calcification.

R18 DK118471-01 (MPis: Golestaneh, Cavanaugh, Melamed)

9/06/2018-7/31/2023

NIH/NIDDK

“Peer Mentorship to Improve Outcomes in Patients on Maintenance Hemodialysis”

Major Goals: The goal of this grant is to train patients on maintenance hemodialysis to become peer mentors to other patients and then test whether the mentees experience fewer hospitalizations and ED visits.

NIH/ NIDDK U2C/TL1 DK129502-01A1 (contact MPI: Melamed)

9/15/2022-6/30/2027

“New York Consortium for Interdisciplinary Training in Kidney, Urological and Hematological Research (NYC Train KUHR)”

This multi-PI, multi-institutional training program brings together the Albert Einstein College of Medicine, Icahn School of Medicine at Mount Sinai, Columbia University Irving Medical Center and the Renaissance School of Medicine at Stony Brook University to create an interdisciplinary training program for pre-doctoral and post-doctoral candidates concentrating on research in kidney, urology and hematology.

NIH/ NCATS K12 TR004411-01 (MPis: Marantz, Melamed)

7/1/2023-6/30/2028

“CTSA K12 Program at Einstein-Montefiore”

To provide support and education for junior faculty members at Einstein-Montefiore who are developing their careers as clinical and translational scientists.

NIDDK K26 DK138488-01 (PI: Melamed)

12/1/2023-11/30/2028

“Mentoring in Kidney Health to Improve Equity”

This award will protect Dr. Melamed’s time to allow her to mentor multiple trainees, including individuals from groups Underrepresented in Medicine, into academic careers in clinical research in Kidney Health. Dr. Melamed will also gain additional training in health equity research.



Sofiya Milman, MD, MS

Associate Professor, Department of Medicine (Endocrinology and Geriatrics)
Associate Professor, Department of Genetics

RESEARCH AREA: Discovery of biological mechanisms that protect against common age-related diseases, like diabetes, cancer, Alzheimer's, and cardiovascular disease in families with exceptional longevity.

SELECTED PUBLICATIONS:

Milman S, Barzilai N. Discovering Biological Mechanisms of Exceptional Human Health Span and Life Span. *Cold Spring Harbor perspectives in medicine*. 2023; *in press*

Milman S, Barzilai N, Wilson KA, Van der Willik O, Lederman S, Perls T, Gao T, Leahy AM, Jain P, Montgomery A, Shuldiner AR. SuperAger Initiative: unlocking the genetic potential of exceptional longevity. *Nat Aging* 2023; 3(6):627-2-628

Milman S, Lerman B, Ayers E, Zhang Z, Sathyan S, Levine M, Ye K, Gao T, Higgins-Chen A, Barzilai N, Verghese J. Frailty Resilience Score: A Novel Measure of Frailty Resilience Associated with Protection from Frailty and Survival. *J Gerontol Biol Sci Med Sci* 2023; *in press*

Aleksic S, Desai D, Ye K, Duran S, Gao T, Crandall J, Atzmon G, Barzilai N, **Milman S**. Integrity of Hypothalamic-Pituitary-Testicular Axis in Exceptional Longevity. *Aging Cell* 2022; 21(8):e13656. PMID: [PMC9381897](https://pubmed.ncbi.nlm.nih.gov/3581897/)

Zhang WB, Ye K, Barzilai N, **Milman S**. The antagonistic pleiotropy of insulin-like growth factor 1. *Aging Cell* 2021; 20(9), e13443; PMID: PMC8441393

Lin JR, Sin-Chan P, Napolioni V, Torres GG, Mitra J, Zhang Q, Jabalameli MR, Wang Z, Nguyen N, Gao T, Regeneron Genetics Center, Laudes M, Görg S, Franke A, Nebel A, Greicius MD, Atzmon G, Ye K, Gorbunova V, Ladiges WC, Shuldiner A, Niedernhofer LJ, Robbins PD, **Milman S**, Suh Y, Vijg J, Barzilai N, Zhang ZD. Rare genetic coding variants associated with human longevity and protection against age-related diseases. *Nat Aging* 2021; 1: 783-794

Gubbi S, Schwartz E, Crandall JP, Verghese J, Holtzer R, Atzmon G, Braunstein R, Barzilai N, **Milman S**. Effect of Exceptional Parental Longevity and Lifestyle Factors on Prevalence of Cardiovascular Disease in Offspring. *Am J Cardiol* 2017; 120(12):2170-2175. PMID: PMC5698168

Ismail K, Nussbaum L, Sebastiani P, Andersen S, Perls T, Barzilai N, **Milman S**. Compression of Morbidity is Observed Across Cohorts with Exceptional Longevity. *J Am Geriatr Soc* 2016; 64(8):1583-91. PMID: PMC4988893

Milman S, Atzmon G, Huffman DM, Wan J, Crandall JP, Cohen P, Barzilai N. Low Insulin-like Growth Factor-1 Level Predicts Survival in Humans with Exceptional Longevity. *Aging Cell* 2014; 13(4):769-71

SELECTED GRANTS:

R01AG061155-01A1: Somatotropic Signaling and Resilience to Aging and Alzheimer's Disease (PI: Milman)

UH3AG064704-01: Identifying protective omics profiles in centenarians and translating these into preventive and therapeutic strategies (PI: Perls; contract-PI: Milman)

U19AG073172: Resilience/Resistance to Alzheimer's Disease in Centenarians and Offspring (RADCO) (PI: Perls; contract-PI: Milman)

AFAR: SuperAgers Family Study (PI: Milman)

P30AG038072: Einstein's Nathan Shock Center of Excellence in Basic Biology Of Aging (PI: Barzilai)



Sophie Molholm, PhD

Professor, Departments of Pediatrics (Developmental Medicine), Neuroscience, and Psychiatry

RESEARCH AREA: I use tools of cognitive neuroscience to understand the brain in health and disease, focusing on processes such as attention, multisensory integration, sensory and perceptual processing, and executive functions. I use psychophysics and high-density electrophysiology (and fMRI when appropriate), in addition to deep clinical and cognitive phenotyping when appropriate, to probe basic perceptual and cognitive function in healthy adults, the development of these processes over childhood, and how differences in neural function and perceptual and cognitive processing contribute to neurodevelopmental and neuropsychiatric disorders. My lab was one of the first to show that multisensory integration is impaired in autism, a finding that we have substantiated for both social and non-social stimuli and that has been replicated by many other groups now. In my translational work I continue to focus on visual and auditory sensory processing and neurooscillatory activity in autism. In addition, I have interest in rare genetic conditions due to their potential to provide insight into the neurobiological pathways underlying more common idiopathic conditions. These include Rett Syndrome, 22q11.2 deletion syndrome, KDM5C missense mutation syndrome and ANKS1B haploinsufficiency syndrome. I have a robust record of collaboration with Einstein and non-Einstein investigators. I am the Co-Director of the NIH funded Rose F. Kennedy Intellectual and Developmental Research Center.

SELECTED PUBLICATIONS:

Mercier MR, Foxe JJ, Fiebelkorn IC, Butler JS, Schwartz TH, **Molholm S**. Auditory-driven phase reset in visual cortex: human electrocorticography reveals mechanisms of early multisensory integration. Neuroimage. 2013 Oct 1;79:19-29. PMID: 23624493.

Francisco, A. A., Horsthuis, D.J., Popiel, M., Foxe, J. J., & **Molholm, S**. Atypical response inhibition and error processing in 22q11. 2 Deletion Syndrome and Schizophrenia: Towards neuromarkers of disease progression and risk. NeuroImage Clinical, 2020 27:102351. PMID: 32731196.

Beker, S., Foxe, J.J., **Molholm, S**. (2020). Oscillatory entrainment mechanisms and anticipatory predictive processes in Autism Spectrum Disorder(ASD). J Neurophysiol 2021 Nov 1;126(5):1783-1798. PMID: 34644178.

