

Winter 2020 DMC Newsletter

This quarterly newsletter is provided by the Duke Microbiome Center to inform the Duke University community about activities, resources, news, funding and educational opportunities, and recent highlights in the microbiome sciences at Duke and beyond. If you have items you would like for us to include in a future newsletter, or if you would like to add someone to our newsletter listserv to receive future issues, please email Pat Massard. For further information on the DMC, please visit our website.

Guidelines Regarding Human Subjects Protection and Microbiome Research

With thanks to Sharon Ellison and Jody Power from the IRB and Anthony Sung, John Rawls, Lawrence David, Raphael Valdivia, Neil Surana, Naz Siddiqui, and many others from the DMC community, we are happy to share the attached document on <u>Guidelines Regarding Human Subjects Protection and Microbiome Research</u>. We hope this will be helpful for individuals considering collecting human samples, research with samples that have already been collected, or research with microbes cultured or isolated from human samples. These guidelines are meant to address questions of when a full IRB protocol is needed (and which may require patient consent), when research may be considered exempt (while an IRB submission may be needed, patient consent may not), or when IRB review is not needed. Of course, these are guidelines, and if there is ever a question, the IRB remains available to help.

Funding opportunities through the DMC

The DMC has two active funding opportunities:

DMC Development Grants: The Duke Microbiome Center (DMC) supports microbiome science at Duke University through pilot project funding. The DMC is pleased to announce a new request for proposals for DMC Development Grants. The objective of the DMC Development Grant program is to support interdisciplinary and collaborative research projects in the microbiome sciences at Duke University. The deadline is May 1, 2020. For more information, see the program announcement.

DMC Rolling Voucher Program: Duke University has established shared resources that avail state-of-the-art technologies to interrogate microbiome structure and function to Duke investigators. The Duke Microbiome Center offers a rolling voucher program to provide its investigators access to these shared resources, particularly for microbiome projects that are not yet externally funded. Eligibility is limited to Duke Microbiome Center faculty and their trainees, and the maximum budget is \$5,000. There is no deadline for these proposals. For more information, see the program announcement.

Learn about the Team Science Core at Duke CTSI

Microbiome research often brings together teams of investigators with distinct and complementary expertise. The Team Science Core of the Duke Clinical & Translational Science Institute offers support services to research teams like these tackling complex problems that span boundaries of many kinds, such as disciplinary, sectoral, institutional, and educational stage. Their core draws on findings from the field of the Science of Team Science in the design and delivery of our programming and consulting services, which include offerings for research teams across their life cycles, from formation to post-award implementation. They provide a range of consults and services, including but not limited to: introductory presentations to familiarize teams with evidence-

based Team Science principles and practices; customized design and facilitation of structured workshops to identify and prioritize research questions; advising and navigation for best practices in team formation and functioning; guidance through self-serve tools and resources from across the SciTS field. For more information, please email Kristine Glauber. Also, save the date for the 11th Annual International Science of Team Science Conference (SciTS) which will be held at Duke University on 1-4 June 2020. The DMC is a co-sponsor for this event. For more information, please visit www.inscits.org.

Upcoming DMC meetings

DMC Microbiome Lunches: This monthly research-in-progress series is held on third Wednesdays at 1PM in 1125 MSRBIII (3 Genome Court), and is open to the entire DMC community. The schedule of speakers can be viewed here. If you would like to present your work in a future DMC Microbiome Lunch, please contact Pat Massard.

DMC Faculty Meetings: The next DMC faculty meeting will be Weds., April 22, at 1PM, in 4122 MSRBIII (3 Genome Court). Lunch will be provided.

Please mark your calendars!

Upcoming Conferences

For a full list of upcoming microbiome conferences, click here.

