

Research Highlights

centered on science

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MISSION STATEMENT

“Biomedical research is integral to excellence in medical care. The mission of research at Maine Medical Center is to foster inquiry among our clinicians; support rigorous, focused scientific investigation; teach health care providers to engage in biomedical research; and bring beneficial discoveries to our patients, our community, and our world.”

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Peter Brooks, PhD Joins MMCRI

We continue to highlight our new investigators who have been recently recruited to MMCRI. They are a very important part of our plan to continue to grow and expand translational and clinical research.



Peter Brooks, PhD

In this issue, we introduce you to Peter Brooks, PhD, a native of Maine, whose work is an outstanding example of laboratory-based research with strong clinical/translational potential - “bench-to-bedside”. We are delighted that Dr. Brooks has joined the team and hope that when you read about his background and research plans you will share in our enthusiasm.

Dr. Brooks received his undergraduate degree in Biology from the University of Maine in 1988 and obtained his PhD in Cell and Developmental Biology from the State University of New York at Stony Brook in 1993 where he studied the roles of cell adhesion molecules in tumor metastasis and angiogenesis. He completed a two-year postdoctoral training program in the laboratory of Dr. David Cheresh at the Scripps Research Institute where in 1994 he discovered a role for integrin $\alpha\beta3$ in blood vessel development. He was appointed senior research associate at Scripps in 1996 where he made the discovery that $\alpha\beta3$ participated in the localization of the enzyme (MMP-2) to the surface of tumor and endothelial cells. These studies resulted in the development of two anti-angiogenic drugs (Vitaxin/Abegrin™ and Cilengitide™), which are currently being evaluated in several Phase-II clinical trials in melanoma, prostate and glioblastoma in collaboration with the NIH, Medimmune and Merck KGaA. In 1997, Dr Brooks received the Wilson S. Stone Memorial Award for outstanding contributions in biomedical research.

In 1997 Dr Brooks joined the faculty of the University of Southern California as an Assistant Professor where he discovered cryptic regulatory elements hidden within the three-dimensional structure of collagen. While at USC, he developed a set of monoclonal antibodies to these cryptic sites in the cell matrix. In addition, he identified a unique region within MMP-2 that regulated proteolytic activity. This work resulted in the development of a novel anti-angiogenic and anti-metastatic compound termed Pexstatin, which is now being prepared for clinical evaluation. In 1999, Dr Brooks co-founded Cell Matrix Incorporated (CMI) a biotech company based in Los Angeles that focused on novel anti-angiogenic drugs targeting cryptic ECM epitopes. In 2004 Cell Matrix merged with CancerVax Corp (nasdaq:CNVX), which then merged with Micromet (nasdaq:MITI).

Peter Brooks, PhD (continued)

In 2000 Dr. Brooks joined New York University School of Medicine as Associate Professor and Director of Angiogenesis and Radiation Research. His studies on cryptic collagen epitopes lead to the FDA approval of an Investigational New Drug (IND) to evaluate D93; a humanized antibody directed to the HU177 cryptic collagen epitope. In July of 2007, TRACON Pharma in collaboration with Micromet began the Phase-1 clinical study of D93 for the treatment of solid tumors. While continuing to study roles of integrins, proteases and cryptic ECM epitopes, Dr. Brooks discovered that a vitamin-like compound (PABA) as well as several organic proprietary analogs selectively enhanced the anti-tumor activity of chemotherapy and ionizing radiation. A Phase-1 clinical trial resulting from these studies is now being completed at NYU School of Medicine. These new technologies serve as the basis of a second biotech company Cancer Innovation Inc. (CII) co-founded by Dr. Brooks. In September 2007, Dr. Brooks joined the Maine Medical Center Research Institute in Scarborough, Maine and continues his

studies on the mechanisms that regulate angiogenesis, tumor growth and metastasis.

Currently, Dr. Brooks serves as an advisor for several graduate students and postdoctoral candidates, is on the editorial boards of a number of scientific journals, serves as a consultant and Scientific Advisory Board (SAB) member for several companies and has served as a member of the Developmental Therapeutic, Vascular Cell and Molecular Biology and the Tumor Metastasis and Progression NIH Study Sections. He has been the recipient of a number of grants from several private foundations, companies and the National Institutes of Health. Dr. Brooks has been an invited speaker in over 90 national and international scientific meetings, published over 50 articles and book chapters, is an inventor on 18 US and international patent applications, is a co-founder of two biotech companies and his basic research has led to the development of four drugs that are currently being evaluated in human clinical trials for the treatment of malignant tumors.

American Society of Hematology Award



Zack Wang, PhD

Zack Wang, PhD, at the Maine Medical Center Research Institute, has received a Scholar's Award from the American Society of Hematology (ASH).

This highly competitive three-year award is given annually to a small group of promising young scientists working in the field of hematology. Dr. Wang's award was in the Junior Faculty category, intended to provide support to young researchers who are in the first two years of their initial appointment to a research faculty position.

"The ASH Scholar Awards are designed to support hematologists who have chosen a career in research," says MMCRI Director Kenneth Ault, MD, "by providing partial salary or other support during that critical period required for completion of training and achievement of status as an independent investigator. It is a great honor for Dr. Wang, and a strong endorsement of the

importance and visibility of the work being done at MMCRI."

