Duke Microbiome Center

Fall 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 Cindy Wicker. For further information on the DMC, please visit the DMC website.

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A Message from the Director

Dear DMC Community,

In this newsletter, we're pleased to share several important announcements and updates. I encourage you to take a minute to browse the sections below and I anticipate you'll find something that will interest you. For example, here are a few important news items that are described in greater detail in the newsletter below:

- Nominations for the **2022 DMC "Diversity Matters Award"** are now open, with nominations due by December 20. See below for more information, and think of a colleague you could nominate!
- The ongoing **faculty search in partnership with the Department of Biochemistry** is proceeding well. The search committee will be inviting finalists for on-site interviews in December and January, so please keep an eye out for those announcements.
- The **Duke Gnotobiotic Core** is highlighted below, and please recall that the **DMC Rolling Voucher Program** can be used in that core. See below for more information.
- The next **DMC Seminar Series** is this Monday November 15th at 4PM from Professor Matthew B. Sullivan of Ohio State University. See below for more information.
- The next **DMC Startup Club** is scheduled for December 15th. See below for more information.
- The **routine center review of the DMC by the Duke University School of Medicine** this fall is nearing completion. Thanks to all of you that contributed time, energy, and information to the review committee. I'll look forward to sharing the outcome of the review with you later this winter.
- Faculty, please mark your calendar for our next **DMC Faculty Meetings** at 1PM on the following dates: 31 January 2022, and 25 April 2022.
- The first annual **Duke Precision Genomics Collaboratory Scientific Retreat** on Friday, December 3, 2021, at the NC Biotechnology Center in RTP. See below for more information.

Finally, I want to outline some upcoming changes to the r**esources for computing, bioinformatics, and biostatistics in microbiome science at Duke**. As many of you know,

the DMC has collaborated closely over the last several years with the Genomic Analysis and Bioinformatics Shared Resource (GAB) in the Center for Genomics and Computational Biology (GCB). In collaboration with GAB and the Microbiome Core Facility (MCF) directed by Dr. Holly Dressman, the DMC helped establish bioinformatic and biostatistical services for 16S rRNA gene amplicon sequence data and shotgun metagenomic sequence data. These services had been established within the Hardac computing environment overseen by GCB. However, the GAB closed in September 2021 and substantial changes to Hardac have rendered the GAB pipelines inactive. (To learn more about the emerging new computing resources at Duke, please see the School of Medicine's Genomics Computing Platform Project and if you'd like to added to their listserv email Hannah Campbell). Recognizing how important those pipelines are to the DMC community, as resources and as services, DMC and MCF leadership is working as quickly as possible to establish new containers for amplicon and shotgun sequencing, which will likely be hosted on the Duke Compute Cluster (DCC). We anticipate those containers will be generally accessible to the DMC community and will also be incorporated into new core facility services later this winter. Please know we are giving this high priority and working towards solutions as quickly as possible within the larger shifting landscape of computing and bioinformatic resources at Duke. We will communicate to the DMC community as those new resources are established, but if you have specific questions or concerns on this subject please email <microbiomesr@duke.edu>

Sincerely,
John F. Rawls
Director, Duke Microbiome Center

Nominate a colleague for the annual DMC Diversity Matters Award

The Duke Microbiome Center invites nominations for the annual DMC "Diversity Matters Award". This award designed to recognize individuals within DMC laboratories that have made significant advances towards the DMC's goal to advance diversity, equity, and inclusion within Duke and our broader scientific and geographic communities. **Nomination packages are due by Monday, December 20.** More information including nomination instructions and previous

awardees can be found here. Please circulate this invitation within your respective networks and help us identify and nominate deserving members of our community.

Core facility highlights - Gnotobiotic Core Facility

This month we are pleased to highlight **Duke's Gnotobiotic Core Facility**. This School of Medicine shared resource is directed by the Division of Laboratory Animal Resources (DLAR) and offers C57BL/6 germ-free mice as well as services and resources for germ-free (GF) and gnotobiotic experimentation. This includes the established service of rederivation of specific-pathogen free mouse lines into GF conditions, establishing defined microbiota in GF mice, monitoring microbiological status of gnotobiotic mice, providing isolator housing for experimental mice, consultation regarding experiments using GF or gnotobiotic mice, and completing various technical services under GF conditions as requested by labs. More information about the Gnotobiotic Animal Core can be found here. To place new service requests and other inquiries please email Kristin Cleveland <kmc96@duke.edu>. Importantly, please the Gnotobiotic Animal Core is among the cores eligible for use with the DMC's Rolling Voucher Program.