Microbiome Funding Opportunities

Dear Colleague Letter: Supporting Research Advances in

Microbiomes Award Amount: See solicitation for details (see here) No deadline

Division of Integrative Organismal Systems Core Programs Award Amount: See solicitation for details (see here) No deadline

Enabling Discovery through Genomic Tools (EDGE) \$2,000,000 (see here) No deadline

Engineering of Biomedical Systems Award Amount: See solicitation for details (see here) No deadline

Instrument Capacity for Biological Research (ICBR) Award Amount: See solicitation for details (see here) No deadline

Systems Biology Research to Advance Sustainable Bioenergy Crop

Development \$15,000,000 (see here) Pre-application 1/27/2020, Full Application 3/9/2020

Computational Tool Development for Integrative Systems Biology Data Analysis Award Amount: See solicitation for details (see here) Pre-application 1/31/2020, Full Application 4/9/2020

Translational Medicine and Therapeutics -- Research Starter Grants \$100,000 (see here) 2/1/2020

Translational Medicine and Therapeutics -- Postdoctoral Fellowships \$60,000 (see here) 2/1/2020

NIAID Emerging Leaders in Data Science Fellowship Award Amount: See solicitation for details (see here) 2/8/2020

Short-term Mentored Career Enhancement Award in Dental, Oral and Craniofacial Research for Mid-Career and Senior Investigators (K18 Independent Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 2/12/2020

Dannon Yogurt, Probiotics and the Gut Microbiome Fellowship Grant \$25,000 (see here) 2/14/2020

Small Research Grants for Analyses of Down Syndrome-related Research

Data for the INCLUDE Project (R03 Clinical Trial Not Allowed) Award Amount:

See solicitation for details (see here) 2/14/2020

Innovator Awards for Inflammatory Bowel Disease Research \$200,000 (see here) 2/18/2020

Co-infection and Cancer (R01, R21 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 3/6/2020

Mechanisms Underlying the Contribution of Type 1 Diabetes Diseaseassociated Variants (R01 Clinical Trial Not Allowed) \$3,400,000 (see here) 3/26/2020

Novel Therapeutics Directed to Intracellular HIV Targets (R21 Clinical Trial Not Allowed) \$275,000 (see here) 4/1/2020

Combating Antibiotic-Resistant Bacteria (CARB) Interdisciplinary Research Units (U19 Clinical Trial Not Allowed) \$7,500,000 (see here) 5/8/2020

Initiative to Maximize Research Education in Genomics: Courses (R25 Clinical Trial Not Allowed) \$750,000 (see here) 5/25/2020

Initiative to Maximize Research Education in Genomics: Diversity Action Plan (R25) \$1,500,000 (see here) 5/25/2020

Addressing Chronic Wound Trajectories Through Social Genomics Research (R01, R21- Clinical Trial Optional) Award Amount: See solicitation for details (see here) 6/5/2020

Advancing Mechanistic Probiotic/Prebiotic and Human Microbiome Research (R01) Award Amount: See solicitation for details (see here) 6/5/2020

Advancing Translational and Clinical Probiotic/Prebiotic and Human Microbiome Research (R01 Clinical Trial Optional) Award Amount: See solicitation for details (see here) 6/5/2020

Age-related Microbiota Changes and their Implications in Chronic Disease Prevention, Treatment and Progression (R01, R21 Clinical Trial Optional) Award Amount: See solicitation for details (see here) 6/5/2020

AHRQ -- Large Research Projects for Combating Antibiotic-Resistant Bacteria (CARB) (R01, R18) \$2,500,000 (see here) 6/5/2020

Comparative Genomics Research Program (R01-Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 6/5/2020

Ethical, Legal, and Social Implications (ELSI) of Genomics Research Project Grant Program (R01, R03, R21) Award Amount: See solicitation for details (see here) 6/5/2020

Generating New Insights and Mechanistic Understanding of Antibiotic

Resistance Development (R01, R21 Clinical Trial Not Allowed) Award Amount:

See solicitation for details (see here) 6/5/2020

The Mechanistic Role of the Microbiome in the Pathobiology of Heart, Lung, Blood, and Sleep Diseases (R01 - Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 6/5/2020

Microbial-based Cancer Therapy - Bugs as Drugs (R01, R21 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 6/5/2020

Omics-guided Biobehavioral Interventions for Improved Health Outcomes: A Step Forward in Translation (R01 Clinical Trial Optional) Award Amount: See solicitation for details (see here) 6/5/2020

Research to Advance HBV Cure: HIV/HBV Co-Infection and HBV Mono-

infection (R01 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 6/5/2020

Role of Gut Microbiome in Regulating Reproduction and Its Impact on Fertility Status in Women Living with and Without HIV (R01, R21 Clinical Trial Optional) Award Amount: See solicitation for details (see here) 6/5/2020

Modeling Intestinal Microbiota to Enhance Protective Immune Responses

Against Cancer (R01 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 6/10/2020

Investigator Initiated Research in Computational Genomics and Data Science (R01 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see here) 7/16/2020

Research Opportunities in Space Biology (ROSBio) Award Amount: See solicitation for details (see here) 7/31/2023

News

<u>Chapel Hill startup focusing on precision health, oncology raises \$3M</u> - 12/10/2019 "Xilis, a startup founded by two professors at Duke University focusing on precision health and oncology, has closed on \$3 million in financing."