The award recognizes Dr. Wang's research in the development of blood supply and blood vessels. His application was based on study of "EphB4 regulation of hematopoietic and endothelial progenitor cell fate". This investigation into stem cell biology will lead to a better understanding of stem cell development and may ultimately lead to new stem cell based therapies for cardiovascular diseases, stroke, and diabetes.

The mission of ASH is to further the understanding, diagnosis, treatment, and prevention of disorders affecting the blood, bone marrow, and the immunologic, hemostatic and vascular systems, by promoting research, clinical care, education, training, and advocacy in hematology. The ASH Scholar's Awards were established more than 20 years ago and have supported more than 150 scholars.

MMCRI Advocates for Cardiovascular Health in Women

Did you know that more women die from heart attack than any other cause? Or that women's heart attack symptoms can present very differently from the symptoms in men? In November, MMCRI joined with many local and national businesses and organizations to support the American Heart Association's "Go Red for Women" event at the Colony Inn in Kennebunkport. "Go Red" is a movement to increase awareness and advocacy of women's heart health issues, and to raise money to support research to study cardiovascular disease specifically in women.

Scientists from MMCRI presented the latest research advances from our laboratories, including: using the MRI to study heart function, using progenitor cells to generate functioning blood vessels for tissue transplantation, and studying the underlying causes of human cardiovascular diseases. Our research drives the basic discoveries behind medical treatments and therapies for cardiovascular diseases.

Participants took advantage of health screenings, attended workshops on the detection of cardiovascular disease and heart attacks, learned how to beat stress during the holidays, and posed questions to pharmacists and doctors. Deborah Daw Heffernan shared her story of surviving a near-fatal heart attack. The entire evening was ably managed by Kim Block of WGME News 13.

The good news is that dark chocolate and red wine are known to contribute (in moderation of course!) to good heart health, and both were available to participants, along with a fantastic meal. No event for women would be complete without shopping – a silent auction raised money for the Maine chapter of the American Heart Association.

Your lifestyle is your best defense against heart disease. MMCRI and the American Heart Association want you to remember the **ABC's** of heart health: **A**void tobacco, **B**e more active, and **C**hoose good nutrition. Learn about heart disease, including the early warning signs of stroke and heart attack. Know your risk factors and your numbers: cholesterol, triglycerides, blood pressure, weight, etc.



Representing MMCRI (left to right) are: Elizabeth Daoudi, Development Officer; Robert Friesel, PhD, Scientific Director; Ken Ault, MD, Director; Ilka Pinz, PhD, Research Scientist.

Some heart attacks are sudden and obvious: someone gasps, clutches her heart and drops to the ground. But most heart attacks start with mild pain or discomfort. Often people aren't sure what's wrong and wait too long before getting help.

SIGNS of a HEART ATTACK
*discomfort in the chest, or upper body,
shortness of breath, cold sweat,
nausea, and lightheadedness.*

While most heart attacks are characterized by chest pain, women are more likely than men to experience some of the other symptoms, particularly shortness of breath, nausea/vomiting and back or jaw pain.



Left to right are: Elizabeth Daoudi, Development Officer; Ilka Pinz, PhD and Lucy Liaw, PhD, Research Scientists.

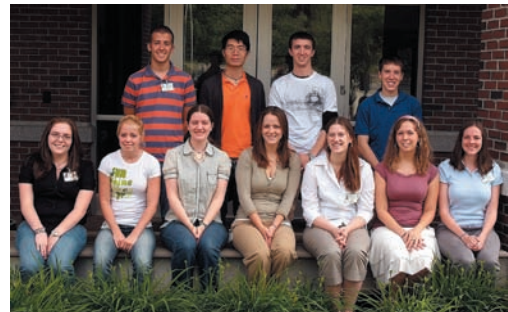
Nurturing the Next Generation of Scientists in Maine

It may be hard to think about summer when the piles of snow tower above our heads, but at MMCRI, we are already planning for the Summer Student Research Program. Each year 12 undergraduates spend ten weeks working under the direction of our scientists, conducting a research project and experiencing the lifestyle of a biomedical research institute. Students work with colleagues and state-of-the-art lab equipment, and attend meetings, seminars and journal reviews. The summer culminates in a presentation of their results in front of their peers and mentors. (BBQs, Sea Dogs games, and other social events keep the summer fun.) This highly competitive program (last year we had over 100 applications) has the added benefit of demonstrating the potential for a scientific career here in Maine.

Each student receives a stipend of \$3,500, ensuring that the program is a viable option for all. We are working to expand philanthropic support for this program from local

businesses, foundations, and individuals who believe in encouraging Maine's young people to pursue careers in science.

If you are interested in learning more, please contact Elizabeth Daoudi in Research Development, by phone at (207)662-2669 or by email at daoude@mmc.org.



2007 Summer Student Program

If you would like your name to be added to our mailing list or to receive the newsletter via email, please contact Betsy Crocker at 207.885.8219 or crockb1@mmc.org.



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