**Core Facilities**

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<th>Core Facilities</th>
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<tr>
<td>Molecular Pathology &amp; Imaging Core</td>
<td>(D) Jonathan Katz, MD</td>
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<td>(TD) Adam Bedenbaugh, MS</td>
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<td>Host-Microbial Analytic and Repository Core</td>
<td>(D) Gary Wu, MD</td>
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<td>(TD) Lillian Chau, MS</td>
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<td>Genetically-Modified Mouse Core</td>
<td>(D) Steve Liebhaber, MD</td>
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<td>(TD) Jean Richa, PhD</td>
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<td>Cell Culture and iPSC Core</td>
<td>(D) Edward Morrissey, PhD</td>
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<td>(AD) Hiroshi Nakagawa, MD, PhD</td>
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<td>(TD) Wenli Yang, PhD</td>
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**Administration**

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<td>Anil Rustgi, MD</td>
<td>(D) Jonathan Katz, MD</td>
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<td>(TD) Adam Bedenbaugh, MS</td>
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<td>Gary Wu, MD</td>
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<td>(TD) Lillian Chau, MS</td>
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<td>Klaus Kaestner, PhD</td>
<td>(D) Steve Liebhaber, MD</td>
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<td>(TD) Jean Richa, PhD</td>
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<td>Kim Meyers-McCombs</td>
<td>(D) Edward Morrissey, PhD</td>
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<td>(AD) Hiroshi Nakagawa, MD, PhD</td>
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<td>Marielle Kent</td>
<td>(D) Wenli Yang, PhD</td>
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**PILOT GRANT Awardees**

The Center for Molecular Studies in Digestive and Liver Diseases Pilot Project program is proud to announce the following awardees for 2017 – 2018:

- **Donita C. Brady, PhD**  
  Presidential Assistant Professor of Cancer Biology  
  Department of Cancer Biology  
  "Characterizing Copper as Modulator of PKM2 Activity and Cellular Function in HCC"

- **Josephine Ni, MD**  
  Instructor of Medicine  
  Division of Gastroenterology  
  "Unique Growth Characteristics of E. Coli via the NtrB/NtrC Two-Component System in Vitro vs. in Vivo – a Signal Transduction Pathway Associated with Dysbiosis in IBD"

- **De'Broski R. Herbert, PhD**  
  Associate Professor of Pathobiology  
  School of Veterinary Medicine  
  "Trefoil factor/LINGO axis regulates intestinal Regeneration"

- **Ben Z. Stanger, MD, PhD**  
  Associate Professor of Medicine  
  Division of Gastroenterology  
  "Epigenetic regulation of the epithelial-mesenchymal-transition"

- **Natalie A. Terry, MD, PhD**  
  Assistant Professor of Pediatrics  
  CHOP  
  "High-throughput screening of enteroids to identify molecules involved in intestinal adaptation in short bowel syndrome"

**The Molecular Pathology & Imaging Core**

The Molecular Pathology & Imaging Core (MPIC) is excited to announce that they recently acquired a **Leica BOND RXm auto-stainer**, which will be used for automating IHC staining. The BOND RXm will work with both paraffin and frozen sections. The BOND RXm will deparaffinize the paraffin sections, perform antigen retrieval, and staining with DAB. When the run is finish the only thing that you’ll need to do is dehydrate the slides and add a coverslip.

The equipment has 3 trays that can hold 10 slides. Each of the 3 trays work independently of each other and, therefore, 3 different users can be using the equipment even if they start at different times. Researchers will be trained on the equipment, a user account will be created, and from there the user will be able to make use of the equipment whenever it’s available. The researcher will need to supply their primary antibody, but after that the rest of the reagents will be provided. The cost will be based on the number of slides stained and will cover the cost of reagents. For any additional information please contact Adam Bedenbaugh, blakebe@upenn.edu.

Please remember to cite the Center (NIH-P30-DK050306) and its core facilities (MPIC, H-MARC, G-MMC, and CCIC) in your publications.
Tina did her undergraduate studies at Duke University followed by medical school at Johns Hopkins University and residency training at Johns Hopkins Hospital Osler Medical Housestaff Training Program. She completed her GI fellowship at the University of Pennsylvania and during this time joined Dr. Andy Minn in the Department of Radiation Oncology to conduct her research. After completing her fellowship, she completed a Master of Science in Translational Research at the University of Pennsylvania. She joined the faculty in July 2016.

Tina is interested in using the immune system to treat cancer. Over the past few years, several drugs that harness the immune system, called immune checkpoint inhibitors, have been FDA-approved to treat cancers including melanoma. The drugs have demonstrated remarkable responses in some patients; however, many patients fail therapy and it has not proved useful in many tumor types including pancreatic cancer. Tina is interested in understanding why some cancer types and people do not respond to therapy with the goal of overcoming this resistance to treatment.