SELECTED GRANTS:

Simons Foundation: Neuro-Oscillatory Function and Network Communication in ASD and Unaffected Siblings. Identification of neural biomarkers of ASD is critical to facilitating translational research, measuring treatment effects, and, ideally, to determining high risk for ASD prior to clinical diagnosis, when intervention is likely to be most effective. Using high density electroencephalographic recordings of human brain activity, this program of research therefore aims to address this pressing need by investigating local and network neuro-oscillatory function in children with ASD.

U01 TR002764-01A1HD098067 (Agency: NICHD): Harnessing Clinical Genomic Characterization to Accelerate Translational Advances for Patients with IDD. The aims of this grant are to establish standards for feasible neurobehavioral characterization of IDD patients, to integrate phenotypic and clinical genomic characterization of these patients and to establish an IDD patient registry.

Cystinosis Research Network: Cognitive Control Systems in Cystinosis: This project characterizes different components of executive functioning (memory updating, set shifting, conflict monitoring, and inhibition) in cystinosis. To this end we use high-density electrophysiology (EEG)—a non-invasive method that allows one to directly measure functional brain activity at the millisecond scale and thus reliably assess the integrity of information processing at the neural level— and standardized cognitive functional assessments and test children and adults with and without cystinosis.



Jelena Radulovic, MD, PhD

Professor, Department of Neuroscience

RESEARCH AREA: Animal models to examine brain mechanisms by which memories of stressful events cause fear, anxiety, and depression.

SELECTED PUBLICATIONS:

Ren LY, Cicvaric A, Zhang H, Meyer MA, Guedea AL, Gao P, Petrovic Z, Sun X, Lin Y, **Radulovic J**. Stress-induced changes of the cholinergic circuitry promote retrieval-based generalization of aversive memories. *Mol Psychiatry*. 2022 Sep;27(9):3795-3805. doi: 10.1038/s41380-022-01610-x. Epub 2022 May 12. PMID: 35551246; PMCID: PMC9846583.

Han Y, Zhang Y, Kim H, Grayson VS, Jovasevic V, Ren W, Centeno MV, Guedea AL, Meyer MAA, Wu Y, Gutruf P, Surmeier DJ, Gao C, Martina M, Apkarian AV, Rogers JA, **Radulovic J**. Excitatory VTA to DH projections provide a valence signal to memory circuits. *Nat Commun*. 2020 Mar 19;11(1):1466. doi: 10.1038/s41467-020-15035-z. PMID: 32193428; PMCID: PMC7081331.

Yamawaki N, Corcoran KA, Guedea AL, Shepherd GMG, **Radulovic J**. Differential Contributions of Glutamatergic Hippocampal→Retrosplenial Cortical Projections to the Formation and Persistence of Context Memories. *Cereb Cortex*. 2019 Jun 1;29(6):2728-2736. doi: 10.1093/cercor/bhy142. PMID: 29878069; PMCID: PMC6519694.

Radulovic J, Lee R, Ortony A. State-Dependent Memory: Neurobiological Advances and Prospects for Translation to Dissociative Amnesia. *Front Behav Neurosci*. 2018 Oct 31;12:259. doi: 10.3389/fnbeh.2018.00259. PMID: 30429781; PMCID: PMC6220081.

Jovasevic V, Corcoran KA, Leaderbrand K, Yamawaki N, Guedea AL, Chen HJ, Shepherd GM, **Radulovic J**. GABAergic mechanisms regulated by miR-33 encode state-dependent fear. *Nat Neurosci*. 2015 Sep;18(9):1265-71. doi: 10.1038/nn.4084. Epub 2015 Aug 17. PMID: 26280760; PMCID: PMC4880671.

SELECTED GRANTS:

Mechanisms of Stress-Enhanced Aversive Conditioning (5R01MH078064-18)

Cortico-hippocampal mechanisms of context memory (5R01MH108837-09)



Carlos Jose Rodriguez, MD,MPH

Professor (**tenured**), Department of Medicine (Cardiology)

RESEARCH AREA: Cardiovascular Epidemiology, Heart Failure, Hypertension and Hypertensive, Heart Disease, Impact of Psychosocial and Behavioral Factors on Cardiovascular Health, Cardiovascular Minority Health and Health Disparities, Echocardiography, Cholesterol Management

SELECTED PUBLICATIONS (2022):

JY Lu, A Buczek, R Fleysher, WS Hoogenboom, W Hou, **CJ Rodriguez**, MC Fisher, T Duong. Outcomes of Hospitalized Patients with COVID-19 with Acute Kidney Injury and Acute Cardiac Injury. *Front Cardiovasc Med.* 2022 Feb 15;8:798897. doi: 10.3389/fcvm.2021.798897.

JQ Lu, JY Lu, W Wang, Y Liu, A Buczek, R Fleysher, W Hoogenboom, W Zhu, W Hou, **CJ Rodriguez**, TQ Duong. Clinical predictors of acute cardiac injury and normalization of troponin after hospital discharge from COVID-19. *Ebiomedicine.* 2022 Feb; 76:103821. doi: 10.1016/j.ebiom.2022.103821.

JP Skendelas, DK Phan, P Friedmann, **CJ Rodriguez**, D Stein, A Zadeh, SJ Forest, L Slipczuk. Perioperative Cardiometabolic Targets and Coronary Artery Bypass Surgery Mortality in Diabetic Patients. *J Am Heart Assoc.* 2022;11:e023558. DOI: 10.1161/JAHA.121.023558

CSG Murray, C Zamora, SG Shitole, P Christa, UJ Lee, J Scheuer, JR Kizer, **CJ Rodriguez**. Characteristics of Race-Ethnic Differences in the ST-Elevated Myocardial Infarction Registry of a Bronx Health System. *Ethnicity & Disease.* 2022;32(3):193- 202; doi:10.18865/ed.32.3.193

PM Kozak, M Pu, M Daviglius, K Swett, Daviglius M, M Kansal, D Sotres, S Ponce, R Kaplan, M Garcia, **CJ Rodriguez**. Echocardiographic Investigation of Low Flow State in a Hispanic/Latino Population. *Mayo Clin Proc Innov Qual Outcomes.* 2022 Jul 31;6(4):388-397. doi: 10.1016/j.mayocpiqo.2022.05.008.

F Castagna, J Miles, J Arce, E Leiderman, P Neshiwat, P Ippolito, P Friedmann, A Schenone, L Zhang, **CJ Rodriguez**, MJ Blaha, JM Levisky, MJ Garcia, L Slipczuk. Visual Coronary and Aortic Calcium Scoring on Chest Computed Tomography Predict Mortality in Patients with Low-Density Lipoprotein-Cholesterol ≥ 190 mg/dL. *Circ Cardiovasc Imaging.* 2022;15:e014135. DOI: 10.1161/CIRCIMAGING.122.014135

WC Cushman, RJ Ringer, **CJ Rodriguez**, GW Evans, JT Bates, JA Cutler, A Hawfield, DW Kitzman, IM Nasrallah, S Oparil, J Nord, V Papademetriou, K Servilla, P Van Buren, PK Whelton, J Whittle, JT Wright, Jr., for the SPRINT Research Group. Blood Pressure Intervention and Control in the Systolic Blood Pressure Intervention Trial. *Hypertension.* 2022;79:2071. <https://doi.org/10.1161/HYPERTENSIONAHA.121.17233>

AK April-Sanders, L Golestaneh, L Zhang, K Swett, P Meissner, **CJ Rodriguez**. Hypertension Treatment and Control in a New York City Healthcare System. *J Am Heart Assoc.* 2022;11:e026077. <https://doi.org/10.1161/JAHA.122.026077>

M Mirbolouk, E Boakye, O Obisesan, AD Osei, O Dzaye, N Osuji, J Erhabor, AC Stokes, O El-Shahawy, **CJ Rodriguez**, GA Hirsch, EJ Benjamin, AP DeFilippis, RM Robertson, A Bhatnagar, MJ Blaha. E-cigarette use among high school students in the United States prior to the COVID-19 pandemic: Trends, correlates, and sources of acquisition. *Preventive Medicine Reports.* 2022; 29:101925 <https://doi.org/10.1016/j.pmedr.2022.101925>

N Bansal, C Fernandez Hazim, S Badillo, S Shyam, D Wolfe, AE Bortnick, MJ Garcia, **CJ Rodriguez**, L Zhang. Maternal Cardiovascular Outcomes of Pregnancy in Childhood, Adolescent, and Young Adult Cancer Survivors. *Journal of Cardiovascular Development and Disease*. 2022; 9:373.

