NINTH ANNUAL DIGESTIVE DISEASE RETREAT

Emphasis on the VDDRC Gastrointestinal Development and Function Program

Vanderbilt Digestive Disease Research Center

Vanderbilt Medical Center and Vanderbilt Children’s Hospital

Key Note Speaker:
Vassilis Pachnis, MD, PhD
Head of Molecular Biology
MRC National Institute for Medical Research
The Ridgeway, Mill Hill, London
Vanderbilt Digestive Disease Research Center (VDDRC) Retreat Agenda
Emphasis on the VDDRC Gastrointestinal Development and Function Program

11:30 – 5:00 PM
January 24, 2011
STUDENT LIFE CENTER, BOARD OF TRUST ROOM

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

12:00 – 12:25 pm  Presentation: “Serosal mesothelium in development and repair”
David M. Bader, PhD
Gladys Parkinson Stahlman Professor of Cardiovascular Research
Professor of Medicine, Cell and Developmental Biology

12:25 – 12:50 pm  Presentation: “Unraveling the molecular factors that regulate intrahepatic bile duct morphogenesis and maintenance”
Stacey Huppert, PhD
Assistant Professor of Cell and Developmental Biology

12:50 – 1:15 pm  Presentation: “Molecular Imaging of Digestive Diseases: Research Strategies and Opportunities”
Henry Charles Manning, PhD
Assistant Professor of Radiology and Radiological Sciences, Biomedical Engineering and Neurological Surgery

1:15 – 1:25 pm  BREAK

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

2:10 – 2:35 pm  Presentation: “New insights on brush border function and assembly”
Matthew Tyska, PhD
Associate Professor of Cell and Developmental Biology

2:35 – 3:00 pm  Presentation: “Influence and timing of arrival of murine neural crest on pancreatic beta cell development and maturation”
Patricia Labosky, PhD
Associate Professor of Cell and Developmental Biology and Pharmacology

3:00 – 3:25 pm  Presentation: “Gastrointestinal Issues in Children with Autism Spectrum Disorders”
Kent Williams, MD
Assistant Professor of Pediatrics

3:25 – 3:50 pm  Presentation: “Disruption of Enteric Neural Crest Lineages - A new mechanism contributing to Hirschsprung Disease”
Michelle Southard-Smith, PhD
Associate Professor of Medicine and Cell and Developmental Biology

3:50 – 4:00 pm  BREAK

4:00 – 5:00 pm  KEYNOTE
Presentation: “Enteric nervous system development: recent progress and future challenges”
Vassilis Pachnis, MD, PhD
Head of Molecular Biology
MRC National Institute for Medical Research
The Ridgeway, Mill Hill, London
VDDRC Retreat Poster Session 2011

CORE POSTERS

Bioanalytical/Mass Spectrometry  Richard Caprioli, Ph.D. “The Vanderbilt Mass Spectrometry Shared Facilities”
Flow Cytometry  James Crowe, M.D. “Flow Cytometry Core”
Cell Imaging  David Piston, Ph.D. “Cell Imaging Shared Resource”

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.  “Villin-claudin-2 transgenic mice are protected from the Dextran Sodium Sulfate (DSS)-induced colitis”
Michael Rosen, M.D.  “IL-13-induced colon epithelial cell apoptosis and barrier dysfunction is STAT6 dependent”
Barbara Fingleton, Ph.D.  “Regulation of colonic wound repair by matrix metalloproteinase-10”
Christopher Williams, M.D., Ph.D.  “BVES, a novel adhesion molecule, acts as tumor modifier through modulation of tight junction associated signaling”
Steven McElroy, M.D.  “The effect of inflammation on the innate immunity of immature small intestine is developmentally-dependent”
Saraswathi Viswanathan, Ph.D.  “A Combination of Fish Oil and Indomethacin Potently Reduces Dyslipidemia and Hepatic Steatosis in Low Density Lipoprotein Receptor Knock-Out Mice”
Charles Robb Flynn, Ph.D.  “Spatial Profiling of Lipids and Phosphopeptide Identification in Human Livers for Nonalcoholic Fatty Liver Disease”
Claus Schneider, Ph.D.  “Oxidative transformation of curcumin – key to its cancer chemopreventive activity?”
John Stafford, Ph.D  “VLDL Production, Clearance and Non-Alcohol Fatty Liver Disease”
Jeff Franklin, Ph.D.  “The Vanderbilt DDRC Novel Cell Line Development Core: Creating New Unique Cell Based Models of Intestinal Function”
Eric Liu, M.D.  “$^{68}$Ga-DOTA-Octreotate PET/CT Imaging for Neuroendocrine Tumors: A New Trial in the United States”
Genome Sciences Resource
Formerly the Genome Technology Core, the Functional Genomics Shared Resource and the DNA Sequencing Core

