

Fall 2019



Duke Microbiome Center

Welcome to the 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](mailto:Pat.Massard@duke.edu). For further information on the DMC, please visit our [website](http://www.duke.edu/microbiome).

First National Microbiome Center Meeting

The Duke Microbiome Center helped organize the first National Microbiome Center Meeting, which took place in Irvine, CA on July 11th, 2019. In attendance were representatives from roughly two dozen other American universities' microbiome centers and initiatives, as well as journal editors and philanthropic foundation staff. The overall goals of the meeting were to: 1) discuss the roles of microbiome centers within universities; 2) share best practices for center research services, teaching, and outreach, and 3) identify

microbiome research and policy areas in which inter-center coordination would benefit. Ideas that were presented by meeting attendees included the creation of institutional data repositories for 16S rRNA gene sequencing data, coordination of culture collections within and between universities, and standardization of human study protocol verbiage for institutional review boards. Meeting products are expected to include a website for member centers, a summary white paper for journal submission, and a follow-up meeting in June, 2020 in Chicago, IL.

Lawrence David, Ph.D.

Associate Director, Duke Microbiome Center

Duke Symposium on Food Systems, Nutrition and the Microbiome on Tuesday November 12

Duke University's Symposium on Food Systems, Nutrition, and the Microbiome will be held 9AM-5PM on Tuesday, November 12th, 2019, in the Great Hall at Trent Semans Center, Duke University School of Medicine.

Food systems are fundamental to human, animal, and planetary health. The availability and composition of food in turn has shaped the evolution of human and animal physiology and can contribute to diverse metabolic diseases. The microbiome is increasingly appreciated as an integral part of this continuum from agriculture to nutritional physiology. The goal of this symposium is to explore the frontiers of the exciting interactions between food systems, nutrition, and the microbiome, and emerging medical, ethical, and policy implications.

For more information about the symposium, go [here](#).

Computational Resources at Duke

Microbiome research frequently relies on computational approaches, and we are fortunate at Duke to have a wide range of computing resources available. To help DMC members understand and navigate this rich landscape, the DMC Bioinformatics Group has developed a new [Computational Resource](#) page which describes those available assets and explains the differences between them. Click [here](#) to learn more.

Funding opportunities through the DMC

The DMC has one active funding opportunity:

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](#).

Upcoming DMC meetings

DMC Microbiome Lunches: This monthly research-in-progress series is held on third Wednesdays at 12PM in CARL 0010, 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 January 29th, 1PM, in CIEMAS 2240. Future DMC faculty meetings will be 4/22, with all meetings at 1PM in CIEMAS 2240 (lunch provided).

Please mark your calendars now!

Core Facility Highlights

The DMC supports and advises several core facilities at Duke that support the microbiome sciences. This includes the [Duke Microbiome Shared Resource](#), the [Duke Genomics Analysis and Bioinformatics Shared Resource](#), and the [Duke Gnotobiotic Core](#). In this newsletter we highlight ...

Upcoming Conferences

For a full list of upcoming microbiome conferences, click [here](#).

Microbiome Funding Opportunities

Noster & Science Microbiome Prize \$25,000 (see [here](#)) 1/24/2020

Microbiome and Aging: Impact on Health and Disease (R01 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see [here](#)) 10/31/2019

Modulating Intestinal Microbiota to Enhance Protective Immune Responses against Cancer (R01 Clinical Trial Not Allowed) Award Amount: See solicitation for details (see [here](#)) 11/6/2019

Recent DMC Publications

Singh A; Permar S; Kollmann TR; Levy O; Marovich M; De Paris K AIDS Vaccine Research Subcommittee (AVRS) Consultation: Early-Life Immunization Strategies against HIV Acquisition. 7/17/2019
<https://scholars.duke.edu/individual/pub1398376>

Chang Z; Yadav V; Lee SC; Heitman J Epigenetic mechanisms of drug resistance in fungi. 7/17/2019 <https://scholars.duke.edu/individual/pub1397838>

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. 7/18/2019

<https://scholars.duke.edu/individual/pub1397931>

Carbone I; White JB; Miadlikowska J; Arnold AE; Miller MA; Magain N; U'Ren JM; Lutzoni F T-BAS Version 2.1: Tree-Based Alignment Selector Toolkit for Evolutionary Placement of DNA Sequences and Viewing Alignments and Specimen Metadata on Curated and Custom Trees. 7/18/2019

<https://scholars.duke.edu/individual/pub1398720>

Armaleo D; Müller O; Lutzoni F; Andrésón ÓS; Blanc G; Bode HB; Collart FR; Dal Grande F; Dietrich F; Grigoriev IV The lichen symbiosis re-viewed through the genomes of *Cladonia grayi* and its algal partner *Asterochloris glomerata*.