AE Bortnick, P Buzkova, J Otvos, M Jensen, MY Tsai, M Budoff, R Mackey, SR El Khoudary, E Favari, RS Kim, **CJ Rodriguez**, G Thanassoulis, JR Kizer. Relationship of High-Density Lipoprotein Cholesterol and Particle Characteristics with Long-term Incidence and Progression of Aortic Valve Calcification: The Multi-Ethnic Study of Atherosclerosis. *Arteriosclerosis, Thrombosis, and Vascular Biology*. 2022; 42:1272–1282.

EJ Benjamin, KL Thomas, AS Go, P Desvigne-Nickens, CM Albert, A Alonso, AM Chamberlain, UR Essien, I Hernandez, M True Hills, KN Kershaw, PD Levy, JW Magnani, DD Matlock, EC O'Brien, **CJ Rodriguez**, AM Russo, EZ Soliman, LS Cooper, SM Al-Khatib. Transforming Atrial Fibrillation Research to Integrate Social Determinants of Health: A National Heart, Lung, and Blood Institute Workshop Report. *JAMA Cardiology*. doi:10.1001/jamacardio.2022.4091

AK April-Sanders, ML Daviglius, UJ Lee, KM Perreira, A Pirzada, FC Bandiera, AL Giachello, TT Vu, **CJ Rodriguez**. Prevalence of Electronic Cigarette Use and Its Determinants in US Persons of Hispanic Heritage: The Hispanic Community Health Study / Study of Latinos. *American Journal of Medicine Open* 2023; 9: 100029. //doi.org/10.1016/j.ajmo.2022.100029

J Kaufmann, M Marino, JA Lucas, **CJ Rodriguez**, SR Bailey, AK April-Sanders, D Boston, J Heintzman. Racial, Ethnic, and Language Differences in Screening Measures for Statin Therapy Following a Major Guideline Change. *Preventive Medicine*. 2022 Nov; 164: 107338. doi:10.1016/j.ypmed.2022.107338.

SELECTED GRANTS:

NIH / NHLBI

Vascular Determinants of Stage B Heart Failure among Hispanics/Latinos

The overall goals are to determine comprehensive vascular phenotypes in Hispanics/Latinos as well as the relation of cardiac-vascular coupling to the rich database of clinical, cultural, and psychosocial risk factors from HCHS/SOL; to help delineate key vascular factors associated with cardiac structure and function trajectories as well as a pooled cohort analysis of existing FHS/JHS/Omni vascular datasets.

NIH / FDA

AHA Tobacco Regulation and Addiction Center (A-TRAC)

The overall goals are to 1) understand the relationship between biomarkers of cardiovascular dysfunction/injury, measures of subclinical cardiovascular disease and clinical cardiovascular events with specific measures of exposure to tobacco smoke in epidemiologic cohorts; and 2) to provide a comprehensive assessment of knowledge, attitudes, risk perception and behaviors related to tobacco use, tobacco products, and smoking cessation programs in vulnerable understudied populations with the use of community-based participatory multi-disciplinary approaches.

NIH / NHLBI

Hispanic Community Health Study/Study of Latinos (HCHS/SOL) Bronx Field Center

HCHS-SOL is a prospective, population-based, cohort study designed to examine risk and protective factors for chronic diseases and to quantify morbidity and mortality in US Hispanics/Latinos (H/Ls) of diverse backgrounds. Objectives are to: 1) expand the evidence on putative causes of prevalent chronic diseases in H/Ls; 2) describe long-term changes in risk and protective factors with continuing acculturation; 3) assess the impact of biomedical, lifestyle, SES, sociocultural factors, and healthcare access on the health of H/Ls; 4) continue to provide a platform and infrastructure for ancillary studies using data and specimens from

HCHS/SOL participants; 5) leverage the diversity among HCHS-SOL participants for genetic epidemiological studies; 6) continue to inform participants and the general H/L community about the study progress and findings; and 7) continue to provide early stage investigators, particularly from under-represented groups, with opportunities for mentored research, manuscripts, and career development.

NIH/NHLBI

MACS/WIHS Combined Cohort Study

Aims are to evaluate HIV infection and associated factors as determinants of myocardial dysfunction and disease as assessed by state-of-the-art echocardiography and magnetic resonance imaging in a longitudinal observational cohort of demographically matched men and women with or at risk for HIV infection.

NIH / NHLBI

Genetic Architecture of Cardiac Structure and Function and Impact on Heart Failure

The goal of this project to utilize the echocardiographic data we have in the Echocardiographic Study of Latinos (ECHO-SOL) and ECHO-SOL 2 to identify common, rare and structural genetic variants associated with cardiac structure and function, as well as HF; and to improve HF risk prediction by incorporating genetic predisposition to cardiac structure and function alterations.

NIH / NHLBI

Non-Alcoholic Fatty Liver Disease and Cardiovascular Disease in Hispanics/Latinos

There is evidence that Hispanics/Latinos may have more fatty liver disease than other ethnic groups, and that their burden of heart disease is underappreciated. This study will evaluate environmental and/or genetic influences on these disorders, assess their interrelationship, and provide information to improve the heart and liver health of this vulnerable population.

PCORI

PRagmatic Evaluation of evENTs And Benefits of Lipid-lowering in oldEr adults (PREVENTABLE)

This is a pragmatic randomized control clinical trial designed to generate knowledge about the role of statins in older adults, a population in which risk/benefit for primary prevention has been under studied. This study is designed to prove the usefulness of statins for primary cardiovascular prevention in adults over age 75, in the setting of multiple chronic conditions as well as determining whether common conditions such as cognitive impairment or HFpEF may be improved by an effective vascular prevention. Other Objectives are to collect bio-specimens to advance precision health.

NIH / NIA

The Study of Women's Health Across the Nation (SWAN)

SWAN is a multi-site longitudinal, epidemiologic study designed to examine the health of women during their middle years. The study will examine how the physical, biological, psychological and social changes during midlife impact health and functioning in early old age. The goal of SWAN's research is to help scientists, health care providers and women learn how mid-life experiences affect health and quality of life during aging.

NIH / NHLBI

Network for Cardiothoracic Surgical Investigations in Cardiovascular Medicine

The Cardiothoracic Surgical Trials Network (CTSN) was created to develop a strong evidence base for the treatment of cardiac surgery patients. The CTSN data coordinating center, leadership, sites and clinical investigators have developed a research agenda of to design and conduct practice-changing collaborative randomized controlled trials that evaluate clinically meaningful questions and address important public health issues. These trials span the spectrum from translational, to confirmatory, to comparative effectiveness.



Joanna Starrels, MD, MS

Professor, Department of Medicine (Division of General Internal Medicine)
Professor, Department of Psychiatry & Behavioral Sciences
Associate Chief (Research), Division of General Internal Medicine

RESEARCH AREA: My work focuses on the intersection of substance use and pain, particularly: use of prescribed opioids for pain, risks and benefits of medical cannabis for chronic pain, and treatment of chronic pain in people with opioid use disorder. I use diverse research methods, from clinical trials to qualitative research.

SELECTED PUBLICATIONS:

Frank JW, Fox AD, Chatterjee A, Goede D, Gordon AJ, **Starrels J**. Harm Reduction and the Drug Overdose Crisis: Evidence and Advocacy Opportunities. *SGIM Forum*. 2018;41(9).