Upcoming DMC Startup Club events

On December 15, the DMC Startup club will be hosting Ben Scruggs from Hatteras Venture Partners who will speak about the microbiome funding climate in North Carolina and the RTP area. Great opportunity to learn about microbiome ventures in the Ag biome space. We are also excited to announce a new push in 2022 to increase student involvement in conjunction with the Duke Innovation and Entrepreneurship Initiative. Look out for announcements in early 2022! If you would like to receive updates on DMC Startup Club activities, please email Cindy Wicker.

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 diverse technologies to Duke investigators that can be used to advance microbiome science. To facilitate Duke Microbiome Center investigators' access to these shared resources, particularly for microbiome projects that are not yet externally funded, we are pleased to announce the **Duke Microbiome Center Rolling Voucher Program**. This rolling voucher program offers vouchers in amounts ranging up to $10,000. Each DMC faculty member cannot receive more than $10,000 of funds through this mechanism within any two year period. These vouchers are redeemable at any of the Duke University School of Medicine's many core facilities, and applicants are required to contact the directors of these shared resources to develop project budgets. Learn more here.

Microbiome Consortium's "Regulation of Microbiome-Based Products" Event

Dear NC Microbiome Consortium community,

Please save date for our upcoming event "Regulation of Microbiome-Based Products". Use the button below to add the event to your calendar, more details and a registration link will be sent closer to the event date.

Subject: No First Friday Microbiome Seminar - But SAVE THE DATE
"Regulation of Microbiome-Based Products"
December 15, 2021 @ 9 am
Add to Calendar

Duke Precision Genomics Collaboratory Scientific Retreat

The first annual Duke Precision Genomics Collaboratory Scientific Retreat on **Friday, December 3, 2021, at the NC Biotechnology Center in RTP**. The Duke Microbiome Center is a part of the Precision Genomics Collaboratory community so please use this opportunity to share your work and learn more about the other exciting activities ongoing across this community. Keynote speakers will be Gilad Evrony of the Center for Human Genetics and Genomics at New York University and Christine Beck of University of Connecticut Health Center & The Jackson Laboratory for Genomic Medicine.

- Dr. Evrony uses genomics to study brain development in humans. His lab also develops genomics technologies that can be rapidly and reliably employed in clinical medicine.
- Dr. Beck uses genomics, bioinformatics and molecular biological techniques to investigate the ways in which repetitive DNA elements, such as transposons, affect human genomes.

Graduate students, postdoctoral and junior investigators are invited to submit a 300 word abstract for a 10-minute oral presentation or a poster. All submitted abstracts will be presented either in one of the oral sessions or in the poster session.
Deadline for abstracts: November 15
Register to attend

Upcoming DMC Meetings

DMC Seminar Series: This monthly seminar series is held on *third* Mondays each month at 4PM in-person in 1125 MSRB3 with a Zoom option. 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. Instead of a seminar, on September 20th there will be a DMC Journal Club discussion about Racism in Microbiome Science. Professor Matthew B. Sullivan of Ohio State University will present on November 15th. The complete schedule of speakers and location can be viewed here.

DMC Microbiome Research-In-Progress Talks: This monthly research-in-progress series is held on *first* Mondays at 4PM. Until further notice, these meetings will be held by Zoom only. It 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 Research-In-Progress meeting, please contact Cindy Wicker.

DMC Startup Club Meetings: The next DMC Startup Club meeting will be 15 December 2021. See above for more details.

DMC Faculty Meetings: The next DMC faculty meetings will be 31 January 2022 and 25 April 2022. All faculty meetings are at 1:00PM in-person in 4122 MSRB3 with a Zoom option.

Please mark your calendars!

