

DHC Newsletter

Bench-to-Bedside Research in Pediatric Digestive Disease

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2013 Pilot and Feasibility Recipients

The Digestive Health Center (DHC) is pleased to announce the recipients of its 2013 Pilot & Feasibility grants. We received a large number of competitive applications and faced a difficult task to select 3 recipients. Below we introduce the awardees and their research programs.



Phillip Minar, MD

Cincinnati Children's Hospital Medical Center, Dept. of Pediatrics; Division of Gastroenterology, Hepatology and Nutrition

"Predicting Treatment Response with Neutrophil CD64 in Inflammatory Bowel Disease"

A large percentage of children with Inflammatory Bowel Disease continue to struggle with significant disease morbidity. Unfortunately, there are limited blood biomarkers to determine disease activity and treatment response. Dr. Minar's primary objectives of this study are to demonstrate that CD64 on the surface of neutrophils is an effective biomarker in monitoring response to induction therapy, can predict those likely to respond to anti-TNF α therapy and accurately reflect the extent of mucosal inflammation/healing.

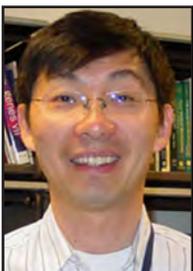


Joseph Palumbo, MD

Cincinnati Children's Hospital Medical Center, Dept. of Pediatrics; Cancer and Blood Diseases Institute; Division of Hematology

"Mechanisms coupling Fibrinogen to Colitis & Colitis-Associated Colon Cancer Pathogenesis"

Inflammatory bowel disease is currently estimated to affect as many as 1.4 million Americans, with many being under the age of 18. Blood coagulation proteins, particularly fibrinogen, appear to drive colitis pathogenesis. Dr. Palumbo seeks to define the mechanisms by which fibrinogen influences colitis pathology and progression to colon cancer in order to identify novel pathways for therapeutic intervention.



Yi Zheng, MD

Cincinnati Children's Hospital Medical Center, Dept. of Pediatrics; Cancer and Blood Diseases Institute; Division of Experimental Hematology & Cancer Biology

"Mechanism of Nutrient Regulation of Intestinal Stem Cells"

Intestinal stem cells are essential for intestine epithelial homeostasis and malfunction of these cells may be closely associated with poor nutrient uptake, obesity-related diseases, and poor prognosis of intestinal cancer. TOR (Target of Rapamycin) signaling pathway has been implicated in controlling the adult stem cell and progenitor response to diet in invertebrates, however genetic studies in mammals are lacking. Dr. Zheng's pilot study will define the role of mammalian TOR signaling as a master modulator of intestinal stem cells and intestine epithelium homeostasis in response to nutrients.

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New External Advisory Board Member



Jacquelyn Maher, MD has joined the External Advisory Board of the DHC. She is Professor of Medicine and Division Chief of Gastroenterology at University of California, San Francisco. Additionally, Dr. Maher is the Director of the Liver Center which is a NIDDK Digestive Disease Research Core Center like

our DHC. Her research focuses on the pathogenesis of fatty liver disease.

Dr. Sanjeev Gupta (Albert Einstein College of Medicine) will rotate off the committee.

Dr. Maher will join the other current External Advisory Board Members, Drs. Judy Cho (Yale University), Brent Polk (Children's Hospital of Los Angeles), and Klaus Kaestner (University of Pennsylvania).

Congratulations Noah Shroyer, PhD- Vice Chair GDCH



Dr. Noah Shroyer was elected to the position of Vice Chair of the Growth, Development and Child Health Section of the American Gastroenterological Association (AGA). In this position Dr. Shroyer

is a member of the AGA Council that represents the needs of its members to the AGA Governing Board. Additionally, he has a central role in developing the programming at the yearly Digestive Disease Week meeting.

Congratulations Dr. Shroyer!

100th Digestive Health Center Member

The DHC is pleased to welcome two new members. With these additions, the DHC has reached a noteworthy milestone of 100 members. The DHC leaders wish to thank all the members for being part of the digestive disease research community in Cincinnati and for making our center an outstanding success.