Buonora M, Perez H, Heo M, Ning Y, Cunningham CO, **Starrels JL**. Race and Gender Are Associated With Opioid Dose Reduction among Patients Receiving Chronic Opioid Therapy. *Pain Medicine*. 2019;20(8):1519-1527.

Perez HP, Buonora M, Cunningham CO, Heo M, **Starrels JL**. Opioid Taper Is Associated With Subsequent Termination of Care: A Retrospective Cohort Study. *Journal of General Internal Medicine*. 2020;35(1):36-42.

Starrels, JL, Young SR, Azari SS, Becker WC, Edelman EJ, Liebschutz JM, Pomeranz J, Roy R, Saini S, Merlin JS. Disagreement and Uncertainty Among Experts About How to Respond to Marijuana Use in Patients on Long-Term Opioids for Chronic Pain: Results of a Delphi Study. *Pain Medicine*. 2020;21(2):247-254.

Richard EL, Althouse A, Arnsten JH, Bulls H, Kansagara D, Kerbag M, Lipsey D, Morasco BJ, Nugent SM, Merlin JS/**Starrels JL** (co-senior authors). How Medical are States' Medical Cannabis Policies?: Proposing a Standardized Scale. *Intl J of Drug Policy*. 2021

Buonora MJ, Hanna DB, Zhang C, Bachhuber MA, Moir LH, Salvi PS, Cunningham CO, **Starrels JL**. U.S. state policies on opioid prescribing during the peak of the prescription opioid crisis: Associations with opioid overdose mortality. *Int J Drug Policy*. 2022

Cunningham CO, **Starrels JL**. Guideline Promoting Buprenorphine for Treatment of Chronic Pain: Transformative Yet Underdeveloped. *Ann Intern Med*. 2023

SELECTED GRANTS:

NIDA RM1 DA055437: Integrated Care for Chronic Pain and Opioid Use Disorder: The IMPOWR Research Center at Montefiore/Einstein (IMPOWR-ME)

NIDA K24DA046309: Mentoring junior investigators to tackle the opioid epidemic

NIDA R01DA039046: Prescription Opioid Use, Misuse, Disorders and HIV Outcomes



Ulrich Steidl, MD, PhD

Professor, Department of Cell Biology

RESEARCH AREA: Hematopoietic stem cells (HSC), leukemia stem cells (LSC), pre-leukemic stem cells, tumor heterogeneity, transcription, transcriptional plasticity, molecular noise, targeted therapy, translational computational biology

SELECTED PUBLICATIONS:

Piszczałowski RT*, Schwenger E*, Sundaravel S, Stein CM, Liu Y, Stanley P, Verma A, Zheng D, Seidel RD, Almo SC, Townley RA#, Bülow HE#, **Steidl U**#. A glycan-based approach to cell characterization and isolation: hematopoiesis as a paradigm. **J Exp Med**. 2022 Nov 7;219(11):e20212552.

Ueda K, Kumari R, Schwenger E, Wheat JC, Bohorquez O, Narayanagari SR, Taylor SJ, ..., Xiong S, Lozano G, Verma A, **Steidl U**. MDMX acts as a pervasive preleukemic-to-acute myeloid leukemia transition mechanism. **Cancer Cell**. 2021; 39:529-547

Wheat JC, Sella Y, Willcockson M, Skoultchi AI, Bergman A, Singer R, **Steidl U**. Single Molecule Imaging of Transcription Dynamics in Somatic Stem Cells. **Nature**. 2020; 583:431-436.

Chen J, Kao Y, Sun D, Todorova TI, Reynolds D, Narayanagari SR, Montagna C, Will B, Verma A*, **Steidl U***. MDS progression to AML at the stem cell level. **Nat Med**. 2019; 25:103-110

Carvajal LA, Ben-Neriah D, Senecal A, Benard L, Thiruthuvanathan V, Yatsenko T, Narayanagari SR, Wheat JC, Todorova TI, Mitchell KM, Kenworthy C, Guerlavais V, Annis DA, Bartholdy B, Will B, Anampa JD, Mantzaris I, Aivado M, Singer RH, Coleman RA, Verma A, **Steidl U**. Dual inhibition of MDMX and MDM2 as a Therapeutic Strategy in Leukemia. **Science Transl Med**. 2018; 10:eaao3003

Antony-Debré I, Paul A, Leite J, Mitchell K, Kim HM, Carvajal LA, Tidorova TI, ..., Mantzaris I, Gavathiotis E, Verma A, Will B, Boykin DW, Wilson WD, Poon GMK, **Steidl U**. Inhibition of the myeloid master regulator PU.1 as a therapeutic strategy in acute myeloid leukemia. **J Clin Invest**. 2017; 127(12):4297-4313

Will B, Vogler TO, Narayanagari S, Bartholdy B, Todorova TI, ..., Edelman W, Verma A, **Steidl U**. Minimal Reduction of PU.1 is Sufficient to Induce a Preleukemic State and Promote Development of Acute Myeloid Leukemia. **Nat Med**. 2015 Oct; 21(10):1172-81

Okoye-Okafor UC, Bartholdy B, Cartier J, ... , Verma A, **Steidl U**. Novel IDH1 Mutant Inhibitors for Treatment of Acute Myeloid Leukemia. **Nat Chem Biol**. 2015; 11(11):878-86.

SELECTED GRANTS:

R35 CA253127, Steidl (PI), 09/01/21 – 08/31/28

Molecular and Cellular Regulation of Pre-Leukemic Stem Cells and their Therapeutic Targeting

R01 HL105832, Verma/Steidl (MPI), 07/01/19 – 06/30/24

STAT3 Inhibition as a Therapeutic Strategy against MDS Stem Cells

R01 HL157948, Steidl/Will (MPI), 04/01/21 – 02/28/25

Contribution of Macrophages in the HSC Niche



Sylvia Suadicani, PhD

Associate Professor, Department of Urology, Department of Molecular Pharmacology

RESEARCH AREA: Molecular mechanisms in benign bladder dysfunction, bladder physiology and pathophysiology.

Research in Dr. Suadicani's laboratory focuses on investigating mechanisms underlying the development of urogenital conditions to identify novel molecular mediators that can be therapeutically targeted. Current studies are addressing bladder dysfunction in diabetes and aging, interstitial cystitis, chronic pelvic pain, and female sexual dysfunction. Her laboratory uses both animal and cellular models combined with physiological, behavioral, pharmacological, molecular, and histological approaches to investigate these mechanisms.

SELECTED PUBLICATIONS:

STERN. J.M., URBAN-MALDONADO, M., USYK, M., GRANJA, I., SCHOENFELD, D., DAVIES, K.P., AGALLIU, I., ASPLIN, J., BURK, R., **SUADICANI, S.O.** (2019) - Fecal transplant modifies urine chemistry risk factors for urinary stone disease. *Physiol Rep* 2019; 7: e14012 (PMCID: PMC6383111)

HARROCHE J., URBAN-MALDONADO, M., THI, M.M., **SUADICANI, S.O.** (2020): Mechanosensitive Vaginal Epithelial Adenosine Triphosphate Release and Pannexin 1 Channels in Healthy, in Type 1 Diabetic, and in Surgically Castrated Female Mice. *J Sex Med* 2020; 17: 870-880 (PMCID: PMC7188554).

KONO J., UEDA M., SENGIKU A., **SUADICANI S.O.**, OGAWA O., NEGORO H. Urothelium-Specific Deletion of Connexin43 in the Mouse Urinary Bladder Alters Distension-Induced ATP Release and Voiding Behavior. *Int J Mol Sci.* 2021;22(4):1594. (PMCID: PMC7914662).

LOLOI J., CLEARWATER W., SCHULTZ A., **SUADICANI S.O.**, ABRAHAM N. Medical Treatment of Overactive Bladder. *Urol Clin North Am.* 2022;49(2):249-61 Review article (PMID: 35428431).

