

Personalized Medicine

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The Wisconsin Genomics Initiative was announced at Marshfield Clinic Research Foundation.



From left: Ulrich Broeckel, M.D., and Howard Jacob, Ph.D., Medical College of Wisconsin; Congressman Dave Obey; Gov. Jim Doyle, at podium; Humberto Vidaillet, M.D., Marshfield Clinic Research Foundation; Robert Golden, M.D., UW School of Medicine and Public Health; Melvin Laird. Also present: Colin Scanes, Ph.D., UW-Milwaukee; and Karl Ulrich, M.D., Marshfield Clinic.

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PMRP at center of historic Wisconsin Genomics Initiative

The largest population-based genetic research project in the country is providing data for an historic collaboration among four Wisconsin research institutions.

Gov. Jim Doyle announced the Wisconsin Genomics Initiative (WGI) on October 10, 2008, involving Marshfield Clinic's Personalized Medicine Research Project, Medical College of Wisconsin, University

of Wisconsin School of Medicine and Public Health, and UW-Milwaukee.

"With our combined knowledge, expertise and technologies here in Wisconsin, we have an incredible opportunity to become a worldwide leader in personalized health care," said Gov. Doyle during dedication ceremonies for the Clinic's new Laird Center for Medical Research North Building.

"Other institutions around the country would love to do this," but it would cost millions of dollars to establish the collective resources already possessed by the four institutions, said Humberto



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From the Director



Cathy McCarty, Ph.D.

I am writing this column two days before Thanksgiving. I love Thanksgiving and always take time to reflect on the people, friends and family whom I am thankful to have in my life. This year, thanks from all of the PMRP

community to Dr. Philip Giampietro, the Department Chair in Medical Genetics at the Marshfield Clinic. He has been instrumental in the community education/consultation/engagement activities for PMRP since 2002. You may have seen him giving a talk about PMRP or heard about his studies of vertebral malformations and osteoporosis. Phil has accepted the position of Medical Director for the genetic counseling program in the School of Medicine and Public Health at the University of Wisconsin, and will have clinical and research time as well. He will continue to collaborate with us and will be

an Adjunct Scientist at the Research Foundation. We wish Phil and his family the best in this new adventure, and look forward to continuing to work with him.

Biobanks such as the PMRP are becoming very popular as a means to obtain the information necessary to personalize health care. We are regularly asked to speak about our experiences in setting up the PMRP because we are viewed as experts internationally in this area. Recent invitations to speak about PMRP have come from the American Society for Bioethics and Humanities, European Science Foundation, Group Health Portland, Columbia University and the Medical College of Wisconsin (MCW). MCW is one of our partners in the recently announced Wisconsin Genomics Initiative. You can read more about this exciting initiative in this newsletter. A reporter from the New York Times scheduled a visit to the Clinic in December to work on a story about the electronic health record and the translation of research information into useful clinical tools. Together, we have put central

Wisconsin on the world map to improve health care, and we have much to be proud of!

Please note on the last page that we have added to the PMRP Community Advisory Group. I am delighted to welcome Mat Bartkowiak, a native of Marshfield who returned to the area recently to accept a position at the University of Wisconsin Marshfield/Wood County after competing Ph.D. studies in Michigan. The group is at full membership now.

PMRP enrollment is still open. We continue to collect dietary history and physical activity information for subjects already enrolled, and are asking additional questions of people who told us that they had smoked at some time in their life. Thank you in advance for completing these questionnaires! If you know anyone who is 18 years or older and lives in one of the 19 ZIP codes around Marshfield and would like to participate in PMRP, please tell them to stop by the Lawton Center on the Marshfield campus or to call our toll free number, 1-888-334-2232 or 715-389-7733.

Access to pathology samples would help PMRP accelerate research into cures, tests

There is more to genetics than the DNA sample you donated to the Personalized Medicine Research Project.

Normal clinical pathology samples, such as tissue and fluids, also contain a wealth of information that can help translate research into new treatments and diagnostic tests that will improve healthcare.