7/23/2019 <https://scholars.duke.edu/individual/pub1401339>

Ianiri G; Dagotto G; Sun S; Heitman J Advancing Functional Genetics Through Agrobacterium-Mediated Insertional Mutagenesis and CRISPR/Cas9 in the Commensal and Pathogenic Yeast *Malassezia*. 8/1/2019

<https://scholars.duke.edu/individual/pub1395643>

Sixt BS; Núñez-Otero C; Kepp O; Valdivia RH; Kroemer G Chlamydia trachomatis fails to protect its growth niche against pro-apoptotic insults.

8/1/2019 <https://scholars.duke.edu/individual/pub1357557>

Hurst JH; Barrett KJ; Kelly MS; Staples BB; McGann KA; Cunningham CK; Reed AM; Gbadegesin RA; Permar SR Cultivating Research Skills During Clinical Training to Promote Pediatric-Scientist Development. 8/1/2019

<https://scholars.duke.edu/individual/pub1402336>

Řežábková L; Brabec J; Jirků M; Dellerba M; Kuchta R; Modrý D; Parker W; Jirků Pomajbíková K Genetic diversity of the potentially therapeutic tapeworm *Hymenolepis diminuta* (Cestoda: Cyclophyllidea). 8/1/2019

<https://scholars.duke.edu/individual/pub1381150>

Sun S; Lin X; Coelho MA; Heitman J Mating-System Evolution: All Roads Lead to Selfing. 8/1/2019 <https://scholars.duke.edu/individual/pub1402891>

Breitbach ME; Newman CM; Dudley DM; Stewart LM; Aliota MT; Koenig MR; Shepherd PM; Yamamoto K; Crooks CM; Young G Primary infection with dengue or Zika virus does not affect the severity of heterologous secondary infection in macaques. 8/1/2019

<https://scholars.duke.edu/individual/pub1402395>

Nelson AN; Goswami R; Dennis M; Tu J; Mangan RJ; Saha PT; Cain DW; Curtis AD; Shen X; Shaw GM Simian-Human Immunodeficiency Virus SHIV.CH505-Infected Infant and Adult Rhesus Macaques Exhibit Similar Env-Specific Antibody Kinetics, despite Distinct T-Follicular Helper and Germinal Center B Cell Landscapes. 8/1/2019

<https://scholars.duke.edu/individual/pub1385862>

Kim-Chang JJ; Wilson L; Chan C; Fischer B; Venturi G; Goodenow MM; Aldrovandi G; Weber TJ; Sleasman JW; Adolescent Medicine Trials Network for HIV/AIDS Interventions Tenofovir Has Minimal Effect on Biomarkers of Bone Health in Youth with HIV Receiving Initial Antiretroviral Therapy. 8/1/2019

<https://scholars.duke.edu/individual/pub1395074>

Manolio TA; Rowley R; Williams MS; Roden D; Ginsburg GS; Bult C; Chisholm RL; Deverka PA; McLeod HL; Mensah GA Opportunities, resources, and techniques for implementing genomics in clinical care. 8/5/2019

<https://scholars.duke.edu/individual/pub1404487>

Espenschied ST; Cronan MR; Matty MA; Mueller O; Redinbo MR; Tobin DM; Rawls JF Epithelial delamination is protective during pharmaceutical-induced enteropathy. 8/7/2019 <https://scholars.duke.edu/individual/pub1404014>

Gardner CM; Volkoff SJ; Gunsch CK Examining the behavior of crop-derived antibiotic resistance genes in anaerobic sludge batch reactors under thermophilic conditions. 8/7/2019

<https://scholars.duke.edu/individual/pub1404490>

Butt J; Epplein M Helicobacter pylori and colorectal cancer-A bacterium going abroad? 8/8/2019 <https://scholars.duke.edu/individual/pub1404300>

Casadei E; Tacchi L; Lickwar CR; Espenschied ST; Davison JM; Muñoz P; Rawls JF; Salinas I Commensal bacteria regulate gene expression and differentiation in vertebrate olfactory systems through transcription factor REST. 8/12/2019 <https://scholars.duke.edu/individual/pub1404322>

Dudiak BM; Maksimchuk KR; Bednar MM; Podracky CJ; Burg JM; Nguyen TM; Nwogbo FO; Valdivia RH; McCafferty DG Insights into the Autoproteolytic Processing and Catalytic Mechanism of the Chlamydia trachomatis Virulence-Associated Protease CPAF. 8/12/2019

