

Deborah Rubin

Washington University, USA

Session 4B: Advances in Intestinal Bioengineering: Stem Cell Biology, Tissue Engineering and Personalized Medicine: B: The Stem Cell Niche in Short Bowel Syndrome; July 2, 2023; 8:50am-9:10am



I am the William B. Kountz Professor of Medicine in the Division of Gastroenterology of the Department of Medicine, and I have a joint appointment in the Department of Developmental Biology. My research interests focus on understanding the molecular mechanisms that regulate intestinal adaptation in short bowel syndrome. We have studied the molecular basis for enhanced gut stem cell proliferation in response to loss of small bowel surface area, using mouse models of short bowel syndrome and enteroid cultures from humans with short bowel syndrome. We have explored the role of myofibroblasts, the microbiome and bile acid metabolism in the gut stem cell niche in short bowel syndrome. Our lab also has a long-standing interest in elucidating the role of epithelial-mesenchymal interactions in regulating gut epithelial proliferation and colon carcinogenesis, including inflammation induced carcinogenesis. We have studied the roles of the transcriptional co-regulator IFRD1, the syntaxin epimorphin, and intestinal subepithelial myofibroblasts in mouse models of colon cancer and colitis-associated cancer in inflammatory bowel disease, and we have explored IFRD1's effects on survival in human colon cancer. More recently, we have explored the role of PLAGL2, a novel Let7 target, in intestinal epithelial transformation and colon cancer, and interactions between PLAGL2 and IFRD1 in early tumorigenesis in colitis-associated cancer. We have extensive expertise in in vitro crypt stem cell cultures and myofibroblast-stem cell co-cultures. These efforts have been supported by NIH R01 funding for which I am the principal investigator. In recognition of my expertise in stem cells and nutrition-related research, I served as Chair of the Section on Nutrition and Obesity of the American Gastroenterological Association (AGA; elected position). I am a Fellow of the American Association for the Advancement of Science. I have been Director of the Advanced Imaging and Tissue Analysis Core of the Digestive Diseases Research Core Center for >15 years and have extensive experience in studying gastrointestinal tissue morphology as well as expertise in imaging and image analysis, immunohistochemistry, and in situ hybridization. I have served as a permanent member of the NIDDK C study section and the NIDDK CIMG study section. I am a practicing gastroenterologist and run the adult Short Bowel Syndrome Intestinal Rehabilitation Clinic at Washington U School of Medicine, with referrals from the inpatient Nutrition service at Barnes-Jewish Hospital, which consults on all patients that receive parenteral nutrition, and from a network of surgeons, community physicians and gastroenterologists who appreciate our expertise in the complex care of these patients. I have mentored many trainees in Gastroenterology including 16 postdoctoral fellows (11 M.D. and 5 PhD), and 22 predoctoral summer or one year research students (high school, undergraduate and medical students), and have received a Distinguished Faculty Award for Clinical Fellow Mentoring from Washington University School of Medicine and a Mentor Award from the Academic Women's Network. I am co-Director of the Doris Duke Fund to Retain Clinician Scientists Program at Washington U. I served as Chair of the MA/MD Medical Student Research Program, a one-year pullout research experience for medical students. I have also served as Chair of the AGA Committee on Women in Gastroenterology.



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