



Duke Microbiome Center

Spring 2021 DMC Newsletter

This quarterly newsletter is provided by the Duke Microbiome Center (DMC) 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. To suggest items for this newsletter or to add someone to our newsletter listserv, please email [Pat Massard](mailto:pat.massard@duke.edu). For further information on the DMC, please visit our [website](https://www.duke.edu/microbiome).

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A Message from the Director:

Dear DMC Community,

As spring winds down and summer heats up, 2021 has already proven to be a big year for the DMC and Duke University. Here are just a few exciting highlights and opportunities:

- *First*, the DMC has launched **two new programs** - the [DMC Seminar Series](#) and the DMC Startup Club. More details on these new programs are provided below.
- *Second*, several DMC faculty recently received **prestigious recognition** for their work: Anne Yoder (American Academy of Arts and Sciences), Joe Heitman (National Academy of Sciences), Gianna Hammer and Lawrence David (Burroughs Welcome Fund Investigators in the Pathogenesis of Infectious Disease), and John Rawls (American Academy of Microbiology). We celebrate these individual achievements as well as the community and institutional environment that helped make them possible.
- *Third*, 2021 is bringing into focus a new array of commitments and action plans across Duke Health and Duke University to help us become a more diverse, equitable, inclusive, and anti-racist community. I hope you will all continue to stay abreast of the **"Moments to Movements"** initiatives at the [School of Medicine](#) and [Duke University](#). In particular, I draw your attention to the recently announced [pledge against racism](#). The ability of our institution to live into these goals will depend heavily on us as community members to understand and sustain these commitments and efforts in the months and

years to come. We each have an important role to play in this movement, so please take the time to learn about the "Moments to Movements" initiatives and look for ways you can engage.

Best wishes for health and success,

John Rawls

Director, Duke Microbiome Center

Funding Opportunities through the DMC

The DMC current 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](#). Note that these vouchers can only be applied to the following core facilities: [Gnotobiotic Core](#), [Microbiome Core Facility](#), [Sequencing and Genomic Technologies Shared Resource](#), and [Genomic Analysis and Bioinformatics Shared Resource](#).

Duke Startup Club launches!

The Duke Microbiome Center has initiated the [DMC Startup Club](#). Led by Dr. Raphael Valdivia, the DMC Startup Club is bringing together community members from DMC and the rest of the Duke community to learn about translation, commercialization, and company formation in the microbiome sciences. The timing for this initiative is ideal, as venture investment in microbiome technologies is large and growing, and DMC labs have a number of different projects that need to be vetted. By focusing on translation and commercialization, we hope to motivate a culture shift on how DMC labs think about their own microbiome research. The DMC Startup Club provides a venue for understanding the current microbiome commercialization space and identify needs and opportunities. It also creates opportunities to learn about financing trends and opportunities in venture capital with a focus on the microbiome. Speakers include experts in venture capital, intellectual property and licensing, as well as CEOs and founders of microbiome companies. This will allow the DMC community to learn about the ABCs of starting a company and build professional networks that can help them do so. If you would like to receive updates on DMC Startup Club activities, please email Pat Massard <patricia.massard@duke.edu>.

DMC Seminar Series will return in the fall!

This spring we launched the [DMC Seminar Series](#) and our final speaker in this inaugural season will be on June 2nd with [Ariangela J. Kozik, Ph.D.](#) from University of Michigan-Ann Arbor (*"Airway microbial-immune relationships in adult asthma"*). We will restart the DMC Seminar Series in the fall, and thanks to all of you who nominated speakers for that series. We will be in touch soon with the final speaker list and dates.

Updates from the Microbiome Centers Consortium

The [Microbiome Centers Consortium \(MCC\)](#) is an organization of microbiome centers in the US that seeks to leverage these centers to accelerate knowledge transfer in the field. The Duke Microbiome Center is an affiliate member of the MCC. If you are not already on the MCC listserv, please consider registering [here](#). Several important updates from the MCC are listed below, along with links to learn more:

- The MCC Seminar Series which also launched this past year will return in the fall. Please register for the MCC listserv above to receive updates.
- The MCC Education Committee is preparing a centralized resource for microbiome bioinformatics software and associated training opportunities. This new resource will be available on the MCC website later this year, but examples include Ohio State University's [list of information tools](#) and [recorded webinar series](#), platforms like [Anvi'o](#), [Cyverse](#), [IMG/M](#), [QIIME2](#) including its [new YouTube channel](#), and [KBase](#).
- The MCC is seeking to increase awareness of the [National Microbiome Data Collaborative \(NMDC\)](#), a community-driven national effort aimed to develop standards, processes, and infrastructure for an integrated microbiome data ecosystem. Their initiatives include a [new ASM Microbiome Data Prize](#), an [NMDC Ambassadors Program](#) targeting early career researchers, and a [new data portal](#) launched last year. To stay updated on NMDC activities and receive their quarterly newsletter, you can register for their listserv [here](#).