A window into the hidden world of colons - 12/11/2019

"Biomedical engineers at Duke University have developed a system that allows for real-time observations of individual cells in the colon of a living mouse."

Research network based at Duke Clinical Research Institute awarded up to \$102.5M for work on antibacterial resistance - 12/13/2019

"The Antibacterial Resistance Leadership Group (ARLG), a unique research network for which the Duke Clinical Research Institute (DCRI) acts as a coordinating center, received a federal award worth up to \$102.5 million over

seven years that will continue the ARLG mission to prioritize, design, and execute clinical research to reduce the public health threat of antibacterial resistance."

Fatty meal interrupts gut's communication with the body, but why? - 12/17/2019
"A high-fat meal can silence communication between the intestine and the rest of the body, according to a new Duke University study in zebrafish."

Recent DMC Publications

Litwin SE; Coles A; Hill CL; Alhanti B; Pagidipati N; Lee KL; Pellikka PA; Mark DB; Udelson JE; Cooper L. Discordances between predicted and actual risk in obese patients with suspected cardiac

ischaemia. Heart 10/10/2019 https://scholars.duke.edu/individual/pub1416599

Gogarten JF; Calvignac-Spencer S; Nunn CL; Ulrich M; Saiepour N; Nielsen HV; Deschner T; Fichtel C; Kappeler PM; Knauf S. Metabarcoding of eukaryotic parasite communities describes diverse parasite assemblages spanning the primate phylogeny. *Mol Ecol*

Resour 10/10/2019 https://scholars.duke.edu/individual/pub1415515

Telzrow C; Nichols C; Castro-Lopez N; Wormley F; Alspaugh A. A fungal arrestin protein contributes to cell cycle progression and pathogenesis. *mBio* 10/11/2019 https://scholars.duke.edu/individual/pub1416454

Lydon EC; Henao R; Burke TW; Aydin M; Nicholson BP; Glickman SW; Fowler VG; Quackenbush EB; Cairns CB; Kingsmore SF. Validation of a host response test to distinguish bacterial and viral respiratory infection. *EBioMedicine* 10/17/2019 https://scholars.duke.edu/individual/pub14164
56

Todd JL; Neely ML; Overton R; Durham K; Gulati M; Huang H; Roman J; Newby LK; Flaherty KR; Vinisko R. Peripheral blood proteomic profiling of idiopathic pulmonary fibrosis biomarkers in the multicentre IPF-PRO Registry. *Resp*

Res 10/22/2019 https://scholars.duke.edu/individual/pub1416622

Hompe ED; Jacobson DL; Eudailey JA; Butler K; Edwards W; Pollara J; Brummel SS; Fouda GG; Chinula L; Kamanga M. Maternal Humoral Immune Responses Do Not Predict Postnatal HIV-1 Transmission Risk in Antiretroviral-Treated Mothers from the IMPAACT PROMISE

Study. mSphere 10/23/2019 https://scholars.duke.edu/individual/pub1417020

One Thousand Plant Transcriptomes Initiative. One thousand plant transcriptomes and theÿphylogenomics of green

plants. Nature 10/23/2019 https://scholars.duke.edu/individual/pub1417828

Dore GJ; Feld JJ; Thompson A; Martinello M; Muir AJ; Agarwal K; M□llhaupt B; Wedemeyer H; Lacombe K; Matthews GV. Simplified monitoring for hepatitis C virus treatment with glecaprevir plus pibrentasvir, a randomised non-inferiority trial. *J Hepatol* 10/23/2019 https://scholars.duke.edu/individual/pub1418215

Todd JL; Kelly FL; Nagler A; Banner K; Pavlisko EN; Belperio JA; Brass D; Weigt SS; Palmer SM. Amphiregulin contributes to airway remodeling in chronic allograft dysfunction after lung transplantation. *Am J*

