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Recorded Live On: December 10, 2014

Untangling the tumor microenvironment

Illuminating the complex interactions and functions of immune cells

During the webinar viewers will learn about:

• Cutting-edge research targeting the B-cell receptor signaling pathway that has recently demonstrated therapeutic promise

• Methods that can provide in depth information on cancer phenotypes, including simultaneous immunohistochemistry of multiple biomarkers, multiplexed imaging, single cell quantitative analysis, and automated phenotyping

• How host-tumor interaction analysis in breast cancers could form the basis for assays to guide therapy and monitor response

Certain antibody therapies have demonstrated the potential for directing a patient’s own immune system against tumors. Further advances in this area will depend upon a detailed understanding of the tumor microenvironment and characterization of the location and status of immune cells and their interaction with tumor cells. This will require methods that provide phenotyping of immune and cancer cells combined with information about their spatial relationship in tumor regions. Additionally, a deeper understanding of the signaling cascades active in immune recognition of cancers is crucial. During this webinar, we will discuss the bringing together of multiplexed fluorescent immunohistochemistry, advanced microscopy techniques, and bioinformatics, and how these are now enabling new insights into cancer biology and immunology.

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Speakers

Scott J. Rodig, M.D., Ph.D.
Dana-Farber Cancer Institute
Boston, MA

Edward C. Stack, Ph.D.
PerkinElmer
Hopkinton, MA

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MagSi-Direct provides a convenient and efficient way to attach virtually any biomolecule to nanoscopic paramagnetic beads. It is particularly suited for exploiting interactions between a biomolecule and its binding partners. With MagSi-Direct, you can start with a molecule of interest, attach magnetic beads to it, and then use a magnet to isolate that molecule from any desired reaction mixture, together with any other molecules, complexes, or even intact cells to which the starting molecule has bound. In effect, the starting molecule is converted into a magnetic affinity reagent, or “bait,” which can be used to purify, isolate, or characterize the partners with which it interacts. MagSi-Direct beads attach to the starting molecule via strong coordinate bonds between the surface of the bead and any electron donating group on your molecule (carboxyl, amid, 1°, 2°, 3° amine, hydroxyl, phosphate, halogen, etc). Molecular orientation is non-specific and random.

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**High-Performance Liquid Chromatography System**

A new high-performance liquid chromatography (HPLC) system has been designed from the ground up to provide new levels of performance, productivity, and usability when used as a standalone system or with the latest mass spectrometers. The monolithic column contains an instrument that combines the ruggedness of an integrated system with the flexibility and serviceability of a modular system. Vanquish stands about 25% lower than comparable modular stacks for safety and convenience in the laboratory. Central to the Vanquish concept is the new family of Accucore Vanquish UHPLC columns, specially designed to optimize performance. The new columns feature 1.5μm solid core particles utilizing Core Enhanced Technology to take full advantage of the Vanquish system’s 1,500 bar (22,000 psi) maximum pump pressure and flow rate up to 5 mL/min for ultrashort diffusion path lengths and highly efficient separations.

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The new LabChip GX Touch and GXII Touch electrophoresis systems automate conventional gel electrophoresis, eliminating the need for manual sample preparation. The LabChip GX Touch and GXII Touch reduce hands-on time and simplify data generation via a user friendly operator touch screen. The LabChip platform provides the data and throughput necessary to perform effective nucleic acid quantification and protein characterization. The LabChip GX system can enhance genomics research process by precisely quantifying nucleic acids. The GXII Touch system helps to accelerate the development of biotechnical drugs by automating the protein characterization process. The LabChip GXII Touch system’s rapid reporting of multiple proteins’ critical quality attributes can support customer needs throughout the product life cycle. The LabChip Touch platform’s top differentiator is its ability to perform electrophoresis in microfluidic channels. The LabChip GX Touch system provides rapid, quantifiable data for pre- and post-polymerase chain reaction sample analysis, which is critical for next generation sequencing and genomics workflows.

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EDUCATION

The Pennsylvania State University
Ph. D. in Bioengineering, expected May, 2015

The Pennsylvania State University
B.S. Biochemistry and Molecular Biology, May, 2010

AWARDS AND HONORS

2012-present Research Fellowship sponsored by NKG
2012 Nominated for luncheon with CEO of Jakobov Copula
2010-2011 President's Award for Educational Excellence
2009-2011 Dean's List

PUBLICATIONS

Lebinewitz J and Harston NR. Venular leukocyte adhesion attenuates tissue shear concentration in closely paired arteries. FASEB J, submitted 2011


REFERENCES

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