Upcoming DMC Meetings

** Note: all DMC seminars and faculty meetings will be held remotely until further*

*notice. Videoconference links will be provided by email. **

DMC Seminar Series: This monthly seminar series is currently held on *first* Wednesdays each month at 12PM. The DMC Seminar Series is organized by graduate students, postdocs, and fellows in DMC labs, and provides DMC trainees opportunities to build their networks and meet leaders in the field. For the last seminar of the academic year on Wednesday, June 2nd, we're happy to welcome [Ariangela J Kozik, PhD](#), Research Fellow in the Department of Internal Medicine at the University of Michigan Medical School, who will be presenting on "*Airway Microbial-Immune Relationships in Adult Asthma*".

DMC Microbiome Noon Research-In-Progress Series: This monthly research-in-progress series is held on *third* Wednesdays at 12PM and is open to the entire DMC community. The schedule of speakers and location can be viewed [here](#). If you would like to present your work in a future DMC Microbiome Noon Seminar, please contact [Pat Massard](#).

DMC Faculty Meetings: The next DMC faculty meetings will be 26 July 2021, 18 October 2021, 31 January 2022, 25 April 2022. All faculty meetings will be at 1:00PM in-person in 4122 MSRB3 and a Zoom option will also be available.

Please mark your calendars!

News

[Re-engineering the consumer product life cycle - 2/4/2021](#)

The DMC's Claudia Gunsch and other Duke civil and environmental engineers are working to make raw materials more sustainable and reimagining how we deal with harmful waste.

[The DMC's Anne Yoder is among four senior Duke faculty members elected to the American Academy of Arts and Sciences - 4/23/2021](#)

Dr. Yoder is among four senior Duke faculty members, and 252 people in total, to be elected to the American Academy of Arts and Sciences this year.

[DMC director John Rawls elected to the American Academy of Microbiology - 4/24/2021](#)

Dr. Rawls is among 65 new fellows elected to the American Academy of Microbiology, an honorific leadership group within the American Society for Microbiology. Fellows are elected annually through a highly selective peer-review process, based on their records of scientific achievement and original contributions that have advanced microbiology.

[The DMC's Joe Heitman elected to the National Academy of Sciences - 4/27/2021](#)

Dr. Heitman is among 120 new members elected in recognition of their distinguished and continuing achievements in original research. Those elected this year bring the total number of active members of the NAS to 2,461.

[Lawrence David and Gianna Hammer receive the 2021 BWF Investigators in the Pathogenesis of Infectious Disease Award - 5/25/2021](#)

Congratulations to Dr. Lawrence David and Dr. Gianna Hammer on being named BWF's 2021 Investigators in the Pathogenesis of Infectious Disease. The award provides opportunities for accomplished researchers to bring multidisciplinary approaches to the study of human infectious diseases. Along with Dr. Nicholas Heaton at Duke who was also one of this year's recipients, Duke investigators received 3 of the 11 awards given nationally.

Upcoming Conferences and Workshops

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

Highlighted Microbiome Funding Opportunities

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](#)). 6/5/2021

Microbial-based Cancer Therapy -Bugs as Drugs (R01, R21 Clinical Trial Not Allowed). Award Amount: See solicitation for details (see [here](#)). 6/5/2021

Advancing Translational and Clinical Probiotic/Prebiotic and Human Microbiome Research (R01 Clinical Trial Optional). Award Amount: See solicitation for details (see [here](#)). 6/5/2021

Gastrointestinal (GI) and Microbiome Explorers: Development of Swallowable Smart Pills or Devices for Precision Nutrition, Microbiome and Digestive Disease Applications (R21/R33 Clinical Trial Required). Award Amount: See solicitation for details (see [here](#)). 6/8/2021

Modulating Intestinal Microbiota to Enhance Protective Immune Responses against Cancer (R01 Clinical Trial Not Allowed). Award Amount: See solicitation for details (see [here](#)). 6/10/2021

Advancing Mechanistic Probiotic/Prebiotic and Human Microbiome Research (R01). Award Amount: See solicitation for details (see [here](#)). 6/16/2021

See more microbiome funding opportunities [here](#).