Christian Hong, PhD is an Assistant Professor in the Department of Molecular and Cellular Physiology at the University of Cincinnati. His digestive disease research

investigates how circadian rhythms influence cell proliferation, glutamine-mediated homeostasis, and DNA damage response in the small intestine.

Takahisa Nakamura, PhD is an Assistant Professor in the Division of Endocrinology and Developmental Biology, Department of Pediatrics at Cincinnati Children's. His research focuses on identifying the mechanisms involved in obesity-induced inflammatory responses in the liver.



Interested in Becoming a Member?

By becoming a DHC member, you will receive subsidies on many core services and resources. Your orders will receive priority at the cores. Membership is open to all Cincinnati Children's and

University of Cincinnati principal investigators involved in digestive disease research. If you are interested in joining, visit [our website](#) for further instructions.

For all publications, please acknowledge the DHC as follows:

"This project was supported in part by PHS Grant P30 DK078392 (include the name of the core that you used of the Digestive Disease Research Core Center in Cincinnati)."

Digestive Health Center Seminar Series

There will be no seminars in July or August. Our fall seminar series will begin on Tuesday September 17. Our seminars are held on Tuesdays at noon in CCHMC Location S Room 6.125. Bring your

lunch. Soft drinks and desserts are provided. The enrichment series includes distinguished speakers from outside the Academic Medical Center as well as conferences by investigators from Cincinnati.

How to Request Biostatistical, Data Management, and Research Methods Support

The DHC continues its partnership with the Center for Clinical and Translational Science and Training (CCTST) to provide its members ready access to research methods, and data management support. BERD (Biostatistics, Epidemiology, and Research Design) faculty and staff are experienced at coordinating a broad array of interdisciplinary clinical and translational research projects, applying biostatistical, methodological, and ethical principles to complex research studies.

A few examples of what they do include:

- Advising on research designs, including project implementation and data collection methods
- Advising on the design of data collection forms and the appropriate structure of a REDCap data base
- Providing guidance on appropriate statistical methods
- Calculating sample sizes
- Analyzing existing datasets
- Creating randomization plans
- Developing data safety and monitoring plans
- Creating surveys and questionnaires

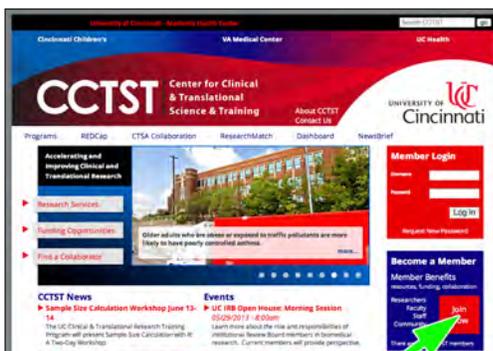
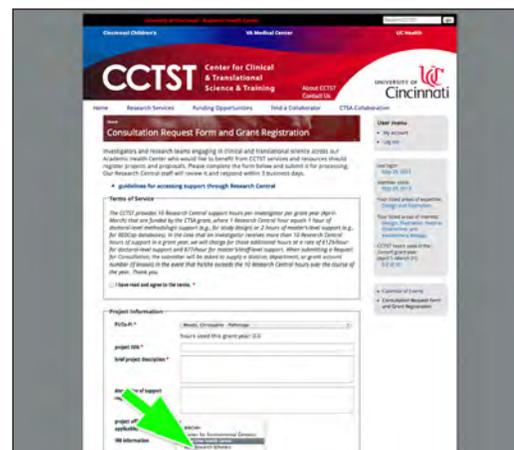
To obtain assistance you need to be a member of the CCTST. To become a member, just visit [their website](#) (see Screen shot below) and com-

plete the online form. If you have any questions regarding CCTST membership contact Elizabeth Heubi at 513-803-2612 or Elizabeth.Heubi@uc.edu.

After you are a CCTST member, log in, and complete the request form by clicking on “Request Assistance with your Research Project” (See screen shot below).