Tina proposed that radiation therapy (RT) might improve response to ipilimumab, one of the FDA-approved immune checkpoint inhibitors for metastatic melanoma. Using melanoma mouse models, she found that RT does indeed improve response to ipilimumab. In addition, she found that tumors resistant to treatment overexpress a protein called PDL1. By targeting the PDL1 protein, she was able to improve response even further. These studies were translated to the clinic and 19 patients were treated with combination RT and ipilimumab with some patients having a partial response. Based on her mouse studies, a future clinical trial will include RT, ipilimumab and drugs to target PDL1 to treat patients with melanoma.

As an independent investigator, Tina will continue to investigate ways to improve response to immune checkpoint inhibitors using mouse models and translating these findings to patients. She will continue to study melanoma, but also plans to study other cancer types, including pancreatic and colon cancers. Tina is currently funded by the AGA Research Scholar Award and the Harold Amos Medical Faculty Award.

This summer, the Center hosted 7 exceptional undergraduate students for 10-weeks through the Undergraduate Student Scholars Program (USSP), an organized program of summer lectures and presentations combined with an intensive research experience with an expert investigator. At the end of the summer program, the students presented their research at the USSP Symposium, with a keynote address by Dr. Douglas Wallace, who joined the students for lunch prior to the symposium. We are always delighted to have our Center investigators serve as mentors for this unique undergraduate training program.

This year’s students and mentors:
Hannah Childs, Cornell University, in Dr. Anil Rustgi’s Lab
Noah Engel, Vanderbilt University, in Dr. Hiroshi Nakagawa’s Lab
Madison Kremp, Bucknell University, in Dr. Klaus Kaestner’s Lab
Justin Raman, University of Texas, Dallas, in Dr. Robert Heuckeroth’s Lab
Dylan Rust, University of Wyoming, in Dr. Xiao Zhao’s Lab
Garrett Santini, Lehigh University, in Dr. Brad Johnson’s Lab
Ankit Shah, University of Miami, in Dr. Christina Twyman-Saint Victor’s Lab

Additional information on the USSP is available at [https://www.med.upenn.edu/molecular/undergrad.shtml](https://www.med.upenn.edu/molecular/undergrad.shtml)
INCOMING RESEARCH SEMINAR SPEAKERS

September

7  Averil Ma, MD, Chief, Division of Gastroenterology and Hepatology, UCSF
   “The Ubiquitous Nature of Human Disease”

21 Clara Abraham, MD, Professor, Department of Medicine, Yale University
   “Innate Immune Dysregulation in Inflammatory Bowel Disease”

October

12 Gregory Gores, MD, Reuben R. Eisenberg Professor of Medicine and Physiology, Mayo Clinic
   “Inflammatory Extracellular Vesicles in NASH Pathogenesis”

November

8  Zachary Schug, PhD, Assistant Professor, Molecular and Cellular Oncogenesis, Wistar Institute
   “Acetate metabolism in cancer”

30 Bishr Omary, MD, PhD, H. Marvin Pollard Professor of Gastroenterology, University of Michigan
   “Intermediate filaments of digestive organs: Pathophysiologic and therapeutic perspectives”

UPenn Cell Culture and induced Pluripotent Stem Cell Core Facility (CCiC)

The Cell Culture and iPSC Core (CCiC) facility is a unique resource at Penn. It was the result of the recent integration of the iPSC Core facility within the Penn Institute for Regenerative Medicine (IRM) and the Cell Culture Core of the Center of Molecular Studies in Digestive and Liver Diseases (CMSDLD). The CCiC is led by Drs. Ed Morrisey, Hiroshi Nakagawa and Wenli Yang. Our mission is to provide support in the design and implementation of experiments involving the use of human iPSCs, human embryonic stem cells (hESCs) and primary and established mouse and human cells of the gastrointestinal system. Our services include derivation of patient-specific iPSCs, genome engineering of existing stem cell lines using CRISPR/Cas9 technology, and lineage specific differentiation of iPSCs/hESCs including hepatocytes, cardiomyocytes and endothelial cells. We also have technology generating 3D organoid cultures of iPSC-derived cells, primary as well as established cell lines. The CCiC has a large collection of patient-derived iPSC lines and esophageal, pancreatic and intestinal cell lines that are available to Center members/associate members. The core is also committed to training investigators in cell culture techniques and providing quality tested stem cell reagents to center members.

Please contact Wenli Yang (wenliyan@mail.med.upenn.edu), Ed Morrrisey (emorrise@mail.med.upenn.edu) or Hiroshi Nakagawa (nakagawh@mail.med.upenn.edu) if you are interested in any of our services or technologies.

Congratulations

The Center for Molecular Studies in Digestive and Liver Diseases would like to congratulate this year’s poster winners from the 2017 Center Symposium:

1st Place: Josie Ni, MD and Chiraag Kulkarni

2nd Place: Jason Goldsmith, MD, PhD

3rd Place: Jason Correnti, PhD and Jason Pitarresi, PhD

Please remember to cite the Center (NIH-P30-DK050306) and its core facilities (Molecular Pathology and Imaging Core, Host-Microbial Analytic and Repository Core, Genetically-Modified Mouse Core, and Cell Culture and iPSC Core) in your publications.