LOLOI J., BABAR M., DAVIES K.P., **SUADICANI, S.O.** Nanotechnology as a tool to advance research and treatment of non-oncologic urogenital diseases. *Therapeutic Advances in Urology*, 2022, Jul 26;14:17562872221109023. Review Article (PMCID: PMC9340423).

TELLECHEA L.M., FREEMAN S., AGALLIU I., LAUDANO M.A., **SUADICANI S.O.**, ABRAHAM N.A. - Feasibility Study to Evaluate Changes in Urinary Metabolites after OnabotulinumtoxinA Injection for Refractory Overactive Bladder. *Metabolites.* 2022;12(9):880. PMCID: PMC9504526 doi:10.3390/metabo12090880.

SELECTED GRANTS:

Grant project title: ***“Pannexin 1 channel, a novel molecular mediator and potential therapeutic target for Interstitial Cystitis”***

Funding agency: Department of Defense (DoD) - CDMRP W81XWH2110465

Principal Investigator: Suadicani, SO

Dates: 04/01/2021 – 03/31/2025

Major Goals: This project will test the overarching hypothesis that Panx1 channels play a key role in events leading to bladder sensitization, micturition dysfunction and pelvic pain in IC by amplifying ATP signaling and activating the bladder inflammasome. The main objectives of this project are to (1) demonstrate that Panx1 channels are novel molecular mediators and therapeutic targets for IC, and (2) obtain pre-clinical validation for use of Panx1 blockers to treat and ameliorate urinary symptoms in IC patients.

Grant project title: ***“Pannexin 1 channels: new players in diabetic bladder dysfunction”***

Fundings agency: NIH NIDDK - R01 DK122153

Principal Investigator: Suadicani, SO

Dates: 09/03/2019 – 06/30/2024 (NCE)

Major Goals: The main goal of this grant is to investigate the role of urothelial pannexin 1 (Panx1) channels in the emergence and temporal progression of diabetic bladder dysfunction (DBD). Findings from proposed studies will demonstrate that Panx1 channels are novel molecular mediators and potential therapeutic targets to manage DBD and prevent bladder decompensation at later stages of the disease.



Yaron Tomer, MD

Professor, Department of Medicine (Endocrinology)

RESEARCH AREA: Immunogenetics of autoimmune Thyroid disease (AITD) and type 1 diabetes (T1D)

SELECTED PUBLICATIONS:

Huber AK, Finkelman FD, Li CW, Concepcion E, Smith E, Jacobson E, Latif R, Keddache M, Zhang W, Tomer Y. Genetically driven target tissue overexpression of CD40: A novel mechanism in autoimmune disease. J Immunol 2012; 189: 3043-3053.

Stefan M, Wei C, Lombardi A, Li CW, Concepcion E, Inabnet III WB, Owen R, Zhang W, Tomer Y. Genetic-epigenetic dysregulation of thymic TSH receptor gene expression triggers thyroid autoimmunity. Proc Natl Acad Sci USA 2014; 111: 12562-12567.

Li CW, Menconi F, Osman R, Mezei M, Jacobson E, Concepcion E, David CS, Kastrinsky DB, Ohlmeyer M, Tomer Y. Identifying a small molecule blocking antigen presentation in autoimmune thyroiditis. J Biol Chem 2016; 291: 4079-4090.

Faustino LC, Kahaly GJ, Frommer L, Concepcion E, Stefan-Lifshitz M, Tomer Y. Precision medicine in Graves' disease: CD40 gene variants predict clinical response to an anti-CD40 monoclonal antibody. Front Endocrinol 2021; 12: 691781.

Ye J, Stefan-Lifshitz M, Tomer Y. Genetic and environmental factors regulate the type 1 diabetes gene CTSH via differential DNA methylation. J Biol Chem 2021; 296: 100774.

Li CW, Osman R, Menconi F, Faustino LC, Kim K, Clarke OB, Hou H, Tomer Y. Cepharanthine blocks presentation of thyroid and islet peptides in a novel humanized autoimmune diabetes and thyroiditis mouse model. Front Immunol 2021; 12: 796552.

Li CW, Osman R, Menconi F, Hou H, Schechter C, Kozhakhmetova A, Tomer Y. Effective inhibition of thyroid antigen presentation using retro-inverso peptides in experimental autoimmune thyroiditis: A pathway towards immune therapies of thyroid autoimmunity. Thyroid 2023, ePub; PMID: 36762945.

SELECTED GRANTS:

2022-2025

Source: NIH-NIDDK.

Project Name: Analyzing Genetic and Environmental Molecular Mechanisms Causing Autoimmune Thyroid Diseases.

Principal Investigators: Yaron Tomer, M.D. (contact PI), and Mihaela Stefan-Lifshitz, PhD (MPI).

2023-2025

Source: NIH-NCI.

Project Name: Endocrine tissue molecular pathways dysregulated by immune checkpoint inhibitors causing ICI-triggered adverse events.

Principal Investigators: Yaron Tomer, M.D. (contact PI), and Mihaela Stefan-Lifshitz, PhD (MPI).



Joe Verghese, MBBS, MS

Professor, Department of Neurology

RESEARCH AREA: Aging and mobility and cognition

SELECTED PUBLICATIONS:

Verghese J, Lipton RB, Katz MJ, Hall CB, Kuslansky G, Buschke H. Abnormality of Gait As A Predictor Of Non-Alzheimer Dementia. **New England Journal of Medicine** 2002; 347: 1760-1767. PMID: 12456852

Verghese J, Lipton RB, Katz MJ, Hall CB, Kuslansky G, Derby CA, Ambrose AF, Sliwinski M, Buschke H. Leisure activities and the risk of dementia in the elderly. **New England Journal of Medicine**; 348: 2508-2516. 2003. PMID: 12815136

Verghese J, Wang C, Holtzer R, Lipton R, Xue. Quantitative Gait Dysfunction And Risk of Cognitive Decline and Dementia. **Journal of Neurology, Neurosurgery & Psychiatry** 78: 929-935, 2007. PMCID: PMC1995159

Holtzer R, **Verghese J**, Wang C, Hall CB, Lipton RB. Within-person across-neuropsychological test variability and incident dementia. **JAMA**. 2008;300(7):823-30. PMID: 18714062

Verghese J, Mahoney JR, Ayers E, Ambrose A, Wang C, Holtzer R. Computerised cognitive remediation to enhance mobility in older adults: a single-blind, single-centre, randomised trial. **Lancet Healthy Longev**. 2021;2(9):e571-e579. PMCID: PMC5134757

Verghese J, Annweiler C, Ayers E, Barzilai N, Beauchet O, Bennett DA, Bridenbaugh S, Buchman AS, Callisaya M, Camicioli R, Capistrant B, Chatterji S, De Cock A, Ferrucci L, Giladi N, Guralnik J, Hausdorff J, Holtzer R, Kim KW, Kowal P, Kressig RW, Lim JY, Lord S, Meguro K, Montero-Odasso M, Muir-Hunter S, Noone ML, Rochester L, Srikanth V, Wang C. Motoric Cognitive Risk Syndrome: Multi-country Prevalence and Dementia Risk. **Neurology** 2014; 83:718-726. PMCID: PMC4150127

Verghese J, Ayers E, Barzilai N, Bennett D, Buchman AS, Holtzer R, Katz M, Lipton R, Wang C. Motoric Cognitive Risk Syndrome: Multi-center Incidence Study. **Neurology**, 2014; 83:2278-2284. PMCID: PMC4277675

Kravatz N, Ayers E, Bennett D, **Verghese J**. Olfactory dysfunction and the incidence of motoric cognitive risk syndrome: prospective clinical-pathological study. **Neurology** 2022; 99(17): e1886-96. PMCID: PMC9620808

SELECTED GRANTS:

Kerala-Einstein Study: Healthy lifestyle, vascular disease, and cognitive decline

2011 – 2016, 2019-2024

Type: R01AG039330; **Agency:** National Institute on Aging, Fogarty Institute

Role: Principal Investigator (contact), Multiple-PI: PS Mathuranath, VG Pradeep

Aim: Examine risk factors for cognitive decline in the southern Indian state of Kerala.

