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IBM and University Researchers to Develop Research Tools to Improve Cancer Patient Outcomes
Advanced Imaging and Computer Technologies Aimed at Providing for More Reliable Prognosis Leading to More Personalized Treatment

New Brunswick, N.J. and Armonk, N.Y. – January 25, 2008 – IBM; The Cancer Institute of New Jersey (CINJ), which is a Center of Excellence of the University of Medicine and Dentistry-Robert Wood Johnson Medical School; and Rutgers, The State University of New Jersey, today announced a collaborative research effort to develop diagnostic tools which can improve the accuracy of predicting patients' responses to treatment and related clinical outcomes. Through the use of advanced computer and imaging technologies that facilitate comparisons of cancerous tissues, cell and radiology studies, researchers and physicians expect to determine more accurate cancer prognoses, more personalized therapy planning and, subsequently, the discovery and development of new cancer drugs.

This new project is a natural extension of the "Help Defeat Cancer" (HDC) project in which IBM's World Community Grid was used to demonstrate the effectiveness of characterizing different types and stages of disease based upon the underlying staining patterns exhibited by digitally imaged cancer tissues. World Community Grid is a virtual supercomputer that gains its resources by thousands of volunteers donating their unused computer time.

Leveraging the experimental results gathered during the course of the HDC project, the team has recently received a \$2.5-million grant through competitive funding from the National Institutes of Health. The central objective of this project is to build a deployable, grid-enabled decision support system to help researchers, physicians and scientists to automatically analyze and classify imaged cancer specimens with improved accuracy. It will be a useful tool for supporting the selection of personalized treatments for people with cancer based upon how patients with similar protein expression signatures and cancers have reacted to treatments.

The team is expanding the first phase of the project that studied breast, colon and head and neck cancers to include other cancers as well. From the World Community Grid project, CINJ created a reference library of expression signatures and demonstrated a reliable means for performing high-throughput analysis of tissue micro-arrays.

In addition, investigators at CINJ also are establishing a Center for High-Throughput Data Analysis for Cancer Research that will tap into state-of-the-art computing resources and a Shared University Research Award provided by IBM. The primary objective of the Center is to develop pattern recognition algorithms that can simultaneously take into consideration information contained in digitally archived cancer specimens, radiology images and proteomic and genomic data for improved assessment of disease onset and progression.

David J. Foran, Ph.D., director of the Center for Biomedical Imaging & Informatics at CINJ and professor of pathology and laboratory medicine at UMDNJ-Robert Wood Johnson Medical School, is the lead investigator for the project. "World Community Grid enabled us to validate our imaging and pattern recognition algorithms and establish a reference library of expression signatures for more than 100,000 digitally imaged tissue samples. The overarching goal of the new NIH grant is to expand the library to include signatures for a wider range of disorders and make it, along with the decision support technology, available to the research and clinical communities as grid-enabled deployable software. Through the use of mirror sites at CINJ and Ohio State University, and with the support of the NCI-funded cancer Biomedical Informatics Grid (caBIG) program at NIH, we hope to deploy these technologies to other cancer research centers around the nation," said Dr. Foran. "We look forward to addressing some of the most pressing challenges in clinical informatics today, working side-by-side with our collaborating team of world-class scientists from IBM, Rutgers and other research partners."

Leiguang Gong, Ph.D., of IBM's T.J. Watson Research Center is leading a team of experts in high performance medical imaging and informatics. In this venture, he and his colleagues at the IBM research and technical labs will collaborate closely with Foran's team at CINJ and investigators at Rutgers. Co-principal investigators for the project are Gyan Bhanot, Ph.D., member of CINJ and professor of biomedical engineering and the BioMaPS Institute at Rutgers University, who is an internationally recognized computational biologist in cancer research and a leading expert in evolutionary genetics; and Manish Parashar, Ph.D., professor of electrical and computer engineering and associate director of the Center for Advanced Information Processing (CAIP) at Rutgers University, who is an internationally recognized expert in distributed and autonomic computing.

As part of the new Center, IBM is donating High Performance P6 570 Series Class Servers, which will provide additional computational power for the project. The Center will utilize grid technology to provide access to the software and database to collaborating investigators at Arizona State University, the Ohio State University and the University of Pennsylvania School of Medicine. The consortium will serve as a network-based testbed for optimizing the software during iterative prototyping. "This is an ambitious initiative that will push the frontiers of medicine and science by modernizing the collection, interpretation and distribution of cancer research," said Jai Menon, vice president Technical Strategy and University Relations IBM. "A new diagnostic tool with capabilities to analyze diverse types of cancer tissue has the potential to yield breakthrough advances for cancer research worldwide."

Collaborative Innovation

One key focus of the project will be to foster interaction and exchange of innovative ideas among those individuals who have formal training in engineering and computer science, physics, mathematics and statistics and those with strong backgrounds in the areas of biological sciences and medicine. Rutgers University also will play a major role in the development of the joint project and will address computational and distributed computing issues at the system and application levels. IBM researchers will work onsite at CINJ and at Rutgers to develop the state-of-the-art image processing, machine learning and pattern recognition methods used in this collaboration by conducting deep analysis of the data and by leveraging the computational power of IBM's latest technologies and platforms. The Center also will work closely with the NSF Industry/University Cooperative Research Center on Automatic Computing (CAC) being established at Rutgers. CAC will investigate core technologies for enabling autonomic systems and applications, which will directly benefit the Center. In addition, the effort will yield internship opportunities for Ph.D. candidates at the Graduate School of Biomedical Sciences at UMDNJ-Robert Wood Johnson Medical School and Rutgers University by encouraging and recommending the brightest among them to work in IBM's T.J. Watson lab beginning this year.

About The Cancer Institute of New Jersey

The Cancer Institute of New Jersey is the state's first and only National Cancer Institute-designated Comprehensive Cancer Center, and is dedicated to improving the prevention, detection, treatment and care of patients with cancer. CINJ's physician-scientists engage in translational research, transforming their laboratory discoveries into clinical practice quite literally bringing research to life. The Cancer Institute of New Jersey is a Center of Excellence of UMDNJ-Robert Wood Johnson Medical School. To support CINJ, please call The Cancer Institute of New Jersey Foundation at 1-888-333-CINJ.

The Cancer Institute of New Jersey Network is comprised of hospitals throughout the state and provides a mechanism to rapidly disseminate important discoveries into the community. Partner Hospitals: Robert Wood Johnson University Hospital, Atlantic Health (Morristown Memorial Hospital and Overlook Hospital). Affiliate Hospitals: Bayshore Community Hospital, CentraState Healthcare System, Cooper University Hospital*, Jersey Shore University Medical Center, JFK Medical Center, Raritan Bay Medical Center, Robert Wood Johnson University Hospital at Hamilton (CINJ-Hamilton), Saint Peter's University Hospital, Somerset Medical Center, Southern Ocean County Hospital, The University Hospital/UMDNJ-New Jersey Medical School*, and University Medical Center at Princeton. *Academic Affiliate

About Rutgers, The State University of New Jersey

Established in 1766, Rutgers, The State University of New Jersey, is America's eighth oldest institution of higher learning and one of the nation's premier public research universities. Serving more than 50,000 students on campuses in Camden, Newark and New Brunswick, Rutgers offers more than 280 bachelor's, master's, doctoral and professional degree programs. The university is home to 27 degree-granting schools and colleges, and more than 150 specialized centers and institutes.

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