<https://scholars.duke.edu/individual/pub1409905>

Bardone-Cone AM; Johnson S; Raney TJ; Zucker N; Watson HJ; Bulik CM

Eating disorder recovery in men: A pilot study. 8/16/2019

<https://scholars.duke.edu/individual/pub1404917>

Hackley RK; Schmid AK Global Transcriptional Programs in Archaea Share Features with the Eukaryotic Environmental Stress Response. 8/19/2019

<https://scholars.duke.edu/individual/pub1406455>

Park J; Levic DS; Sumigray KD; Bagwell J; Eroglu O; Block CL; Eroglu C; Barry R; Lickwar CR; Rawls JF Lysosome-Rich Enterocytes Mediate Protein Absorption in the Vertebrate Gut. 8/20/2019

<https://scholars.duke.edu/individual/pub1406575>

Yoneshiro T; Wang Q; Tajima K; Matsushita M; Maki H; Igarashi K; Dai Z; White PJ; McGarrah RW; Ilkayeva OR BCAA catabolism in brown fat controls energy homeostasis through SLC25A44. 8/21/2019

<https://scholars.duke.edu/individual/pub1405163>

Williams RC; Blanco MB; Poelstra JW; Hunnicutt KE; Comeault AA; Yoder AD Conservation genomic analysis reveals ancient introgression and declining levels of genetic diversity in Madagascar's hibernating dwarf lemurs. 8/21/2019

<https://scholars.duke.edu/individual/pub1406496>

Grogan KE; Harris RL; Boulet M; Drea CM Genetic variation at MHC class II loci influences both olfactory signals and scent discrimination in ring-tailed lemurs. 8/22/2019 <https://scholars.duke.edu/individual/pub1406884>

Singh T; Lopez CA; Giuberti C; Dennis ML; Itell HL; Heimsath HJ; Webster HS; Roark HK; Merçon de Vargas PR; Hall A Efficient transplacental IgG transfer in women infected with Zika virus during pregnancy. 8/26/2019

<https://scholars.duke.edu/individual/pub1406435>

Fu C; Coelho MA; David-Palma M; Priest SJ; Heitman J Genetic and genomic evolution of sexual reproduction: echoes from LECA to the fungal kingdom.

8/29/2019 <https://scholars.duke.edu/individual/pub1406355>

Freedland SJ; Howard L; Allen J; Smith J; Stout J; Aronson W; Inman BA; Armstrong AJ; George D; Westman E A lifestyle intervention of weight loss via a low-carbohydrate diet plus walking to reduce metabolic disturbances caused by androgen deprivation therapy among prostate cancer patients: carbohydrate and prostate study 1 (CAPS1) randomized controlled trial. 9/1/2019

<https://scholars.duke.edu/individual/pub1366837>

Herrera J; Nunn CL Behavioural ecology and infectious disease: implications for conservation of biodiversity. 9/1/2019

<https://scholars.duke.edu/individual/pub1402621>

Jelovsek JE; Markland AD; Whitehead WE; Barber MD; Newman DK; Rogers RG; Dyer K; Visco AG; Sutkin G; Zyczynski HM Controlling faecal incontinence in women by performing anal exercises with biofeedback or loperamide: a randomised clinical trial. 9/1/2019

<https://scholars.duke.edu/individual/pub1379838>

Heitman J E Pluribus Unum: The Fungal Kingdom as a Rosetta Stone for Biology and Medicine. 9/1/2019

<https://scholars.duke.edu/individual/pub1409840>

Chen Z; Newgard CB; Kim JS; Ilkayeva O; Alderete TL; Thomas DC; Berhane K; Breton C; Chatzi L; Bastain TM Near-roadway air pollution exposure and altered fatty acid oxidation among adolescents and young adults - The interplay

with obesity. 9/1/2019 <https://scholars.duke.edu/individual/pub1394735>

Liu AB; Liu Q; Yang CC; Griffith JW; Smith AR; Helmuth ME; Lai HH; Amundsen CL; Erickson BA; Jelovsek JE Patient Characteristics Associated with More Bother from Lower Urinary Tract Symptoms. 9/1/2019 <https://scholars.duke.edu/individual/pub1383503>

Armstrong S; Wong C Physical Activity Interventions Improve Quality of Life of Children With Obesity: Should We Expect Them to Also Decrease Body Mass Index? 9/1/2019 <https://scholars.duke.edu/individual/pub1398510>