News

How Much Fiber Should You Eat?

Jeff Letourneau, a graduate student in the lab of DMC's Dr. Lawrence David, studies the effects of a high-fiber diet on human health. During the pandemic last year, Letourneau interest's in wild food foraging intensified and goes far beyond the convenience of free local food. Read more here.

Mountaintop Mining Causes 40 Percent Loss of Aquatic Biodiversity

The DMC's Emily Bernhardt is senior author on a study which found that the effects of mountaintop coal mining are even more widespread than previously reported. Streams from heavily mined watersheds harbor 40% fewer species than streams with cleaner water. "It was really surprising to see how consistent this decline in biodiversity is across all these really different groups of organisms, starting at really low levels of disturbance," said Dr. Bernhardt. The study appeared in the September 2021 issue of the journal *Ecological Applications*. Read more here.

Neil Surana starts serving as new Duke Scholars in Molecular Medicine director

The DMC's Neil Surana recently took on the role of Director of the Duke Scholars in Molecular Medicine (DSMM) career development program. The DSMM program joined the Duke Clinical and Translational Science Institute (CTSI) within the Workforce Development Core in late 2018. It has developed into a strong and impressive program that exposes promising young basic scientists to long-standing and emerging

problems in priority areas of medicine. Each track is designed to help these students rethink basic science research in continuum with unmet clinical needs of adults and children. Learn more about DSMM here.

Upcoming Conferences and Workshops

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

Highlighted Microbiome Funding Opportunities

Identification and Characterization of Bioactive Microbial Metabolites for Advancing Research on Microbe-Diet-Host Interactions (R01 Clinical Trial Not Allowed). See solicitation for details (see here).

Modulating Intestinal Microbiota to Enhance Protective Immune Responses against Cancer (R01 Clinical Trial Not Allowed). See solicitation for details (see here).

Microbial-based Cancer Therapy - Bugs as Drugs (R01, R21 Clinical Trial Not Allowed). See solicitation for details (see here).

Notice of Special Interest (NOSI): Methods Development in Natural Products Research (SBIR/STTR). See solicitation for details (see here).

Modulating Human Microbiome Function to Enhance Immune Responses Against Cancer (R01 and R21 Clinical Trial Not Allowed) See solicitation for details (see here for R01 and here for R21).

See more microbiome funding opportunities here**.**

Highlighted Recent DMC Publications

Genetic and plastic rewiring of food webs under climate change. Barbour MA; Gibert JP. *The Journal of animal ecology* https://scholars.duke.edu/individual/pub1483468

Properties affecting transfer and expression of degradative plasmids for the purpose of bioremediation. Varner PM; Gunsch CK. *Biodegradation* https://scholars.duke.edu/individual/pub1484407

Consistent declines in aquatic biodiversity across diverse domains of life in rivers impacted by surface coal mining. Simonin M; Rocca JD; Gerson JR; Moore E; Brooks AC; Czaplicki L; Ross MRV; Fierer N; Craine JM; Bernhardt ES. *Ecological applications* https://scholars.duke.edu/individual/pub1486244

Antibiotic Resistance Genes in Lemur Gut and Soil Microbiota Along a Gradient of Anthropogenic Disturbance. Bornbusch SL; Drea CM. *Frontiers iin ecology and evolution* https://scholars.duke.edu/individual/pub1496479

Non-diphtheriae Corynebacterium species are associated with decreased risk of pneumococcal colonization during infancy. Kelly MS; Plunkett C; Yu Y; Aquino JN; Patel SM; Hurst JH; Young RR; Smieja M; Steenhoff AP; Arscott-Mills T. *The ISME journal* https://scholars.duke.edu/individual/pub1497014

Antibiotics and fecal transfaunation differentially affect microbiota recovery, associations, and antibiotic resistance in lemur guts. Bornbusch SL; Harris RL; Grebe NM; Roche K; Dimac-Stohl K; Drea CM. *Animal microbiome* https://scholars.duke.edu/individual/pub1498653

See more DMC publications here.

Jobs Listing

Postdoctoral Researcher in Computational Microbiology and Urban Health - The Senseable City Lab, Cambridge, MA