NIH/NIDDK P30 Center for Molecular Studies in Digestive & Liver Diseases

NEWSLETTER

WINTER 2021

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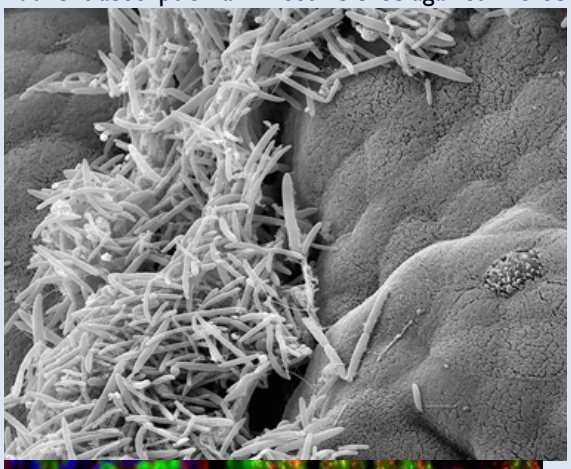
Please remember to cite the Center (NIH-P30-DK050306) and its core facilities (MPIC, H-MARC, G-MMC, and BDSC) in your publications.

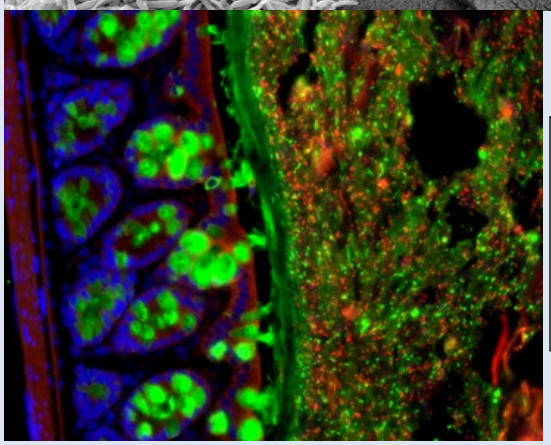
MAAYAN LEVY, PHD, LAB UPDATE

We live on a microbial planet – bacteria are found at virtually any location on Earth, ranging from deep oceans and dry deserts to the unique microenvironment found in the gastrointestinal tract of all mammalian organisms. The realization that a human being harbors a much larger and more diverse gene pool in the gut than anywhere else in the body has been a fascinating starting point for Maayan Levy's scientific endeavor. Maayan has completed her doctoral at the Weizmann Institute of Science in 2017 and has recently joined the Microbiology Department at Penn as an Assistant Professor. During her doctoral studies, she discovered the first microbial metabolites that regulate epithelial innate immune sensors that can be harnessed for the treatment of intestinal inflammation.

The global research interest in the Levy lab is to understand the communication between the microbiome and its host, focusing on intestinal epithelial cells as mediators of this interaction. The single layer of epithelial cells is exposed to a vast community of microorganisms and an enormous biochemical repertoire of molecules, yet very little is known about how epithelial cells sense microbial metabolites and initiate appropriate regulatory responses. Therefore, the goal of the Levy lab is to unravel the influence of microbial metabolites on epithelial biology, and to decipher how metabolite sensing contributes to the epithelial tightrope walk between nutrient absorption and host defense against microbial invasion.



Electron microscopy image of the large intestine of a mouse showing the proximity of the intestinal microbiome to the cells of the host



The microbiome (red) is separated from the intestinal epithelial cells (blue) by the inner mucus layer (green)

MOLECULAR PATHOLOGY AND IMAGING CORE UPDATE

Visium Spatial Transcriptomics

The Molecular Pathology and Imaging Core will soon be offering Visium Spatial Transcriptomics as a service in conjunction with the Next Gen Sequencing Core. We encourage researchers to investigate the new FFPE spatial transcriptomics protocol, which offers a faster workflow with less opportunity for error

RNAscope

MPIC is partnering with ACDBio to offer self-service automated RNAscope assays on our Lecia Bond RXm autostainer. We also have a hybridization oven which is now available to center members for manual RNAscope and other slide staining protocols. There will be a grant competition for one RNAscope manual HiPlex assay (up to 13 target probes), and one RNAscope automated assay (up to 4 target probes). The deadline for abstracts is June 30th, please reach out to Kate Bennet (bennk@upenn.edu) for more information about the grant competition or if you are interested in performing an RNAscope at MPIC.

2021 PILOT AND FEASIBLITY GRANT COMPETITION

Purpose and Research Focus

The Purpose of Penn's Center for Molecular Studies in Digestive and Liver Diseases (CMSDLD) is to unite investigators with interests in digestive and liver physiology and disease and to stimulate others in the biomedical community to enter this area of research. One of the most important aspects of this effort is the funding of Pilot/Feasibility Projects.
The Pilot/Feasibility Project should be related to the focus of the Center, which encompasses molecular studies on the biology or disease of the alimentary tract, pancreas, and liver. Relevant investigators include those in developmental biology, nutrition, regulation of gene expression, growth, differentiation, the biology of stem cells, molecular genetics, gene therapy, the gut microbiome, and immunology, including growth factors and cytokines. Pilot project awards are for 1 year with a second year possible through a competitive renewal.

Eligibility

All faculty members of the University scientific community who meet the eligibility requirements below are invited to submit proposals. Applicants must be a U.S. Citizen or have a permanent visa. There are three categories of applications:

1. New investigators who have never held extramural support at the level of a NIH R01
2. Established investigators in other areas of biomedical research who wish to apply their expertise to a problem in digestive and liver disease.
3. Established digestive and liver investigators who wish to study an area that represents a significant departure from currently funded work.

Proposal Preparation

1. Submit documents either through the online form located at the bottom of the Pilot and Feasibility Grant Program webpage, **here**, or by attaching the below documents to your final application. Complete proposals are due by Friday, May 21, 2021.

2. Format:
   - -Cover page: includes abstract of up to 250 words and list of approved or pending IACUC/IRB protocols
   - -NIH Biosketch
   - -NIH Other Support
   - -Budget and justification: one year, $33,000, one page only.
   - -Background, preliminary results, estimated core usage, research plan, and future directions; up to four pages total
   - -Senior investigators should indicate how this project represents a new direction in their research
   - -References: one page only
   - -Appendix: pertaining to preliminary data only, no reprints

For additional information, please contact and submit to: Center for Molecular Studies in Digestive and Liver Diseases. Telephone: 215-573-4264; Fax: 215-898-0573; email: kimmeyer@pennmedicine.upenn.edu