Highlighted Recent DMC Publications

Venkatakrishnan A; Holzknecht ZE; Holzknecht R; Bowles DE; Kotzé SH; Modliszewski JL; Parker W. Evolution of bacteria in the human gut in response to changing environments: An invisible player in the game of health. *Comput Struct Biotec* 19:752 (1/11/2021) <https://scholars.duke.edu/individual/pub1472609>

Gardner CM; Hoffman K; Stapleton HM; Gunsch CK. Exposures to Semivolatile Organic Compounds in Indoor Environments and Associations with the Gut Microbiomes of Children *Environ Sci Tech Let* 8:73(1/12/2021) <https://scholars.duke.edu/individual/pub1466982>

Dayanidhi DL; Thomas BC; Osterberg JS; Vuong M; Vargas G; Kwartler SK; Schmaltz E; Dunphy-Daly MM; Schultz TF; Rittschof D. Exploring the Diversity of the Marine Environment for New Anti-cancer Compounds *Front Mar Sci* 7:2296 (1/21/2021) <https://scholars.duke.edu/individual/pub1472161>

Bickhaus JA; Bradley MS; Amundsen CL; Visco AG; Truong T; Li Y-J; Siddiqui NY. Does a Recent Urinary Tract Infection Increase the Risk of Postprocedure Urinary Tract Infection After Onabotulinum Toxin A? *Female Pelvic Med Reconstr Surg* 27:121 (2/1/2021) <https://scholars.duke.edu/individual/pub1397906>

Ye L; Bae M; Cassilly CD; Jabba SV; Thorpe DW; Martin AM; Lu H-Y; Wang J; Thompson JD; Lickwar CR; Poss KD; Keating DJ; Jordt S-E; Clardy J; Liddle RA; Rawls JF. Enteroendocrine cells sense bacterial tryptophan catabolites to activate enteric and vagal neuronal pathways. *Cell Host Microbe* 29:179 (2/10/2021)
<https://scholars.duke.edu/individual/pub1469955>

Dohlman AB; Arguijo Mendoza D; Ding S; Gao M; Dressman H; Iliev ID; Lipkin SM; Shen X. The cancer microbiome atlas: a pan-cancer comparative analysis to distinguish tissue-resident microbiota from contaminants. *Cell Host Microbe* 29:281 (2/10/2021) <https://scholars.duke.edu/individual/pub1471127>

Dupnock TL; Deshusses MA. Development and validation of a comprehensive model for biotrickling filters upgrading biogas. *Chem Eng J* 407:1385 (3/1/2021)
<https://scholars.duke.edu/individual/pub1464274>

McCumber AW; Kim YJ; Isikhuemhen OS; Tighe RM; Gunsch CK. The environment shapes swine lung bacterial communities. *Sci Total Environ* (3/1/2021) <https://scholars.duke.edu/individual/pub1466319>

McCann, JR; Bihlmeyer, NA; Roche, K; Catherine, C; Jawahar, J; Kwee, LC; Younge, NE; Silverman, J; Ilkayeva, O; Sarria, C; Zizzi, A; Wootton, J; Poppe, L; Anderson, P; Arlotto, M; Wei, Z; Granek, JA; Valdivia, RH; David, LA; Dressman, HK; Newgard, CB; Shah, SH; Seed, PC; Rawls, JF; Armstrong, SC. The Pediatric Obesity Microbiome and Metabolism Study (POMMS): Methods, Baseline Data, and Early Insights. *Obesity* 758:143623 (3/1/2021)
<https://scholars.duke.edu/individual/pub1474621>

Dolat L; Valdivia RH. An endometrial organoid model of interactions between *Chlamydia* and epithelial and immune cells. *J Cell Sci* 134(5):jcs252403 (3/8/2021)
<https://scholars.duke.edu/individual/pub1472248>

Karstens L; Siddiqui NY; Zaza T; Barstad A; Amundsen CL; Sysoeva TA.
Benchmarking DNA isolation kits used in analyses of the urinary microbiome. *Sci Rep* 11:6186 (3/17/2021) <https://scholars.duke.edu/individual/pub1476594>

Kim YJ; Womble JT; Gunsch CK; Ingram JL. The Gut/Lung Microbiome Axis in Obesity, Asthma, and Bariatric Surgery: A Literature Review. *Obesity* 29:636 (April 2021) <https://scholars.duke.edu/individual/pub1476391>

Redfern LK; Jayasundara N; Singleton DR; Di Giulio RT; Carlson J; Sumner SJ; Gunsch CK. The role of gut microbial community and metabolomic shifts in adaptive resistance of Atlantic killifish (*Fundulus heteroclitus*) to polycyclic aromatic hydrocarbons. *Sci Total Environ* 776:145955 (7/1/2021) <https://scholars.duke.edu/individual/pub1475568>

See more DMC publications [here](#).

Jobs Listing

[Several positions](#) - Smillie Lab, Mass General Hospital/Broad Institute

[Postdoc](#) - Maldonado-Conteras Lab, University of Massachusetts Medical School

[Postdoc](#) - Gulati Lab, UNC

[Scientist, Host-Microbe Microbiologist](#) - Novome Biotechnologies, South San Francisco, CA

[Senior Research Associate](#) - Novozymes, Research Triangle Park, NC

[PhD candidate](#) - Moissl-Eichinger Lab, Medical University of Graz, Austria