Transplant 10/30/2019 https://scholars.duke.edu/individual/pub1418241

Viswanathan G; Tobin DM. Macrophage ACKRobatics: An atypical Cxcr3 keeps macrophages in check. *J Leukocyte Biol* 10/31/2019 https://scholars.duke.edu/individual/pub1417867

Anderson MR; Kolaitis NA; Gao Y; Kukreja J; Greenland J; Hays S; Wolters P; Golden J; Diamond J; Palmer S. A nonlinear relationship between visceral adipose tissue and frailty in adult lung transplant candidates. *Am J Transplant* 11/1/2019 https://scholars.duke.edu/individual/pub1396039

Armstrong AJ; Szmulewitz RZ; Petrylak DP; Holzbeierlein J; Villers A; Azad A; Alcaraz A; Alekseev B; Iguchi T; Shore ND. ARCHES: A Randomized, Phase III Study of Androgen Deprivation Therapy With Enzalutamide or Placebo in Men With Metastatic Hormone-Sensitive Prostate Cancer. *J Clin*

Oncol 11/1/2019 https://scholars.duke.edu/individual/pub1398365

Cameron AP; Wiseman JB; Smith AR; Merion RM; Gillespie BW; Bradley CS; Amundsen CL; Yang CC; Lai HH; DeLancey JOL. Are three-day voiding diaries feasible and reliable? Results from the Symptoms of Lower Urinary Tract Dysfunction Research Network (LURN) cohort. *Neurourol Urodynam* 11/1/2019 https://scholars.duke.edu/individual/pub1402786

Brahmania M; Lombardero M; Hansen BE; Terrault NA; Lok AS; Perrillo RP; Belle SH; Di Bisceglie AM; Feld JJ; Lee WM. Association Between Severe Serum Alanine Aminotransferase Flares and Hepatitis B e Antigen Seroconversion and HBV DNA Decrease in Untreated Patients With Chronic HBV Infection. *Clin Gastroenterol H* 11/1/2019 https://scholars.duke.edu/individual/pub1417143

Ji R-R; Donnelly CR; Nedergaard M. Astrocytes in chronic pain and itch. *Nat Rev Neurosci* 11/1/2019 https://scholars.duke.edu/individual/pub1411887

Siddiqui NY; Helfand BT; Andreev VP; Kowalski JT; Bradley MS; Lai HH; Berger MB; Mueller MG; Bickhaus JA; Packiam VT. Biomarkers Implicated in Lower Urinary Tract Symptoms: Systematic Review and Pathway Analyses. *J Urology* 11/1/2019 https://scholars.duke.edu/individual/pub1379939

Bruls YM; de Ligt M; Lindeboom L; Phielix E; Havekes B; Schaart G; Kornips E; Wildberger JE; Hesselink MK; Muoio D. Carnitine supplementation improves metabolic flexibility and skeletal muscle acetylcarnitine formation in volunteers with impaired glucose tolerance: A randomised controlled trial. *EBioMedicine* 11/1/2019 https://scholars.duke.edu/individual/pub1421897

Berkowitz JN; Skinner AC; Lohr JA. Carrying the Weight: Athletics and Obesity in High School Football Players. *Clin*Pediatr 11/1/2019 https://scholars.duke.edu/individual/pub1388283

Souli M; Ruffin F; Choi S-H; Park LP; Gao S; Lent NC; Sharma-Kuinkel BK; Thaden JT; Maskarinec SA; Wanda L. Changing Characteristics of Staphylococcus aureus Bacteremia: Results From a 21-Year, Prospective, Longitudinal Study. *Clin*

Infect Dis 11/1/2019 https://scholars.duke.edu/individual/pub1380919

Zhu J; Tucker M; Marin D; Gupta RT; Healy P; Humeniuk M; Jarvis C; Zhang T; McNamara M; George DJ. Clinical utility of FoundationOne tissue molecular profiling in men with metastatic prostate cancer. *Urol Oncol* 11/1/2019 https://scholars.duke.edu/individual/pub1397929

Agusman; Qi Y; Wu Z; He J; Rittschof D; Su P; Ke C; Feng D. Conspecific cues that induce spore settlement in the biofouling and green tide-forming alga Ulva tepida provide a potential aggregation mechanism. *Int Biodeterior Biodegration* 11/1/2019 https://scholars.duke.edu/individual/pub1417202

