

Oncology and Pathology Informatics Fellowship

University of Pittsburgh Centers for Oncology and Pathology Informatics

Oncology and Pathology Informatics is a developing discipline that focuses on the management and analysis of clinical and research oncology and pathology data using modern computing and communications techniques. The field includes **Medical Informatics** and **Bioinformatics** related to clinical oncology and cancer research. Medical Informatics research is reshaping the way medicine is practiced and will provide the foundation for accurate, timely, effective and efficient care in the future. Bioinformatics focuses on basic research and seeks ways to optimize the storage, analysis and interpretation of complex biological data sets resulting from modern high-throughput technologies like micro-arrays and proteomics assays.

Research Fellowship Training

The Centers for Oncology and Pathology Informatics offer one- to two-year research fellowships in Oncology or Pathology Informatics. The fellowship is designed to equip pathologists and oncologists with the skills required to lead information systems evaluation and implementation projects, incorporate informatics techniques into their own practice, and/or conduct academic work in the field of informatics. In some cases, research fellowships in informatics may be combined with clinical fellowships in other areas, such as Molecular Diagnostics or Dermatopathology, to provide a focus of informatics training in an area of clinical specialty.

The fellow has primary responsibility for designing and managing a project, which is chosen based on the fellow's training goals and level of computing expertise. Fellows present the results of their work in semi-annual seminars to the Centers and the Department of Pathology and submit abstracts of their work for presentation at national conferences and for publication. Fellows may also be invited to participate in Center teaching, including informatics courses for pathology residents and graduate students, in presenting invited seminars by Centers faculty, and in writing reviews with faculty members to address current developments in oncology/pathology informatics.

Conferences and National Meetings

The Centers host Advancing Practice, Instruction and Innovation through Informatics (APIII) each fall (see <http://apiii.upmc.edu/>). This meeting is the premier national conference focusing on the application of informatics and advanced technologies to oncology and pathology research and practice. It also serves as the national meeting for the Association for Pathology

Informatics (API). The meeting includes platform presentations of research and development in Oncology/Pathology Informatics, electronic poster presentations, breakout sessions and keynote presentations by nationally-recognized leaders in informatics. Trainees of the Centers attend the meeting at no cost and typically present their work in the platform or poster sessions. Other conferences include monthly colloquia in Pathology/Oncology Informatics and Bioinformatics and weekly informatics seminars hosted by the Center for Biomedical Informatics and the Intelligent Systems Program.

Key Project Areas

A partial list of research areas available for trainee participation includes:

- Telepathology implementation; network implications of robotic telepathology systems; collaborative telemicroscopy
- Digitization, automated analysis and management of microscopic images for educational and diagnostic use
- Clinical trials information management
- Tissue banking information systems
- Cancer registry development and data management
- A multi-institutional archive of de-identified oncology patient information for research
- Natural language processing and information extraction from pathology reports
- Outcomes research and medical error reduction
- Management and analysis of gene array data for oncology diagnosis and tumor profiling
- Cancer genomic and proteomic analysis including statistical methods development
- Intelligent tutoring systems in pathology
- Automated identification of clinically-relevant data patterns in the medical record
- Clinical user interfaces that effectively communicate pathology data
- Internet-based communication and support related to oncology care and clinical trial accrual
- Development of information systems for specialty clinical laboratories

The Centers for Oncology and Pathology Informatics

The combined Centers for Oncology and Pathology Informatics at the University of Pittsburgh Medical Center (UPMC) is the first organization of its kind in the nation. It was initially organized as the Division of Pathology Informatics in 1991 and subsequently joined with Oncology Informatics to create the combined Centers in 2001. It has a primary missions of managing

and improving UPMC laboratory information services and systems in anatomic and clinical pathology, managing the tissue banking and cancer registry systems at UPMC, developing custom systems to support pathology and oncology practice, supporting the information system needs of the University of Pittsburgh Cancer Institute, carrying out cutting-edge research in medical informatics, and training the next generation of informatics specialists in Oncology and Pathology. Today, the Centers provide a rare balance of clinical and investigative work in informatics: the organization is an integral part of clinical information management at UPMC with responsibilities for key clinical systems, and it is also very active in externally-supported informatics research with funding from a broad range of sources including the NIH (RO-1, local collaborations and national multi-institutional projects), the Department of Defense, state research initiatives and foundations.

The Centers are located in approximately 2/3 of the third floor of the new Cancer Pavilion at UPMC Presbyterian-Shadyside Hospital, next to the new University of Pittsburgh Cancer Institute. The area currently houses 12 faculty (appointments variously in the Department of Pathology, Department of Medicine and the University of Pittsburgh Cancer Institute), 4 graduate students, 5 research fellows, 10 software engineers/developers (of various levels), approximately 15 project and system managers, approximately 10 hardware/software support staff and 5 database curators. The facility also houses its own teaching/conference space, laboratories for telepathology and human-computer interaction studies, and a fully-equipped server room.

Application and Contact Information

Applicants for the research fellowship should forward a current CV, a cover letter with a description of their training goals, interests and skills in informatics and at least three letters of recommendation to the Training Program Coordinator, below. Applications are considered at any time, but submission 9 months to one year prior to the anticipated start date is recommended.

Training Program Coordinator

Jan Walker

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Training Program Director

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Centers Faculty

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Stephen Raab, MD
Professor of Pathology
Director, Center for Pathology Quality

Sharon Winters, MS
Manager, Cancer Registry System

Yukako Yagi
Director of Telepathology Development

For More Information:

Oncology/Pathology Informatics Training Program
<http://path.upmc.edu/cpi/cpi-train.html>

Center for Pathology Informatics
<http://path.upmc.edu/cpi/index.htm>

Advancing Practice, Instruction and Innovation Through Informatics (APIII)
<http://apiii.upmc.edu>

Bioinformatics Tools at U. Pittsburgh/UPMC
<http://bioinformatics.upmc.edu/index.html>

UPMC Cancer Informatics Services
<http://www.upci.upmc.edu/internet/research/facilities/cis/>

U. Pittsburgh Oncology/Pathology Web Sites
<http://opi.upmc.edu/>