Pianalto KM; Billmyre RB; Telzrow CL; Alspaugh JA Roles for Stress Response and Cell Wall Biosynthesis Pathways in Caspofungin Tolerance in *Cryptococcus neoformans*. 9/1/2019 <https://scholars.duke.edu/individual/pub1396198>

Simons ND; Tung J Social Status and Gene Regulation: Conservation and Context Dependence in Primates. 9/1/2019 <https://scholars.duke.edu/individual/pub1398109>

Marano AL; Clarke JM; Morse MA; Shah A; Barrow W; Selim MA; Hall RP; Cardones AR Subacute cutaneous lupus erythematosus and dermatomyositis associated with anti-programmed cell death 1 therapy. 9/1/2019 <https://scholars.duke.edu/individual/pub1350481>

Finn SMB; Scheuermann U; Holzkecht ZE; Gao Q; Ibrahim MM; Parker W; Granek JA; Lin SS; McKenney EA; Barbas AS The effect of levofloxacin on the lung microbiota of laboratory rats. 9/1/2019 <https://scholars.duke.edu/individual/pub1397909>

Goswami R; Nelson AN; Tu JJ; Dennis M; Feng L; Kumar A; Mangold J; Mangan RJ; Mattingly C; Curtis AD Analytical Treatment Interruption after Short-Term Antiretroviral Therapy in a Postnatally Simian-Human Immunodeficiency Virus-Infected Infant Rhesus Macaque Model. 9/5/2019 <https://scholars.duke.edu/individual/pub1409814>

Maness NJ; Schouest B; Singapuri A; Dennis M; Gilbert MH; Bohm RP; Schiro F; Aye PP; Baker K; Van Rompay KKA Postnatal Zika virus infection of nonhuman primate infants born to mothers infected with homologous Brazilian Zika virus. 9/5/2019 <https://scholars.duke.edu/individual/pub1409906>

Sun S; Coelho MA; Heitman J; Nowrousian M Convergent evolution of linked mating-type loci in basidiomycete fungi. 9/6/2019 <https://scholars.duke.edu/individual/pub1409841>

Ruchlemer R; Ben-Ami R; Bar-Meir M; Brown JR; Malphettes M; Mous R; Tonino SH; Soussain C; Barzic N; Messina JA Ibrutinib associated invasive fungal diseases in patients with CLL and non-Hodgkin lymphoma: an observational study. 9/13/2019 <https://scholars.duke.edu/individual/pub1412162>

Juvvadi PR; Fox D; Bobay BG; Hoy MJ; Gobeil SMC; Venters RA; Chang Z; Lin JJ; Averette AF; Cole DC Harnessing calcineurin-FK506-FKBP12 crystal structures from invasive fungal pathogens to develop antifungal agents. 9/19/2019 <https://scholars.duke.edu/individual/pub1411818>

Sun S; Coelho MA; David-Palma M; Priest S; Heitman J The Evolution of Sexual Reproduction and the Mating-Type Locus: Links to Pathogenesis of

Cryptococcus Human Pathogenic Fungi. 9/19/2019

<https://scholars.duke.edu/individual/pub1411860>

Fu C; Thielhelm TP; Heitman J Unisexual reproduction promotes competition for mating partners in the global human fungal pathogen *Cryptococcus deneoformans*. 9/19/2019 <https://scholars.duke.edu/individual/pub1411859>

Patel SM; Jallow S; Boiditswe S; Madhi SA; Feemster KA; Steenhoff AP; Arscott-Mills T; Muthoga C; Ajibola G; Shapiro R Placental Transfer of Respiratory Syncytial Virus Antibody Among HIV-Exposed, Uninfected Infants. 9/24/2019 <https://scholars.duke.edu/individual/pub1412336>

Wang S; Fan K; Luo N; Cao Y; Wu F; Zhang C; Heller KA; You L Massive computational acceleration by using neural networks to emulate mechanism-based biological models. 9/25/2019

<https://scholars.duke.edu/individual/pub1412140>

Hwang S; Chavarria NE; Hackley RK; Schmid AK; Maupin-Furlow JA Gene Expression of *Haloferax volcanii* on Intermediate and Abundant Sources of Fixed Nitrogen. 9/26/2019 <https://scholars.duke.edu/individual/pub1415259>

Coppola T; Mangold JF; Cantrell S; Permar SR Impact of Maternal Immunity on Congenital Cytomegalovirus Birth Prevalence and Infant Outcomes: A Systematic Review. 9/26/2019 <https://scholars.duke.edu/individual/pub1414431>

