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Biostatistics and Medical Informatics Collaborative Research Overview

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This page provides a brief overview of the types of research performed by our Department. Please consult each individual [Department Program](#) for more detailed information on each research area (if available).

The Department is involved in the crossroads of (1) basic research, (2) epidemiological or observational research, and (3) clinical trials research. Biostatistical and medical informatics research facilitates the translation between these areas. These collaborations span basic and clinical science as well as several disease areas including cancer, cardiovascular, ophthalmology, pediatrics, neurology, diabetes, aging, hearing, osteoporosis and smoking cessation. Some major collaborations and affiliations include the Comprehensive Cancer Center, The General Clinical Research Center, The Clinical Trials Research Office, and a number of other university departments. Most collaboration can be broken down into the following types:

Epidemiology, Quality of life, Health policy and Population Science: (DeMets, Fine, Gangnon, Palta, Rosenberg, Serlin, Wahba). Examples of collaborations include work on sleep disorders, the relationship of life histories and health, pain management, tools to monitor health care outcomes, cost-effectiveness of alternative treatments, longitudinal cohort studies of diabetes, sleep disordered breathing, function in the elderly after hospitalization, and familial aggregation of eye disease in the Beaver Dam population.

Clinical trials program: (Chappell, Cook, DeMets, Eickhoff, Fine, Fisher, Kim, Roecker). Collaborations include all aspects of clinical research including design, monitoring and analysis of results. Specific examples include trials of gene therapy, chemopreventative agents, numerous phase I and phase II trials in cancer therapeutics including the treatment of breast cancer in Vietnam, and cystic fibrosis research. The program also has active *extramural* cancer, cardiovascular, ophthalmological, and endocrine collaborations.

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Genetics/Genomics: (Craven, Kendzierski, Newton, Page, Shavlik). Projects in this area include characterization of the genetic factors involved in susceptibility and resistance to cancer growth, mapping gene locations, analyzing genomic sequence data, analysis of mutagenesis experiments, analyzing gene-expression array data, optical mapping of genomes, predicting genomic regulatory elements, algorithms for analysis of mass spectrometry data, and novel gene-expression measurement technology. Collaborators include the UWCCC, McArdle, Computer Sciences, Pharmacy, Genetics, Biochemistry

Laboratory and transitional research: (Fine, Keles, Lindstrom, Newton). This work falls into two main categories The first is modeling and analysis of cell line data including radiosensitization data and lytic unit estimation, serial dilution assays. The second is animal experiments including assessment of cancer fighting properties of various compounds and radiation in animal models where cancers arise naturally or where (human or animal) tumor cells are introduced and the effect of hormones on muscle recovery from injuries.

Clinical and Bioinformatics: (Brennan, Craven, Page, Shavlik, DeMets). Collaborative projects include computational diagnosis of breast cancer including the determination of which mammogram abnormalities require biopsy, automated methods for extracting information from the biomedical literature, automated interpretation of images from x-ray crystallography, automated pharmacophore discovery to help guide drug design, and the use of computer technologies in home-care for patients with complex health problems. Collaborators include the UWCCC, McArdle, Computer Sciences, Pharmacy, Genetics, Biochemistry, GCRC.

Image Analysis: (Chung, Dyer). Dr. Chung and Dr. Dyer are developing algorithms for analyzing MRI images of the brain, where the algorithms perform segmentation, co-registration, and description. Collaborations exist with the Keck Lab (brain imaging), the Department of Ophthalmology and Visual Sciences, the Fundus Photograph Reading Center, Medical Physics, Mechanical Engineering, Waisman Center (speech kinematics), and the Department of Radiology (diagnostic and functional MRI).

Collaborative Research Examples

[Stem Cell Research](#)

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Please see each [Department Program](#) for more information on collaborative research.



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