VDDRC Retreat Agenda

MICROBIAL-HOST INTERACTIONS WITH EMPHASIS ON THE VDDRC EPITHELIAL INTEGRITY PROGRAM

11:30 – 5:00 PM
APRIL 19, 2010
STUDENT LIFE CENTER, BOARD OF TRUST ROOM

11:30 – 12:00 pm  Lunch/Welcome:
Richard M. Peek, Jr., M.D.
Mina Cobb Wallace Professor of Medicine and Cancer Biology
Director, Vanderbilt Digestive Disease Research Center

12:00 – 12:25 pm  Presentation: “A Novel Mechanism for Oxidative Stress and Helicobacter pylori – Associated Gastric Cancer Risk”
Keith Wilson, M.D., Professor of Medicine and Cancer Biology

12:25 – 1:15 pm  Presentation: “New Insights into Helicobacter pylori VacA toxin”
Tim Cover, M.D., Professor of Medicine, Division of Infectious Diseases

1:15 – 1:25 pm  BREAK

1:25 – 2:10 pm  Cores & Pilot/Feasibility Poster Presentation

2:10 – 2:35 pm  Presentation: “Probiotic Prevention of Intestinal Inflammation and Barrier Disruption: Impact on Digestive Health”
Fang Yan, M.D., Ph.D., Research Associate Professor, Division of Pediatrics
Gastroenterology, Hepatology and Nutrition

2:35 – 3:00 pm  Presentation: “Fundamental Mechanisms Underlying the Development of the Human Antibody Response to Rotavirus”
James E. Crowe Jr., M.D., Professor of Pediatrics, Microbiology and Immunology

3:00 – 3:25 pm  Presentation: “Is Rotavirus Gone? Vaccine Successes”
Kathy M. Edwards, M.D., Sarah H. Sell Chair in Pediatrics, Vanderbilt Vaccine Research Program

Terence Dermody, M.D., Professor of Pediatrics, Microbiology and Immunology

3:50 – 4:00 pm  BREAK

4:00 – 5:00 pm  KEYNOTE
Presentation: “Norovirus Vaccine Development: A Bench to Bedside Story”
Mary Estes, Ph.D., Cullen Endowed Chair of Molecular and Human Virology
Departments of Molecular Virology and Microbiology and Medicine
Baylor College of Medicine
VDDRC Retreat Poster Session 2010

CORE POSTERS

Functional Genomics
William Tansey, Ph.D. “Functional Genomics Shared Resources”

Bioanalytical/Mass Spectrometry/Proteomics
Richard Caprioli, Ph.D., David Hachey, Ph.D. “Mass Spectrometry and Proteomics Cores”

Flow Cytometry
James Crowe, M.D., Kevin P. Weller “DDRC Flow Cytometry Shared Resources”

Cell Imaging
David Piston, Ph.D., Sam Wells, Ph.D. “Cell Imaging Core”

Cellular & Animal Modeling
Robert Whitehead, Ph.D., Kay Washington, M.D., Ph.D. “Tissue Morphology Subcore”

Biostatistics
Tatsuki Koyama, Ph.D. “Biostatistics Core” & “Pitfalls of Simplistic normalization in basic science experiments”

PILOT POSTERS

Claudia Andl, Ph.D.
“A model of tissue-specific E-cadherin and TGF® receptor II loss in the Esophagus”

Amar Singh, Ph.D.
“Colonic Over-expression of Claudin-2, a Tight Junction Protein, Increases Epithelial Permeability and Renders Protection from Dextran Sulfate Sodium (DSS) Induced Colitis”

Merchant Nipun, M.D.
“Combined blockade of Src kinase and epidermal growth factor receptor synergistically inhibits growth of pancreas cancer”

John Loh, Ph.D.
“Effect of a high-salt environment on Helicobacter pylori protein expression”

Jeff Reese, M.D.
“Effects of Maternal Obesity on Postnatal Cardiovascular Outcomes”

Christopher Williams, M.D., Ph.D.
“A role for cell adhesion signaling molecule BVES in colorectal carcinoma” (Min Chang will present)

Michael Rosen, M.D., M.S.C.I.
“The Role of SAHA for Preventing IL-13 Induced Colon Epithelial Cell Dysfunction”

Naji Abumrad, M.D. and Charles Flynn, Ph.D.
“Spatial and Quantitative Profiling of Proteins and Lipids in Human Livers for Nonalcoholic Fatty Liver Disease (NAFLD)”

John Stafford, M.D., Ph.D.
“Increasing Postprandial Lipid Clearance with Adiponectin: Consequences for Fatty Liver Disease”