The biological underpinnings of Motoric Cognitive Risk syndrome: a multi-center study

2020 – 2025

Type: 1R01AG057548-01A1; **Agency:** National Institute on Aging

Role: Principal Investigator

Aims: Examine biological and brain substrates of Motoric Cognitive Risk syndrome in 8 cohorts in 6 countries.

Non-Invasive Home Neurostimulation for Mild to Moderate Alzheimer’s Disease: Double-Blind, Sham Controlled Randomized Clinical Trial

2020 – 2025

Type: R01 AG068167-01;

Agency: National Institute on Aging

Role: Principal Investigator (Co-PI: Helena Knotkova, PhD)

Aims: Double blind sham controlled randomized trial of the efficacy and neuroplasticity effects of transcranial direct current stimulation in mild to moderate Alzheimer’s disease patients.

5-Cog Battery to improve detection of cognitive impairment and dementia

09/25/2017 – 08/31/2022

Type: 1UG3NS105565-01; **Agency:** NINDS

Role: Principal Investigator

Aim: This UG3/UH3 project intends to further develop and validate a 5-minute screen (5-Cog) to identify persons at high risk of developing dementia and to flag them for further evaluation



Amit K. Verma, M.B.B.S.

Professor, Department of Oncology (Medical Oncology)

RESEARCH AREA: Molecular pathogenesis of Myelodysplastic syndrome (MDS)

Targeting signal transduction in hematologic malignancies:

Cytokines play important roles in the regulation of normal hematopoiesis and a balance between the actions of hematopoietic growth factors and myelosuppressive factors is required for optimal production of different hematopoietic cell lineages. The myelodysplastic syndromes (MDS) are collections of heterogeneous hematologic diseases characterized by refractory cytopenias due to ineffective hematopoiesis. These preleukemic disorders are common causes of anemia in the elderly and are rapidly increasing in incidence. We have also demonstrated that the TGF-beta superfamily/smad, IRAK and MAP kinase pathways is overactivated in MDS. Our work has led to clinical trials with Luspatercept, Galunisertib, CA4948, ARRY-614 and various other promising agents in MDS. We are trying to study the molecular mechanisms that lead to the activation of these pathways in MDS and are using small molecule inhibitors in mouse models to target these pathways.

Targeting aberrant stem and progenitor cells in myelodysplastic neoplasms:

We have demonstrated that aberrant stem cells persist during morphological remissions and are involved in relapse. We have identified novel targets against MDS/AML stem cells that are being tested in various studies. We are also conducting sequencing/epigenetic analysis of highly purified human stem cells and evaluating the role of these alterations in transformation of MDS to AML.

SELECTED PUBLICATIONS:

Jasra S, Giricz O, Zeig-Owens R, Pradhan K, Goldfarb DG, Barreto-Galvez A, Silver AJ, Chen J, Sahu S, Gordon-Mitchell S, Choudhary GS, Aluri S, Bhagat TD, Shastri A, Bejan CA, Stockton SS, Spaulding TP, Thiruthuvanathan V, Goto H, Gerhardt J, Haider SH, Veerappan A, Bartenstein M, Nwankwo G, Landgren O, Weiden MD, Lekostaj J, Bender R, Fletcher F, Greenberger L, Ebert BL, Steidl U, Will B, Nolan A, Madireddy A, Savona MR, Prezant DJ, **Verma A**. High burden of clonal hematopoiesis in first responders exposed to the World Trade Center disaster. *Nat Med*. 2022 Mar 7. PMID: 35256801.

Lee M, Quinn R, Pradhan K, Fedorov K, Levitz D, Fromowitz A, Thakkar A, Shapiro LC, Kabarriti R, Ruiz RE, Andrews EM, Thota R, Chu E, Kalnicki S, Goldstein Y, Loeb D, Racine A, Halmos B, Mehta V, **Verma A**. Impact of COVID-19 on case fatality rate of patients with cancer during the Omicron wave. *Cancer Cell*. 2022 Feb 22: PMID: 35219358; PMCID: PMC8860706

Pinho S, Wei Q, Maryanovich M, Zhang D, Baladrán JC, Pierce H, Nakahara F, Di Staulo A, Bartholdy BA, Xu J, Borger DK, **Verma A**, Frenette PS. VCAM1 confers innate immune tolerance on haematopoietic and leukaemic stem cells. *Nat Cell Biol*. 2022 Feb 24. PMID: 35210567.

Su H, Jiang M, Senevirathne C, Aluri S, Zhang T, Guo H, Xavier-Ferruccio J, Jin S, Tran NT, Liu SM, Sun CW, Zhu Y, Zhao Q, Chen Y, Cable L, Shen Y, Liu J, Qu CK, Han X, Klug CA, Bhatia R, Chen Y, Nimer SD, Zheng YG, Iancu-Rubin C, Jin J, Deng H, Krause DS, Xiang J, **Verma A***, Luo M*, Zhao X*. Methylation of dual-specificity phosphatase 4 controls cell differentiation. *Cell Rep*. 2021 Jul 27;36(4):109421. PMID: 34320342. *Co-Corresponding.

Mehta V*, Goel S*, Kabarriti R*, Cole D, Goldfinger M, Acuna-Villaorduna A, Pradhan K, Thota R, Reissman S, Sparano JA, Gartrell BA, Smith RV, Ohri N, Garg M, Racine AD, Kalnicki S, Perez-Soler R, Halmos B*, **Verma A***. Case Fatality Rate of Cancer Patients with COVID-19 in a New York Hospital System. *Cancer Discov*. 2020 Jul;10(7):935-941. PMID: 32357994; PMCID: PMC7334098.

List AF, Sun Z, **Verma A***, Bennett JM, Komrokji RS, McGraw K, Maciejewski J, Altman J, Cheema PS, Claxton DF, Luger SM, Mattison RJ, Wassenaar T, Artz AA, Schiffer CA, Litzow MR, Tallman MS Lenalidomide-Epoetin Alfa versus Lenalidomide-monootherapy in Myelodysplastic Syndromes Refractory to Recombinant Erythropoietin *JCO*, 2021, Jan 13: PMID: 33439748 *Corresponding.

Verma A, Suragani RN, Aluri S, Shah N, Bhagat TD, Alexander MJ, Komrokji R, Kumar R. Biological basis for efficacy of activating receptor ligand traps in myelodysplastic syndromes. *J Clin Invest*. 2020 Feb 3;130(2):582-589. doi: 10.1172/JCI133678. Review. PMID: 31961337

Fenau P, Platzbecker U, Mufti GJ, Garcia-Manero G, Buckstein R, Santini V, Díez-Campelo M, Finelli C, Cazzola M, Ilhan O, Sekeres MA, Falantes JF, Arrizabalaga B, Salvi F, Giai V, Vyas P, Bowen D, Selleslag D, DeZern AE, Jurcic JG, Germing U, Götze KS, Quesnel B, Beyne-Rauzy O, Cluzeau T, Voso MT, Mazure D, Vellenga E, Greenberg PL, Hellström-Lindberg E, Zeidan AM, Adès L, **Verma A**, Savona MR, Laadem A, Benzohra A, Zhang J, Rampersad A, Dunshee DR, Linde PG, Sherman ML, Komrokji RS, List AF. Luspatercept in Patients with Lower-Risk Myelodysplastic Syndromes. *N Engl J Med*. 2020 Jan 9;382(2):140-151. PMID: 31914241

Bhagat TD, Ahrens DV, Dawlaty M, Zou Y, Baddour J, Achreja A, Zhao H, Yang L, Patel N, Kwak C, Choudhary G, Gordon-Mitchell S, Alluri S, Bhattacharyya S, Yu Y, Bartenstein M, Giricz O, Suzuki M, Sohal D, Gupta S, Batra S, Goggins M, Steidl U, Grealley J, Agarwal B, Pradhan K, Banerjee D, Nagrath D*, Maitra A*, **Verma A***. Lactate-mediated Epigenetic Reprogramming Regulates Formation of Pancreatic Cancer-associated Fibroblasts *Elife*, Oct 30;8, 2019, (In Press)* Equal Contribution PMID: 31663852

