



HARVARD

SCHOOL OF DENTAL MEDICINE
OFFICE OF RESEARCH BULLETIN

September/October 2008

Giuseppe Intini, DDS, PhD

Giuseppe Intini, DDS, PhD, Postdoctoral Fellow and Dean's Scholar in the Rosen Laboratory, received a **Fellowship from the American Academy of Periodontology**. The Fellowship came after a nationwide selection of four finalists who were interviewed for the final assignments during the 94th Annual Meeting of the American Academy of Periodontology held in Seattle.



Winston Kuo, DDS, DMSc

Winston Kuo, DDS, DMSc received an **Award from the Norwegian Research Council** entitled, *Bioinformatics platform for the*



pharmacogenomic analysis of sequence variation in complex diseases.

Malcolm Whitman, PhD & Tracy Keller, PhD



Malcolm Whitman, PhD, Professor of Developmental Biology and Tracy Keller, MS, PhD, Instructor in Developmental Biology received an **Award from The Technology Development Accelerator Fund**. Established by the Office of the Provost and Office of Technology Development, the Accelerator Fund is an innovative program designed to fund early stage applied and translational research with manifest

commercial potential. Providing critical support to advance potentially important but nascent technologies is key, given the absence of early stage funding from industry sources.

The proposal that was funded is based on a project that Malcolm and Tracy are working on as co-PIs, and is in collaboration with Dr. Anjana Rao at the Immune Disease Institute Inc. at HMS. They are developing a new family of small molecule therapeutics for the treatment of chronic inflammatory conditions and autoimmune diseases. Congratulations to Malcolm and Tracy.



The goal of this project is to create an analysis platform for genetic sequence variation implicated in complex disease. This implies providing a bioinformatics solution to solve one of the principle challenges of "personalized medicine", in that there is lacking a comprehensive platform to analyze the genetic components of complex disease implicated in the pathogenesis of the disease and individual drug response. The platform will feature as a computational hypothesis generator linking genetic variation detected in high-throughput experiments with sequence variation, phenotypes and drugs mined from the literature and other sources.



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Dr. Damian Medici

(PhD BSDM Nov '08)



This November, Damian will become the fifth graduate of the Biological Sciences in Dental Medicine Program, based at HSDM and offered through the Graduate School of Arts and Sciences of Harvard

University. Damian's PhD dissertation, **Pathogenetic mechanisms of hemangioma endothelial cells** was defended in August and was completed under the mentorship of Bjorn R. Olsen, MD, PhD. Damian is currently a Harvard School of Dental Medicine Dean's Scholar in the Olsen Lab working on a project, **Inhibition of endoglin prevents Runx2-mediated tumor angiogenesis.**

THE FORSYTH INSTITUTE NEWS



PHILIP STASHENKO, DMD, PHD APPOINTED PRESIDENT OF THE FORSYTH INSTITUTE

Forsyth announced that Philip Stashenko, DMD, PhD, has been appointed president and CEO of the research institute. Stashenko has played an important role in Forsyth's history and has held a variety of scientific and leadership positions since joining the Institute in 1978. "Dr. Stashenko has been instrumental in developing Forsyth's strategy for the future," said Ronald Newbower, PhD, Chairman of Forsyth's Board of Directors. "Since taking over as interim President, he has worked closely with the Board on Forsyth's relocation and strategic plans. As a nationally recognized leader in his field, and with his in-depth knowledge of the Institute, he is superbly suited to promote both the scientific and business interests of Forsyth." "It is an honor and a privilege to be officially appointed as President and CEO of Forsyth," said Stashenko. "This is an exciting time for the Institute, with our pending move to a new state-of-the-art facility in 2010, access to powerful new technologies, closer working relationships with Harvard and other universities and hospitals locally and around the world, and a substantial new resource base, we are poised to seize the vast opportunities before us in new and exciting ways."

LITT COMMUNICATION

LITT is now incorporated into the Harvard Medical School Clinical and Translational Science Center (CTSC-LITT) and will have additional space in the NRB on the 3rd floor.



PAMGENE PAMSTATION

The PamGene PamStation 4 is a 3-dimensional multiplexed microarray platform for the detection and identification of kinase activities in cells of any type. The platform enables investigation on kinase activity in real time. The technology has added a completely new dimension to kinase profiling. Not only does it allow easy and fast substrate identification, it allows you to monitor your kinase activity in a multiplex set up of up to 400 peptides. The PamStation provides this multiplexed kinetic data, including initial velocities, IC50, Ki, and Km data, in less than one hour. The PamStation is a fully automated, integrated incubator, liquid handler, and imager. The system uses unique BioNavigator software with data exportable to a variety of software formats.

Typical applications include mechanism of action, pathway elucidation, compound screening, patient stratification, and determination of the effects of various kinase inhibitors on specific cancer cell lines and tissues.

AMNIS IMAGESTREAM SYSTEM

The ImageStream system is a single platform that combines the analytical power of quantitative cell imaging with the statistical power of flow cytometry. With the ImageStream system, you can:

- Quantitate the amount, location and movement of target molecules on, in or between cells
- Accurately measure cellular processes such as translocation, co-localization, reverse signaling, cell conjugate formation, cell morphology, FISH, gene expression and many more
- Generate and analyze statistically significant data on individual cells, entire populations and sub-populations
- Unambiguously confirm your gating strategies by direct visual analysis of gated cells

By combining microscopy and flow cytometry in a single platform, the ImageStream achieves a true breakthrough in cell analysis. Now the visual information that you obtain with a microscope can be fully integrated with the population statistics you would typically get from a flow cytometer. You can define and quantify cell subpopulations not only by signal intensity, but by the location of the signal in or on the cell. You can use cell and nuclear morphologies to characterize cell populations. In short, you can take full advantage of complex visual data to perform robust, multiparameter quantitative analyses.

In the ImageStream, cells are illuminated with both a brightfield source, a 488 nm laser and up to two additional lasers as optional illumination sources. The resulting composite images are spectrally decomposed into as many as 6 component images and captured using Time Delay Integration technology on a proprietary CCD camera. You see a brightfield, darkfield and up to 4 fluorescence images of every cell, while over 35 morphological and signal intensity features are calculated for every image – over 200 features in total.

QUESTIONS? COMMENTS? SUGGESTIONS?

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