Navarro-Mendoza MI; P,rez-Arques C; Panchal S; Nicol s FE; Mondo SJ; Ganguly P; Pangilinan J; Grigoriev IV; Heitman J; Sanyal K. Early Diverging Fungus Mucor circinelloides Lacks Centromeric Histone CENP-A and Displays a Mosaic of Point and Regional Centromeres. *Curr*

Biol 11/1/2019 https://scholars.duke.edu/individual/pub1409839

Tsoi R; Dai Z; You L. Emerging strategies for engineering microbial communities. *Biotechnol Adv* 11/1/2019 https://scholars.duke.edu/individual/pub1376171

Chang Z; Yadav V; Lee SC; Heitman J. Epigenetic mechanisms of drug resistance in fungi. *Fungal Genet*

Biol 11/1/2019 https://scholars.duke.edu/individual/pub1397838

Gardner CM; Volkoff SJ; Gunsch CK. Examining the behavior of crop-derived antibiotic resistance genes in anaerobic sludge batch reactors under thermophilic conditions. *Biotechnol*

Bioeng 11/1/2019 https://scholars.duke.edu/individual/pub1404490

Amoroso CR; Kappeler PM; Fichtel C; Nunn CL. Fecal contamination, parasite risk, and waterhole use by wild animals in a dry deciduous forest. *Behav Ecol Sociobiol* 11/1/2019 https://scholars.duke.edu/individual/pub1422632

Kelly MS; Ward DV; Severyn CJ; Arshad M; Heston SM; Jenkins K; Martin PL; McGill L; Stokhuyzen A; Bhattarai SK. Gut Colonization Preceding Mucosal Barrier Injury Bloodstream Infection in Pediatric Hematopoietic Stem Cell Transplantation Recipients. Biol Blood Marrow

Tr 11/1/2019 https://scholars.duke.edu/individual/pub1397931

Ocal S; Muir AJ; Naggie S. Hepatitis C Behind and Beyond Bars: Targeting the US Prison Population and Changing North Carolina Prisoner Health Policy. N C Med J 11/1/2019 https://scholars.duke.edu/individual/pub1418216

Martinu T; McManigle WC; Kelly FL; Nelson ME; Sun J; Zhang HL; Kolls JK; Gowdy KM; Palmer SM. IL-17A Contributes to Lung Fibrosis in a Model of Chronic Pulmonary Graft-versus-host

Disease. Transplantation 11/1/2019 https://scholars.duke.edu/individual/pub14181 73

Gerhard WA; Lundgreen K; Drillet G; Baumler R; Holbech H; Gunsch CK. Installation and use of ballast water treatment systems -- Implications for compliance and enforcement. Ocean Coast Manag 11/1/2019 https://scholars.duke.edu/individual/pub1412297

Darwiche S; Terrell L; Skinner AC; Narayan AP. Kinship Care and Foster Care: A Comparison of Out-of-Home Placement From the Perspective of Child Abuse Experts in North Carolina. N C Med

J 11/1/2019 https://scholars.duke.edu/individual/pub1418225

Stein-Thoeringer CK; Nichols KB; Lazrak A; Docampo MD; Slingerland AE; Slingerland JB; Clurman AG; Armijo G; Gomes ALC; Shono Y. Lactose drives Enterococcus expansion to promote graft-versus-host disease. Science 11/1/2019 https://scholars.duke.edu/individual/pub1422336

Gerhard WA; Gunsch CK. Microbiome composition and implications for ballast water classification using machine learning. Sci Total Environ 11/1/2019 https://scholars.duke.edu/individual/pub1398471

Yuan F; Hankey W; Wu D; Wang H; Somarelli J; Armstrong AJ; Huang J; Chen Z; Wang Q. Molecular determinants for enzalutamide-induced transcription in prostate cancer. *Nucleic Acids*

Res 11/1/2019 https://scholars.duke.edu/individual/pub1409757

George DJ; Halabi S; Healy P; Barak I; Winters C; Anand M; Wilder R; Klein M; Martinez E; Nixon AB. Phase 1b trial of docetaxel, prednisone, and pazopanib in men with metastatic castration-resistant prostate cancer. *Prostate* 11/1/2019 https://scholars.duke.edu/individual/pub1409756