Smith M*, Choudhary GS*, Pellagatti A, Choi K, Bhagat TD, Gordon-Mitchell S, Von Ahrens D, Pradhan K, Steeples V, Kim S, Steidl U, Salomonis N, Walter M, Komurov K, Boultonwood J*, **Verma A***, Starczynowski D* U2AF1 mutations induce oncogenic innate immune pathways by regulating the expression of active IRAK4 isoforms in hematologic malignancies. *Nature Cell Bio* 2019 May;21(5):640-650 * Equal Contribution

Jeong JJ, Gu X, Nie J, Sundaravel S, Liu H, Kuo W, Bhagat TD, Pradhan K, Cao J, Nischal S, McGraw K, Bhattacharyya S, Bishop M, Artz A, Thirman M, Moliterno AR, Ji P, Levine RL, Godley LA, Steidl U, Beiker J, List AF, Sauntharajah Y, He C, **Verma A***, Wickrema A* Cytokine regulated phosphorylation and activation of TET2 by JAK2 in hematopoiesis *Cancer Discovery* 2019 Jun;9(6):778-795 * Equal Contribution

SELECTED GRANTS:

Active

Diversity-focused Montefiore Einstein Clinical Oncology Training Program in the Bronx

Verma, A. K. & Saenger, Y. M.

4/1/23 → 3/31/24

Therapeutic targeting of IRAK4 in MDS

Verma, A. K. & Starczynowski, D. T.

9/2/22 → 7/31/23

Finished

STAT3 inhibition as a therapeutic strategy against MDS stem cells

Verma, A. K. & Steidl, U. G.

National Heart, Lung, and Blood Institute

7/23/19 → 6/30/23

Cooperative Research Agreements Related to the World Trade Center Health Program (U01)

Verma, A. K.

1/1/19 → 6/30/20

Project: Research project

Therapeutic targeting of MDS stem cells

Steidl, U. G. & Verma, A. K.

8/20/18 → 6/30/22

Therapeutic targeting of MDS stem cells

Verma, A. K., Steidl, U. G. & Verma, A. K.

National Heart, Lung, and Blood Institute

8/20/18 → 6/30/22

Therapeutic targeting of glutamine metabolism in MDS

Verma, A. K. & Verma, A. K.

4/1/16 → 3/31/21

Therapeutic targeting of glutamine metabolism in MDS

Konopleva, M. Y., Tiziani, S. & Verma, A. K.

National Cancer Institute

4/1/16 → 3/31/21

Neoplasms12%

Therapeutic targeting of MicroRNA-21 in Myelodysplastic syndromes

Verma, A. K. & Verma, A. K.

National Institute of Diabetes and Digestive and Kidney Diseases

9/1/14 → 5/31/18

Therapeutic targeting of MicroRNA-21 in Myelodysplastic syndromes

Verma, A. K. & Verma, A. K.

9/1/14 → 5/31/18



Louis Weiss, MD, MPH

Professor, Department of Pathology

RESEARCH AREA: Parasitology (*Toxoplasma gondii*, Microsporidia, and *Trypanosoma cruzi*)

TOXOPLASMOSIS: *Toxoplasma gondii* is a ubiquitous Apicomplexan protozoan parasite that infects humans, mammals and birds. Despite recent progress in understanding the biology of the rapidly replicating form (tachyzoite), very little is known about the cyst form (bradyzoite). The bradyzoite stage plays a critical role in maintenance of latent infection, the relapse of infections and the development of chronic neurological disease. Our research is focused on the identification of cyst wall (bradyzoite) proteins and how they function.

MICROSPORIDIOSIS: Microsporidia are "emerging" human and veterinary pathogens that contain a unique organelle, the polar tube, which is involved in invasion. While the description of the polar tube occurred over 100 years ago, the biochemical components of this structure and its formation during invasion remain to be definitively determined. Our research is focused on the: (1) characterization of the structure and composition of the polar tube and spore wall; and (2) the identification of therapeutic agents for microsporidiosis.

SELECTED PUBLICATIONS:

Weiss LM and Kim K (eds.) *Toxoplasma gondii* the model Apicomplexan: Methods and Applications, Elsevier Press (Academic Press), 3rd edition, 2020.

Weiss LM and Becnel JJ (eds.) *Microsporidia: Pathogens of Opportunity*, Wiley-Blackwell, 2014. [Translated into Chinese 2020]

Han B, Pan G, **Weiss LM**. Microsporidiosis in humans. *Clin Microbiol Rev*. 2021 Jun 30:e0001020. doi: 10.1128/CMR.00010-20.

Mayoral J, Guevara RB, Rivera-Cuevas Y, Tu V, Tomita T, Romano JD, Gunther-Cummins L, Sidoli S, Coppens I, Carruthers VB, **Weiss LM**. Dense granule protein GRA64 interacts with host cell ESCRT proteins during *Toxoplasma gondii* infection. *mBio*. 2022 Jun 22:e0144222. doi: 10.1128/mbio.01442-22

Tomita T, Mukhopadhyay D, Han B, Yakubu R, Tu V, Mayoral J, Sugi T, Ma Y, Saeij JPJ, **Weiss LM**. *Toxoplasma gondii* matrix antigen 1 is a secreted immunomodulatory effector. *mBio*. 2021 May 18;12(3):e00603-21.

Flores J, Takvorian PM, **Weiss LM**, Cali A, Gao N. Human microsporidian pathogen *Encephalitozoon intestinalis* impinges on enterocyte membrane trafficking and signaling. *J Cell Sci*. 2021 Feb 15:jcs.253757. doi: 10.1242/jcs.253757.

Mayoral J, Tomita T, Tu V, Aguilan JT, Sidoli S, **Weiss LM**. *Toxoplasma gondii* PPM3C, a secreted protein phosphatase, affects parasitophorous vacuole effector export. *PLoS Pathog*. 2020 Dec 28;16(12):e1008771. doi: 10.1371/journal.ppat.1008771.

Mayoral J, Shamamian P Jr, **Weiss LM**. In vitro characterization of protein effector export in the bradyzoite

stage of *Toxoplasma gondii*. mBio. 2020 Mar 10;11(2):e00046-20. doi: 10.1128/mBio.00046-20.

Tu V, Mayoral J, Yakubu RR, Tomita T, Sugi T, Han B, Williams T, Ma Y, **Weiss LM**. MAG2, a *Toxoplasma gondii* bradyzoite stage-specific cyst matrix protein. mSphere. 2020 Feb 19;5(1). pii: e00100-20. doi: 10.1128/mSphere.00100-20.

Tu V, Tomita T, Sugi T, Mayoral J, Han B, Yakubu RR, Williams T, Horta A, Ma Y, **Weiss LM**. The *Toxoplasma gondii* cyst wall interactome. mBio. 2020 Feb 4;11(1). pii: e02699-19. doi: 10.1128/mBio.02699-19.

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Tu V, Mayoral J, Sugi T, Tomita T, Han B, Ma YF, **Weiss LM**. Enrichment and proteomic characterization of the cyst wall from in vitro *Toxoplasma gondii* cysts. mBio. 2019 Apr 30;10(2). pii: e00469-19. doi: 10.1128/mBio.00469-19.

