Goals and Objectives of the Center

- Provide scientific leadership dedicated to GI and liver research.
- Facilitate GI-related research in Southeast Texas, building on the thematic areas of gastrointestinal infection and injury to stimulate innovative treatment development as well as research.
- Develop important GI research programs by supporting new investigators and pilot projects.
- Provide core facilities and infrastructure dedicated to GI research.
- Stimulate scientific collaboration and translational research.
- Foster scientific communication through conferences, seminars, and workshops.
- Sponsor training and education.
- Develop young investigators and support their careers.

Administrative Core

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Purpose: The Administrative Core provides governance, financial and operational management, and planning functions for the Texas Medical Center Digestive Diseases Center, including:

- Coordination of activities of DDC advisory committees.
- Oversight of infrastructure and scientific cores supportive of basic and clinical GI research.
- Organization and implementation of program development activities that benefit GI research.
- Facilitation of communication and information dissemination among GI researchers, institutional officials, and external groups.
- Coordination of enrichment activities that support GI-related research and educational programs, including a mentoring and grant review program.
- Management of the annual strategic planning process for the DDC and GI-related research programs.
- Maintenance of records and preparation of reports, including any DDC-related grant applications.
- Coordination of pilot and feasibility grant program.

Cellular & Molecular Morphology Core

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Purpose: The Cellular & Molecular Morphology Core provides expertise, equipment and procedures relevant to GI research, makes available its specialized laboratory facilities to GI researchers, and aims to develop new tests that may be useful in clinical and basic research.

Major Core Services:

- Histology, immunohistochemistry, and in-situ hybridization.
- Frozen sections for enzyme histochemistry.
- Immunofluorescent antibody studies.
- Laser-capture microscopy.
- Transmission, scanning, and immunoelectron microscopy.
- Quantitative morphometric analysis.
- Confocal and deconvolution microscopy.
- Fully automated high throughput microscopy platforms for slides or 96/384 well plates, including robotic microfluidic processing of samples
- Custom assay development services for multiplex immunolabeling or FISH
- Access to validated fluorescent oligo probe sets for multiplex FISH
- Custom development of automated image analysis routines (e.g., high content analysis/high content screening)
- Consultation and training in the proper collection, fixation, storage and handling of human and animal tissues for morphological analysis.
- Training and technical advice to researchers interested in developing sophisticated procedures for their GI-related research projects.

Functional Genomics & Microbiome Core

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Purpose: The Functional Genomics & Microbiome Core provides expertise in gene expression (mRNA) studies, genomics, metagenomics and bio-informatics.

Major Core Services:

- Bioinformatics and Genome – Level Data Analysis
- Microbiome and metagenomics analyses
- Gene expression profiling and genomic DNA microarray technology.
- In situ hybridization probe preparation and amplification of RNA from LCM.
- Real time quantitative PCR.
- Protein (antibodies, cytokines, signaling proteins) liquid bead arrays.
- Illumina mammalian DNA and RNAseq.
- Micro RNA arrays.
- Consultation in the choice of methodology in functional genomics or microbiome research.
- Periodic workshops for DDC members to provide information about new genomics/bio-informatics technologies.

Integrative Biology Core

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Purpose: The Integrative Biology Core provides training and service to DDC members and their research staff in the use of techniques to assess GI physiological responses in their animal preparations and or tissues. The core also assists in developing rodent models of digestive diseases, and functional/imaging techniques to non-invasively monitor the animals.

Major Core Services:

- Animal surgery of the gastrointestinal (GI) tract.
- Physiological measurements of GI properties utilizing both in vivo and in vitro systems.
- Help develop animal models of digestive diseases.
- Computerized fluoroscopic imaging technique to monitor the contractile activity of the GI tract.
- Non-invasive in vivo animal imaging.
- Supplies primary hepatocytes.
- GI organoids from mice and humans.

Pilot/Feasibility Funding Program

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Grant funds are available to support pilot/feasibility projects in the area of GI-related research. These funds will support projects related to GI development, infection and injury. Awards range from $10,000 to $25,000 for 1 year. A committee composed of the DDC Internal Advisory Committee, plus ad hoc members and External Advisors, evaluate proposals.

Study Design & Clinical Research Core

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Purpose: The Study Design sub core promotes the use of appropriate study design, statistical analyses, and interpretation for clinical and basic science investigators. The Clinical Research sub core specializes in helping investigators navigate the IRB process to obtain patient samples needed for their research. The core also provides the manpower to collect and store samples until needed.

Major Core Services:

- Services include study design (e.g., study population identification, sample size and power estimates), data management (e.g., design, development and maintenance of databases) and statistical analyses.
- Provides advice on design and analysis of outcomes research, including decision analysis and health economics.
- Helps obtain local and distant IRB approvals needed to obtain clinical specimens.
- Provides manpower to collect, store, and manage specimens collected under IRB approved protocols for pilot and translational studies.

Please Note: All DDC core users must acknowledge the DDC as follows: "This project was supported in part by **PHS grant DK56338**"
and
must comply with the NIH Public Access Policy, including use of PMCIDs for all publications after April 2008. For more information, go to http://publicaccess.nih.gov/submit_process.htm

Member Institutions

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University of Texas Health Science Center/Houston
M.D. Anderson Cancer Center
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James Versalovic, M.D., Ph.D.
Terri Bosshard, CRA

Clinical Liaison Committee

Mark Gilger, M.D.
Marc Rhoads, M.D.

Core Services

Administrative
Cellular & Molecular Morphology
Functional Genomics
Integrative Biology
Study Design & Clinical Research

For more information, contact:

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