Armstrong AJ; Lin P; Higano CS; Iversen P; Sternberg CN; Tombal B; Phung D; Parli T; Krivoshik A; Beer TM. Prognostic Association of Prostate-specific Antigen Decline with Clinical Outcomes in Men with Metastatic Castration-resistant Prostate Cancer Treated with Enzalutamide in a Randomized Clinical Trial. *Eur Urol Oncol* 11/1/2019 https://scholars.duke.edu/individual/pub1395707

McKee DC; Gonzalez EJ; Amundsen CL; Grill WM. Randomized Controlled Trial to Assess the Impact of High Concentration Intraurethral Lidocaine on Urodynamic Voiding

Parameters. Urology 11/1/2019 https://scholars.duke.edu/individual/pub1406414

Park J; Lee JM; Koo B-K; Choi G; Hwang D; Rhee T-M; Yang S; Park J; Zhang J; Kim K-J. Relevance of anatomical, plaque, and hemodynamic characteristics of non-obstructive coronary lesions in the prediction of risk for acute coronary syndrome. *Eur Radiol* 11/1/2019 https://scholars.duke.edu/individual/pub1381791

Andy UU; Amundsen CL; Honeycutt E; Markland AD; Dunivan G; Dyer KY; Korbly NB; Bradley M; Vasavada S; Mazloomdoost D. Sacral neuromodulation versus onabotulinumtoxinA for refractory urgency urinary incontinence: impact on fecal incontinence symptoms and sexual function. *Am J Obstet Gynecol* 11/1/2019 https://scholars.duke.edu/individual/pub1393796

Samy KP; Gao Q; Davis RP; Song M; Fitch ZW; Mulvihill MS; MacDonald AL; Leopardi FV; How T; Williams KD. The role of human CD46 in early xenoislet engraftment in a dual transplant

model. *Xenotransplantation* 11/1/2019 https://scholars.duke.edu/individual/pub139 3496

Lehrnbecher T; Fisher BT; Phillips B; Alexander S; Ammann RA; Beauchemin M; Carlesse F; Castagnola E; Davis BL; Dupuis LL. Guideline for Antibacterial Prophylaxis Administration in Pediatric Cancer and Hematopoietic Stem Cell Transplantation. *Clin Infect*

Dis 11/2/2019 https://scholars.duke.edu/individual/pub1417908

Beggs GA; Brennan RG; Arshad M. MarR family proteins are important regulators of clinically relevant antibiotic resistance. *Protein Sci* 11/4/2019 https://scholars.duke.edu/individual/pub1418525

Chang Z; Heitman J. Drug-Resistant Epimutants Exhibit Organ-Specific Stability and Induction during Murine Infections Caused by the Human Fungal Pathogen Mucor

circinelloides. mBio 11/5/2019 https://scholars.duke.edu/individual/pub1418070

Russo JJ; Prasad M; Doshi D; Karmpaliotis D; Parikh MA; Ali ZA; Popma JJ; Pershad A; Ohman EM; Douglas PS. Improvement in left ventricular function following higher-risk percutaneous coronary intervention in patients with ischemic cardiomyopathy. *Catheter Cardio*

Inte 11/6/2019 https://scholars.duke.edu/individual/pub1418213

Vilme H; Duke NN; Muiruri C; Wordlaw L; Skinner AC. Using Telehealth to Disseminate Primary, Secondary, and Tertiary CVD Interventions to Rural Populations. Curr Hypertens Rep

11/7/2019 https://scholars.duke.edu/individual/pub1421562

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Levitsky J; Burrell BE; Kanaparthi S; Turka LA; Kurian S; Sanchez-Fueyo A; Lozano JJ; Demetris A; Lesniak A; Kirk AD. Immunosuppression withdrawal in liver transplant recipients on sirolimus. *Hepatology* 11/13/2019 https://scholars.duke.edu/individual/pub1421709

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Abu-Raya B; Goldfarb DM; Smieja M; Luinstra K; Richard-Greenblatt M; Steenhoff AP; Feemster KA; Arscott-Mills T; Cunningham CK; Shah SS. The prevalence and clinical characteristics of pertussis-associated pneumonia among infants in Botswana. *BMC*

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Trial. JAMA Cardiol 11/18/2019 https://scholars.duke.edu/individual/pub1422005

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States. Helicobacter 11/20/2019 https://scholars.duke.edu/individual/pub1421640

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neoformans. *mSphere* 11/20/2019 https://scholars.duke.edu/individual/pub142148

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