Remember for DHC members the first 10 hours of work is paid by the CCTST grant. Projects that go beyond this initial period, the DHC will subsidize the cost of the service by providing 50% of the total charge up to \$500 per member, per year. In order for you to receive this subsidy you MUST select “Digestive Health Center” under “Select project affiliation” (see arrow on screen shot below).



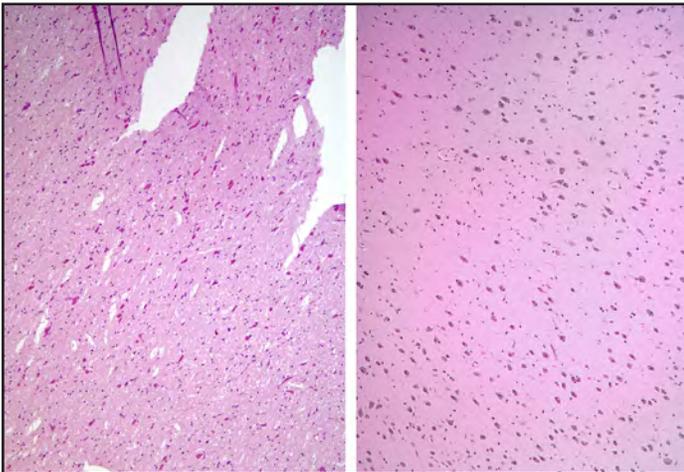
Morphology Tissue Preparation Tips

The Pathology Research Core provides routine and specialized histological services for all of your research needs. The pathologists and technicians of the core strive to provide high quality service. The following tips are important to consider when planning your project.

Pre-plan for Optimal Morphology

There is no charge for consultation with the pathologists or technical staff. Through this discussion you can find the best way to go about a particular project, especially for newer techniques. To set up an appointment contact:

Dr. Shanmukhappa at
shiva.shanmukhappa@cchmc.org
 513-803-4289; CCHMC R2031



Left panel: Poorly fixed tissue. Unwanted artifacts include tearing, folding, gaps, and poorly preserved cell features.
 Right panel: Properly fixed tissue.

Technical Tips on Tissue Preparation

Here are some tips to follow:

- For paraffin processing trim tissue pieces to about the thickness of a nickel. Specimens for frozen sectioning should also be trimmed down to improve fixation.
- For tissue that has a capsule or outer layer (such as kidney), nick the outer layer so that fixative can deeply and properly infiltrate.
- Often times the entire organ is not necessary for sectioning and visualization. It is recommended to provide only a representative portion of the tissue in order to improve infiltration of the fixative and processing reagents.
- Cassettes and slides should be marked using alcohol/xylene resistant pen. Sharpies and other “permanent” markers will wash off during processing.

Tissue Fixation Conditions

Generally, tissues for paraffin embedding are fixed in 10% neutral buffered formalin for 24-48 hours at room temperature. Tissues can be submitted to the Core for processing after being placed into formalin. Prolonged exposure to formalin, and fixation at temperatures other than room temperature can lead to suboptimal morphology and issues with downstream applications. When considering antibody staining, researchers should consult the technical data sheet for the antibody to be used for staining in order to identify the proper fixative and fixation time.

Tissues for frozen sectioning should be fixed in 4% paraformaldehyde (in 1X PBS) and stored at 4°C for 24 hours. The tissues can then be moved to 30% sucrose (in 1X PBS) and stored at 4°C. The tissues can be submitted to the Core in the sucrose solution. If snap frozen tissues are needed for your project, they should be frozen in OCT embedding medium immediately upon removal and submitted to the Core on dry ice. Please inform the Core staff in advance if you need assistance with this.

Tissues provided for Transmission Electron Microscopy should be fixed in 3% glutaraldehyde in cacodylate buffer as soon as possible. It is recommended that the tissue pieces be cut to approximately one cubic millimeter for optimal results. Tissues provided for Scanning Electron Microscopy should be fixed and then dehydrated in ethanol.

For more information regarding the DHC visit our [website](#) or contact one of the following:

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