Choi J; Rakhilin N; Gadamsetty P; Joe DJ; Tabrizian T; Lipkin SM; Huffman DM; Shen X; Nishimura N Author Correction: Intestinal crypts recover rapidly from focal damage with coordinated motion of stem cells that is impaired by aging. 9/30/2019 <https://scholars.duke.edu/individual/pub1414999>

Sharma G; Sarma AA; Walsh MN; Hayes SN; Sahni S; Brown S-A; Singh T; Harrington RA; Douglas PS; Duvernoy CS 10 Recommendations to Enhance Recruitment, Retention, and Career Advancement of Women Cardiologists. 10/1/2019 <https://scholars.duke.edu/individual/pub1415068>

Redfern LK; Gardner CM; Hodzic E; Ferguson PL; Hsu-Kim H; Gunsch CK A new framework for approaching precision bioremediation of PAH contaminated soils. 10/1/2019 <https://scholars.duke.edu/individual/pub1397851>

Handfield C; Kwock J; Hoang P; MacLeod AS Activation of nociceptive fibers following skin injury triggers antiviral host defense immunity 10/1/2019 <https://scholars.duke.edu/individual/pub1410049>

Park H-S; Lee SC; Cardenas ME; Heitman J Calcium-Calmodulin-Calcineurin Signaling: A Globally Conserved Virulence Cascade in Eukaryotic Microbial Pathogens. 10/1/2019 <https://scholars.duke.edu/individual/pub1407253>

Kadokia R; Talbot O; Kuang A; Bain JR; Muehlbauer MJ; Stevens RD; Ilkayeva OR; Lowe LP; Metzger BE; Newgard CB Cord Blood Metabolomics: Association With Newborn Anthropometrics and C-Peptide Across Ancestries. 10/1/2019 <https://scholars.duke.edu/individual/pub1409762>

Li R; Utevsky AV; Huettel SA; Braams BR; Peters S; Crone EA; van Duijvenvoorde ACK Developmental Maturation of the Precuneus as a Functional Core of the Default Mode Network. 10/1/2019 <https://scholars.duke.edu/individual/pub1386166>

Softic S; Meyer JG; Wang G-X; Gupta MK; Batista TM; Lauritzen HPMM;

Fujisaka S; Serra D; Herrero L; Willoughby J Dietary Sugars Alter Hepatic Fatty Acid Oxidation via Transcriptional and Post-translational Modifications of Mitochondrial Proteins. 10/1/2019

<https://scholars.duke.edu/individual/pub1412416>

Elphinstone RE; Weckman AM; McDonald CR; Tran V; Zhong K; Madanitsa M; Kalilani-Phiri L; Khairallah C; Taylor SM; Meshnick SR Early malaria infection, dysregulation of angiogenesis, metabolism and inflammation across pregnancy, and risk of preterm birth in Malawi: A cohort study. 10/1/2019

<https://scholars.duke.edu/individual/pub1415214>

Herzog DP; Mattingly JC Ergodicity and Lyapunov Functions for Langevin Dynamics with Singular Potentials 10/1/2019

<https://scholars.duke.edu/individual/pub1284507>

Mba Medie F; Sharma-Kuinkel BK; Ruffin F; Chan LC; Rossetti M; Chang Y-L; Park LP; Bayer AS; Filler SG; Ahn R Genetic variation of DNA methyltransferase-3A contributes to protection against persistent MRSA bacteremia in patients. 10/1/2019

<https://scholars.duke.edu/individual/pub1411777>

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<https://scholars.duke.edu/individual/pub1414974>

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<https://scholars.duke.edu/individual/pub1373123>

Wen Y; Lu X; Ren J; Privratsky JR; Yang B; Rudemiller NP; Zhang J; Griffiths R; Jain MK; Nedospasov SA KLF4 in Macrophages Attenuates TNF α -Mediated Kidney Injury and Fibrosis. 10/1/2019

<https://scholars.duke.edu/individual/pub1402081>

Butt J; Varga MG; Wang T; Tsugane S; Shimazu T; Zheng W; Abnet CC; Yoo K-Y; Park SK; Kim J Smoking, Helicobacter Pylori Serology, and Gastric Cancer Risk in Prospective Studies from China, Japan, and Korea. 10/1/2019

<https://scholars.duke.edu/individual/pub1388302>

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<https://scholars.duke.edu/individual/pub1406850>

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Reese AT; Kartzinel TR; Petrone BL; Turnbaugh PJ; Pringle RM; David LA Using DNA Metabarcoding To Evaluate the Plant Component of Human Diets: a Proof of Concept. 10/8/2019 <https://scholars.duke.edu/individual/pub1415375>