Benjamin Spiller, Ph.D.
“Structural and Functional Analysis of Shigella flexneri Virulence Factor VirA”

Weisong Zhou, Ph.D.
“PGE2 and TH17 differentiation in inflammatory bowel diseases”

Steven McElroy, M.D.
“Tumor Necrosis Factor Induction of Goblet Cell MUC2 Depletion and MUC2 Gene Upregulation Is Age- and TNFR-Dependent”

Saraswathi Viswanathan, Ph.D.
“Impact of cyclooxygenase inhibition on the anti-atherosclerotic effect of dietary fish oil”
CONTACT US

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Analysis Suite: 615.936.3001  
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http://www.thefgsr.org

Functional Genomics Core  
Formerly: Gene Microarray Core  
Director: Bill Tansey, Ph.D.  
Manager: Vicky Amann, M.S.

CORE SERVICES:

• Differential Gene Expression on a variety of Commercial Platforms  
• Genotyping with Affymetrix  
• RNAi Clones  
• Gene Expression Validation using Taqman Probes  
• Library preparation for Sequencing through the GTC  
• RNA Amplification using Nugen SPIA Kits  
• Experimental Design Consultation

Director  
William Tansey, Ph.D.  
Head of Technology  
Travis Clark

Laboratory Personnel  
Vicky Amann, M.S. (Lab Manager)  
John Mote, M.S.  
Chelsea Baker  
Latha Raju, M.S.  
Caroline Kibakaya  
Blake Shester

Informatics Personnel  
Zhongming Zhao, Ph.D. (Head)  
Joe Huang, M.T., M.S., Ph.D.  
Dedeepya Vaka, M.S.

Business Manager  
Jill Ross

ACKNOWLEDGMENT

All microarray experiments were performed in the Vanderbilt Functional Genomics Shared Resource. The Vanderbilt Functional Genomics Shared Resource is supported by the Vanderbilt Ingram Cancer Center (P30 CA68485), the Vanderbilt Digestive Disease Center (P30 DK58404) and the Vanderbilt Vision Center (P30 EY08126).
Bioanalytical/Mass Spectrometry Core

Director: Richard Caprioli, Ph.D.
Associate Director: David Hachey, Ph.D.

CORE SERVICES:

- Identification of oxidized lipids by GC/MS
- Quantitation of prostaglandins & thromboxanes by isotope dilution GC/MS
- Molecular weight determination of proteins & peptides by MALDI/TOF analysis
- Microsequencing of proteins and peptides by capillary ESI/LC/MS & MALDI/TOF
- Determination of postranslational modifications of proteins & peptides by ESI/LC/MS & MALDI/TOF
- Quantification of micronutrients in physiologic fluids by GC/MS and ESI/LC/MS
- Development of novel analytical methods using mass spectrometry
- Interpretation & analysis of mass spectrometry data
- Education & training in mass spectrometry principles & operation

Director  Associate Director
Richard Caprioli, Ph.D.  David Hachey, Ph.D.

Laboratory Personnel  Administration
Melissa D. Carter, Ph.D.  Maureen Casey
Wade Calcutt, Ph.D.  Loretta Collier
Julie Coleman
Jere L. Compton
Lamar E. Dixon
Flow Cytometry Core

Scientific Director: James Crowe, Jr, M.D.
Managing Director: Kevin P. Weller

CORE SERVICES:

- Training, acquisition and analysis on our state-of-the-art cytometers for experiments that include up to 17 different fluorochromes simultaneously
- High-speed sorting with up to nine different fluorochromes simultaneously with the ability to sort and or clone into any plate or dish
- Soluble protein measurement from a variety of biological or experimental samples that can be multiplexed up to 30 different analytes concurrently
- Blood processing and storage to separate and collect cells, serum or plasma for subsequent studies
- Staining for subsequent flow cytometric acquisition and analysis of patient samples
- Expert consultation and troubleshooting and experimental design guidance

CONTACT US

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http://www.vmcflow.com

ACKNOWLEDGMENT

Flow Cytometry experiments were performed in the VMC Flow Cytometry Shared Resource. The VMC Flow Cytometry Shared Resource is supported by the Vanderbilt Ingram Cancer Center (P30 CA68485) and the Vanderbilt Digestive Disease Research Center (DK058404).
Cell Imaging Core

Director:  David Piston, Ph.D.
Associate Directors:  Sam Wells, Ph.D. and Gray Jerome, Ph.D.