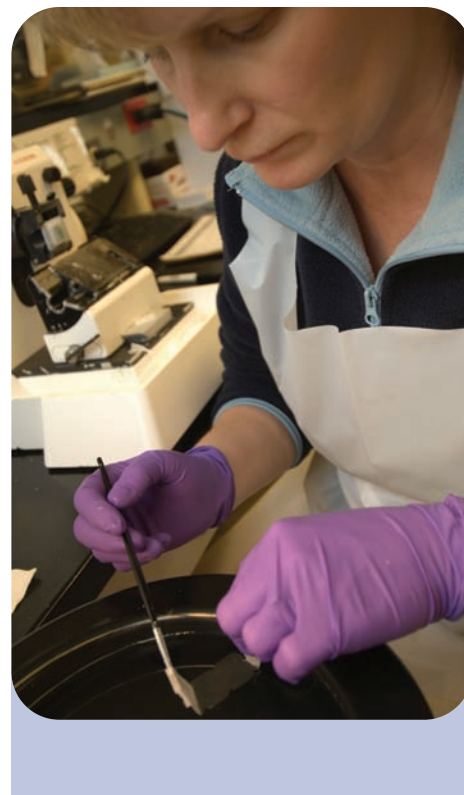
Perhaps you've heard of criminal cases in which a verdict is reversed years later by virtue of a DNA test? Similarly, histology and pathology professionals now have the technical capability to perform tests on decades-old pathology samples and harvest new information that could be crucial to healthcare.

An example is tissue taken from breast cancer tumors. There is a study underway, utilizing the PMRP, that looks at clinical

response to tamoxifen. The next step in the study will be to examine tumor samples.

"Stored tissues with associated clinical outcome (such as cancer) may be useful to discover or validate the role of a candidate gene in a disease process or the response to treatment," said Adedayo Onitilo, M.D., an oncologist-hematologist at Marshfield Clinic-Weston Center who was recently named Co-Investigator on the Personalized Medicine Research Project.

"Stored tissue is often readily available and cost saving," said Dr. Onitilo, "and technology is now available to analyze its DNA material. This, when coupled to the abundant clinical outcome data available electronically at Marshfield Clinic, will indefinitely assist scientists in answering clinical questions rather than waiting for



Endometriosis study includes Oxford, National Primate Research Center

A study involving 1,000 women in the Personalized Medicine Research Project (PMRP) diagnosed with endometriosis, and up to 2,000 women without endometriosis, will help researchers hunt genetic risk factors for the disease, as well as environmental and genetic interactions that may contribute to its development.

“Genetic Epidemiology of Endometriosis,” will include collaborators at the Wisconsin National Primate Research Center and the University of Oxford, England. It is funded by the National Center for Research Resources Administrative Supplement.

Cathy McCarty, Ph.D., is Principal Investigator on the study. Co-Principal Investigator is Joseph Welter, M.D., Marshfield Clinic Department of Obstetrics and Gynecology.

Endometriosis involves tissue similar to the lining of the uterus being found elsewhere in the body, most often in the pelvic region. Symptoms include severe pelvic pain and reduced fertility. Women with endometriosis are at increased risk of developing ovarian cancer and non-Hodgkin’s lymphoma. A definitive diagnosis can only be made during surgery, and it is

estimated that 5 – 10 percent of all women of reproductive age in the U.S. have the disease. Treatment options are limited, and endometriosis has a major impact on women’s quality of life and work productivity.

“This project will set the stage for sophisticated genetic analysis of the risk for endometriosis and suggest new ways for developing biomarkers of early disease and potential therapeutic intervention,” said Joseph Kemnitz, Ph.D., University of Wisconsin School of Medicine and Public Health and Director of the Wisconsin National Primate Research Center.

Research at the primate center suggests that endometriosis is hereditary, and indicates that monkeys are a promising animal model for the investigation of potential genetic markers.

The effectiveness of currently available drugs on individuals can be reviewed through Marshfield Clinic’s world-renowned electronic health record.