Tomita T, Bzik DJ, Ma YF, Fox BA, Markillie LM, Taylor RC, Kim K, **Weiss LM**. The *Toxoplasma gondii* cyst wall protein CST1 is critical for cyst wall integrity and promotes bradyzoite persistence. PLoS Pathog. 2013; 9(12):e1003823. doi: 10.1371/journal.ppat.1003823

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SELECTED GRANTS:

Active

Microsporidia: invasion apparatus
Weiss, L. L. M. & Weiss, L. M.
National Institute of Allergy and Infectious Diseases
5/16/16 → 5/31/24

Geographic Medicine and Emerging Infections
Tanowitz, H. B., Weiss, L. M., Kim, K. & Weiss, L. M.
National Institute of Allergy and Infectious Diseases
7/1/08 → 8/31/23

Geographic Medicine and Emerging Infections
Tanowitz, H. B., Kim, K. & Weiss, L. M.
7/1/06 → 8/31/24

Finished

Composition and formation of the cyst wall
Weiss, L. M.
6/1/18 → 5/31/22

Composition and formation of the cyst wall
Weiss, L. L. M. & Weiss, L. M.
National Institute of Allergy and Infectious Diseases
6/1/18 → 5/31/23

Development of Novel MetAP2 inhibitors as potential therapeutics for Microsporidiosis
Weiss, L. M.
4/1/18 → 3/31/22

Development of Novel MetAP2 inhibitors as potential therapeutics for Microsporidiosis
Das, B. C. & Weiss, L. M.
National Institute of Allergy and Infectious Diseases
4/1/18 → 3/31/22

Toxoplasma gondii Glycosylation
Weiss, L. M.
National Institute of Allergy and Infectious Diseases
12/7/16 → 11/30/18

Toxoplasma gondii Glycosylation
Weiss, L. M.
12/7/16 → 11/30/18

Toxoplasma gondii: cyst wall glycobiology
Weiss, L. M.
12/1/16 → 11/30/18

Microsporidia: invasion apparatus
Weiss, L. M.
5/16/16 → 5/31/22



Marcel Yotebieng, MD, MPH, PhD

Professor, Department of Medicine (General Internal Medicine)

RESEARCH AREA: HIV, Tuberculosis. Infectious disease. Implementation science, Clinical Trial, Observational cohort,

SELECTED PUBLICATIONS:

Edmonds A, **Yotebieng M**, Lusiana J, Matumona Y, Kitetele F, Napravnik S, Cole SR, Van Rie A, Behets F. The Effect of Highly Active Antiretroviral Therapy on the Survival of HIV-Infected Children in a Resource-Deprived Setting: A Cohort Study. *PLoS Med*. 2011 Jun;8(6):e1001044.

Patel MR, Westreich D, **Yotebieng M**, Nana M, Eron JJ, Behets F, Van Rie A. The Impact of Implementation Fidelity on Mortality Under a CD4-Stratified Timing Strategy for Antiretroviral Therapy in Patients With Tuberculosis. *Am J Epidemiol*. 2015 May 1;181(9):714-22.

Yotebieng M, Labbok M, Soeters HM, Chalachala JL, Lapika B, Vitta BS, Behets F. Ten Steps to Successful Breastfeeding programme to promote early initiation and exclusive breastfeeding in DR Congo: a cluster-randomised controlled trial. *Lancet Glob Health*. 2015 Sep;3(9):e546-55.

Yotebieng M, Thirumurthy H, Moracco KE, Kawende B, Chalachala JL, Wenzi LK, Ravelomanana NL, Edmonds A, Thompson D, Okitolonda E, Behets F. Conditional cash transfers and uptake of and retention in prevention of mother-to-child HIV transmission care: a randomised controlled trial. *Lancet HIV*. 2016 Feb;3(2):e85-93.

Mbonze NB, Tabala M, Wenzi LK, Bakoko B, Brouwer M, Creswell J, Van Rie A, Behets F, **Yotebieng M**. Xpert[®] MTB/RIF for smear-negative presumptive TB: impact on case notification in DR Congo. *Int J Tuberc Lung Dis*. 2016 Feb;20(2):240-6.

Thompson P, Morgan CE, Ngimbi P, Mwandagilirwa K, Ravelomanana NLR, Tabala M, Fathy M, Kawende B, Muwonga J, Misingi P, Mbendi C, Luhata C, Jhaveri R, Cloherty G, Kaba D, **Yotebieng M**, Parr JB. Arresting vertical transmission of hepatitis B virus (AVERT-HBV) in pregnant women and their neonates in the Democratic Republic of the Congo: a feasibility study. *Lancet Glob Health*. 2021 Nov;9(11):e1600-e1609.

SELECTED GRANTS:

R01AI176309-01

Torrelles, Restrepo, Yotebieng (MPI)

04/05/2023 - 04/31/2028

Improving rapid phenotypic drug susceptibility testing for drug resistant tuberculosis in high-burden areas

U01AI096299

Anastos, Nash, Yotebieng (MPI)

07/01/2021 – 05/31/2026

Central Africa International Epidemiologic Databases to Evaluate AIDS (CA-IeDEA)

R01HD105526

Kwiek, Yotebieng (PI)

03/01/2021 - 05/31/2026

HIV/ART, low birth weight, and mortality in HIV-exposed uninfected children: a translational mechanistic study.

U54CA254568

Anastos, Adebola, Mutesa, Castle, Yotebieng (MPI)

09/01/2020 - 08/31/2025

Einstein/Rwanda/DRC Consortium for Research in HIV/HPV/Malignancies

R01HD087993

Babakazo, Yotebieng (MPI)

06/01/2016 - 05/31/2022 (NCE)

Long term outcomes of therapy in women initiated on lifelong ART because of pregnancy in DR Congo



Xingxing Zang, PhD

Professor, Departments of Microbiology & immunology, Oncology, Urology, Medicine
Louis Goldstein Swan Chair in Cancer Research

RESEARCH AREA: Basic biology of new immune checkpoints.

Translational immunotherapies in cancers, autoimmune diseases, metabolic diseases.

SELECTED PUBLICATIONS:

Ren X, Peng M, Xing P, Wei Y, Galbo PM, Corrigan D, Wang H, Su Y, Dong X, Sun Q, Li Y, Zhang X, Edelmann W, Zheng D, **Zang X**. Blockade of the immunosuppressive KIR2DL5-PVR pathway elicits potent human NK cell-mediated anti-tumor immunity. **Journal of Clinical Investigation**, 132:e163620, 2022.

John P, Pulanco MC, Galbo PM, Wei Y, Ohaegbulam KC, Zheng D, **Zang X**. The immune checkpoint B7x expands tumor-infiltrating Tregs and promotes resistance to anti-CTLA-4 therapy. **Nature Communications**, 13:2506. doi: 10.1038/s41467-022-30143-8, 2022.

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Wei Y, Ren X, Galbo PM, Moerdler S, Wang H, Sica RA, Etemad-Gilbertson B, Shi L, Zhu L, Tang X, Lin Q, Peng M, Guan F, Zheng D, Chinai JM, **Zang X**. KIR3DL3-HHLA2 is a human immunosuppressive pathway and a therapeutic target. **Science Immunology**, 6: eabf9792, 2021.

SELECTED GRANTS:

NIH R01CA175495 Zang (PI)

07/01/2014-11/30/2025

The B7x pathway in the tumor microenvironment.

NIH R01CA262132 Zang (PI)

12/01/2022 – 11/30/2027

A new immune checkpoint pathway in human bladder cancer

DOD Breakthrough Award BC190403 Zang/Guo (MPIs)

12/15/2019-12/14/2023

Targeting B7x to overcome stem cell-mediated immunosuppression in triple-negative breast cancer

DOD PC210331 Zang (PI)

07/01/2022 - 06/30/2025

A novel immune checkpoint pathway in human prostate cancer

Price Family Foundation Award Zang (PI)

10/18/2021 - 10/30/2023

Novel bispecific immune checkpoint inhibitors targeting both human NK cells and T cells

NextPoint Therapeutics sponsored research project Zang (PI)

11/16/2020 - 12/05/2025

Humanized NSG mice in vivo studies and novel first-in-class bispecific mAbs

Sebastian Strong Foundation Discovery Science Award Zang (PI)

08/01/2023 - 07/31/2026

A novel CAR-T therapy to treat human rhabdomyosarcoma