CORE SERVICES:

- Access to and technical support for confocal laser scanning microscopy for studies on cell lines, polarized cells and tissues from the digestive tract.
- Support and UNIX based workstations with graphics systems for the display and analysis of massive data sets required for the images obtained.
- Assistance with FRET, FRAP, time lapse, image tiling, and many, many other specialized procedures.
- Education & training in electron, fluorescent and confocal microscopes.
- The CISR facility provides three computer systems for use in medical research studies. The offline image processing workstations are running the latest versions of Metamorph, Adobe Photoshop and Zeiss Image Examiner.

**Director**  
David Piston, Ph.D.

**Associate Directors**  
Sam Wells, Ph.D.  
Gray Jerome, Ph.D.

**Laboratory Personnel**  
CarolAnn Bonner (Lab Manager) 
Sean Schaffer 
Matthew Stephenson 
Bob Matthews, Ph.D. 
Mary Dawes, M.S. 
Denny Kerns 
Maria Vinogradova

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Cellular and Animal Modeling Core

The DDRC Cell and Animal Modeling Core is made up of two subcores, the Novel Cell Line Development Subcore and the Tissue Morphology Subcore.

NOVEL CELL LINE DEVELOPMENT SUBCORE

Director: Robert Whitehead, Ph.D

CORE SERVICES:

• Utilizes the Immortomouse as a source of a conditional immortalizing gene in crosses with other transgenic mouse models that are relevant to a particular digestive disease.

• Establishes conditionally-immortalized epithelial cell lines from gastrointestinal mucosa, pancreas or liver.

• Fully characterizes these cell lines with respect to their epithelial phenotype, the presence of the specific genetic mutation of interest and the presence of tissue-specific markers.

• Has established a "bank" of early passage cells for use by DDRC investigators.

TISSUE MORPHOLOGY SUBCORE

Director: Kay Washington, M.D., Ph.D.
Histotechnologist: Frank Revetta

CORE SERVICES:

• Provision of human gastrointestinal tissues and matched normal tissue samples, processed according to investigator requirements, with stringent quality control measures

• Laser capture microdissection

• Custom tissue microarray (TMA) blocks

• Evaluation of histopathology of mouse models of gastrointestinal diseases and correlation with human disease

• Immunohistochemical services

• Tissue processing and routine histology services
Biostatistics

Director: Tatsuki Koyama, Ph.D.

The purpose of the Biostatistics Core is to provide professional expertise in biostatistics for all DDRC projects, investigators, and participants. Functions provided by this core include development of experimental designs, power analysis, and sample size computation; data acquisition and database development; statistical analysis and interpretation of findings; collaboration on presentation of results; education in biostatistical methods; and development of tools with application to clinical trials and laboratory research.

To achieve these functions, the Biostatistics Core director and core biostatisticians are constantly available to investigators and are in regular contact with the leaders of DDRC research programs and other shared resources.

SERVICES:

- Provide study design, power analysis, and sample size determination, as well as to review laboratory, animal, clinical, and prevention studies, including a feasibility assessment.
- Collaborate in funded research efforts initiated by DDRC investigators, providing statistical data analysis, interpretation of results, and the writing of final study reports and manuscripts.
- Develop and evaluate statistical methods and software for experimental design and data analysis.
- Provide relational database design, data entry, data tracking, forms, queries, and reports, and to maintain computer databases for information storage and retrieval for investigator-initiated clinical trials or laboratory studies.
- Train DDRC members in research design and data analysis through seminars, short statistical workshops, or individual sessions on statistical methods.

ACKNOWLEDGMENT

The Biostatistics Shared resource is supported by the National Cancer Institute. Please acknowledge use of this core in any publications, citing grant number P30CA68485.
Vanderbilt Digestive Disease Research Membership

DIRECTOR: Richard M. Peek, Jr., M.D.

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David Friedman, Ph.D.
David L. Hachey, Ph.D.
W. Gray Jerome, Ph.D.
Tatuki Koyama, Ph.D.
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David W. Piston, Ph.D.
K. Washington, M.D., Ph.D.
Sam K. Wells, Ph.D.
Robert Whitehead, Ph.D.
Kevin Weller

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The Digestive Disease Research Center is a multidisciplinary center at Vanderbilt University Medical Center developed to serve the following purposes:

- Promote digestive diseases-related research in an integrative, collaborative and multidisciplinary manner
- Enhance the basic research capabilities of established DDRC investigators
- Attract investigators not involved in digestive diseases-related research to pursue these lines of investigation
- Develop and implement programs for training and establishment of young investigators in digestive diseases-related research
- Facilitate the transfer of basic research findings to the clinical area