Women with diagnosed endometriosis are invited to participate in the PMRP.

Furthermore...

Supervised by **Deanna Cross, Ph.D.**, a molecular finger-printing panel of 37 markers was completed on all of nearly 20,000 PMRP subjects...**James Burmester, Ph.D., Michael Caldwell, M.D., Ph.D.**, and the warfarin team discovered a new gene responsible for warfarin dosing and filed a patent on those findings...**Phil Giampietro, M.D., Ph.D.**, gave a platform presentation on his osteoporosis results at the Human Genome Variation Society meeting, November 11, 2008, in Philadelphia ... **Dr. Giampietro, Steve Wesbrook, Ph.D., Timothy Uphoff, Ph.D.**, and **Humberto Vidaillet, M.D.**, attended the 2008 National Summit on Personalized Healthcare, October 5 – 7, in Deer Valley, Utah. This invitation-only summit brought together leading stakeholders with varying interests but with shared common goals to engage in a high-level discussion aimed at developing a shared vision of making personalized healthcare a living reality...

Access to pathology samples would help PMRP accelerate research into cures, tests

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10 or 20 years to obtain results in a prospective fashion, which is the gold standard for research.”

Said Cathy McCarty, Ph.D., Director of the PMRP: “We need to look at the genetics of the tumor, the genetics of the individual, and personal health behaviors and exposures that interact to influence disease and response to medications.”

Pathology samples in the tamoxifen response study would be subject to the same privacy safeguards as your DNA samples. They would be given a study identification number, coded and de-identified.

When pathology samples are taken at Marshfield Clinic, they are stored for 25 years. This is done so that pathologists can go back and conduct studies or do procedures that were not available when the samples were originally taken, said Judy Spath, Marshfield Clinic Lab Section Manager. A reason might be family history. For example, years-old breast tumor samples now commonly are tested for ER/PR/Her2neu status.

These pathology samples, however, are not part of your health record, for which you consented access to the PMRP when

you enrolled in the project. The PMRP would like to include your pathology samples in its research, but would first have to obtain permission from the Clinic’s Institutional Review Board.

Do you have questions about granting access to the PMRP to study stored pathology samples? Contact PMRP staff at 1-888-334-2232 or 715-389-7733, or visit the PMRP on the Web at www.marshfieldclinic.org/pmrp.

Wisconsin Genomics Initiative

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Vidaillet, M.D., Director of Marshfield Clinic Research Foundation and Principal Investigator of the WGI.

Attendees at the dedication included Elias Zerhouni, M.D., the outgoing Director of the National Institutes of Health. Zerhouni said the ability to identify, treat and prevent disease through an understanding of people's genes could lead to the types of major advances that turned some types of cancers from a death sentence into a chronic disease. Initial work involves genotyping each DNA sample in the PMRP for one million genetic markers; using the Clinic's electronic health record to obtain health history and environmental factors for targeted diseases; and building and testing a computer model capable of predicting an individual's disease susceptibility and treatment response.

The first WGI project is well underway, and involves heart attack. Much of the data is now being analyzed at the UW. "By correlating the genomic data and information from the medical records, our computer scientists will identify patterns that relate to the incidence of complex diseases," said Paul De Luca, Ph.D., Vice Dean, UW School of Medicine.

There already exists an online tool that estimates a person's risk of a heart attack during the next 10 years. Based on the

Framingham Heart Study, the tool asks questions about risk factors such as age, sex, and cholesterol levels. "Imagine how much more accurate the tool could be," said Cathy McCarty, Ph.D., Director of the PMRP, "if you could plug in genetic markers known to be associated with heart attack, along with personal health information such as diet and exercise."

The success of the WGI will depend on the strengths of each partner. Marshfield's repository of DNA and health data will provide a wealth of information, while Medical College of Wisconsin has one of the country's top human genetics labs. UW possesses supercomputers to help process the vast data, and UW-Milwaukee's urban health programs will help expand the knowledge base beyond the rural PMRP.



Gov. Jim Doyle

Contact Us

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