Interim Director: Mark Magnuson, M.D.

Managers:
- Vicky Amann, M.S. – Microarrays and RNAi
- Travis Clark, Ph.D. – Next Generation Sequencing
- Robert Woodhall, B.S. – Sanger Sequencing
- Jean-Philippe Cartailler, Ph.D. – Informatics
- Kurt Shepherd, M.B.A., - Business Operations

Scientific Consultants: Alfred L. George, M.D.
William P. Tansey, Ph.D.

SERVICES:
- RNA expression analysis
- Genotype analysis
- RNA interference
- RNA quality assessment and amplification
- Sanger sequencing
- Next generation sequencing
- Experimental Design Consultation
- Bioinformatics analysis

Laboratory and other staff
John Mote Jamaya Simmons
Chelsea Baker Jennifer LeBlanc
Latha Raju Sam Bearden
Kasey Lawrence Jignasa Patel
Blake Shester Jill Ross

Questions about billing 615.936.3000
Jill Ross

For information about services, prices and locations please visit the GSR website at http://www.gsr.vanderbilt.edu

CONTACT US
To discuss new projects please send an email to gsr@vanderbilt.edu or contact the appropriate service line manager directly by phone.

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Next Generation Sequencing
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Sanger Sequencing
Robert Woodhall 615.936.2660

Acknowledgments
The Genome Sciences 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). The Resource collaborates with the Computational Genomics Core of the Center Human Genetic Research to process and analyze next generation sequencing data.
Bioanalytical/Mass Spectrometry Core

**Director:** Richard Caprioli, Ph.D.

**Associate Director:** David Hachey, Ph.D.

**CORE SERVICES:**

- Identification of oxidized lipids by GC/MS
- Proteomics for identification and characterization of proteins by MudPIT and LC-MS/MS techniques
- Molecular weight determination of proteins & peptides by MALDI/TOF analysis
- Microsequencing of proteins and peptides by capillary ESI/LC/MS & MALDI/TOF
- Determination of posttranslational 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**

Richard Caprioli, Ph.D.

**Associate Director**

David Hachey, Ph.D.

**Laboratory Personnel**

Melissa D. Carter, Ph.D.

Wade Calcutt, Ph.D.

Julie Coleman

Jere L. Compton

**Administration**

Maureen Casey

Loretta Collier

Lamar E. Dixon

**CONTACT US**

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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

Scientific Director
James Crowe, Jr., M.D.

Managing Director
Kevin P. Weller

Laboratory Personnel
David Flaherty
Brittany Matlock

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 (P30DK058404)."
Cell Imaging Core

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

CORE SERVICES:

- Confocal microscopy
- Wide-field microscopy
- Transmission electron microscopy
- Scanning electron microscopy
- Technical assistance, training, image processing and analysis
- Processing and Embedment of tissue or cells for EM
- Sectioning and staining of processed samples
- Immuno/ enzyme histo-cyto chemistry

CONTACT US

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Associate Directors
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Jay Jerome, Ph.D.

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Sean Schaffer
Matthew Stephenson
Bob Matthews, Ph.D.
Mary Dawes, M.S.
Maria Vinogradova
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.
- Provide statistical review on DDRC pilot project applications.
Vanderbilt Digestive Disease Research Membership

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CO-DIRECTORS: Naji Abumrad, M.D. and Keith Wilson, M.D.

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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