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Imaging in 2020 Conference Focuses on Imaging the Immune System to Improve the Diagnosis and Treatment of Cancer, Heart Disease and Brain Disorders

Academic, Industry and Medical Association Experts Gather to Guide the Long Term Future of Imaging

CULVER CITY, Calif., October 23, 2014 – The role of the immune system in the pathologies of cancer, heart diseases, and brain disorders was the focus of the *Imaging in 2020: 2014 Conference*, designed to discover new methods of using molecular imaging to image the immune system to better understand mechanisms of the diseases and improve therapy. The *Imaging in 2020: 2014 Conference* was sponsored by the World Molecular Imaging Society, the National Cancer Institute, National Institutes of Health, Radiological Society of North America, Northwestern University, as well as a number of leading companies in molecular imaging, life sciences, *in vivo* diagnostics, and the biotechnology and medical device industries.

Imaging in 2020 was created in 1999 to advance the emerging field of molecular imaging as researchers recognized its potential to reveal the dynamic processes in cells and tissues that could lead to discoveries in the imaging, diagnosis and treatment of disease. Held every two years, the *Imaging in 2020* conferences are structured to facilitate open and effective communication among basic and clinical researchers from many different fields in attempt to prompt multi-discipline discussion and collaborations.

Imaging the immune system was selected as the central topic for the Conference to explore and help solve two important contemporary medical issues:

- Why is vaccination successful in some cancers but has failed in many trials?
- Is immune system involvement in brain and cardiovascular diseases, including aging, far more important than is generally recognized?

“Molecular Imaging has a great potential to reveal the behavior of the immune system such as T-cell trafficking, dendritic cell migration and use of chemical ligands to show body chemistry beyond non-specific inflammation. This can provide guidance to disease detection and to efficacy of therapy, such as labeled antibody, Herceptin, in the treatment of breast cancer,” said Thomas F. Budinger, M.D., Ph.D., Senior Scientist Lawrence Berkeley National Lab and Professor, University of California, Berkeley.

Highlights of the *Imaging in 2020: 2014 Conference* include:

- NIH researcher Dr. Polly Matzinger kicked off the *Imaging in 2020: 2014 Conference* with a discussion of the complexities of the immune system, which demonstrated immune mechanisms using historical milestones. She discussed the “Danger Theory”, a major change in paradigm from how immune system function was understood decades ago.
- Cell-based therapies were highlighted including current clinical trials, basic research on mechanisms, and imaging technologies to track cell migration. Researchers are showing successful application of immunotherapy in the treatment of disease in the clinic. The ability to understand the fate and distribution of these therapies is critical to their further development and refinement and several sessions explored the role that imaging might play in elucidating fate.
- In focused sessions on the roles of inflammation in cancer, brain injury and cardiovascular disease, experts reached across disciplinary boundaries to communicate the key limiting issues to progress and extensive discussions probed how new technology may facilitate overcoming these limitations.
- In an “Emerging Topics” session, researchers discussed the role of the gut microenvironment on immune regulation and disease. We are coming to recognize that gut fauna are strongly correlated

with disease pathogeneses but much remains to be studied. The ability to characterize fauna non-invasively would be of great utility to the field.

- The keynote address “Inflammation and Immunity in Atherosclerosis” by Dr. Peter Libby of Harvard emphasized inflammation as a key component of vascular disease based on his seminal experimental and translational observations on the pathophysiological pathways leading to plaque formation and destabilization. Reviewing the failure of clinical trials and therapies to make an impact on atherosclerotic-based deaths, Dr. Libby presented the potential for a new trial involving 10,000 subjects with far reaching clinical implications.
- In the “New Technologies” session, researchers highlighted diverse projects that are pushing the forefront of imaging technologies, from novel imaging contrast molecules and nanoparticles to technology development in optical and nuclear sciences.

“Molecular imaging is itself a complex activity, requiring knowledge and integration of physics, chemistry and biology. *Imaging in 2020* has brought together leading experts to stimulate advances in the field of molecular imaging such as imaging and tracking of immune cells, engineering of immunity, and the use of imaging to evaluate immunotherapies. A key aspect of the meeting structure is the time allocated to discussion, in the scientific sessions, poster sessions and in informal settings. These highly informed, face-to-face conversations have been crucial in creating new collaborations and encouraging researchers to incorporate new approaches into their existing work,” said Daniel C. Sullivan, M.D., Professor and Vice Chair, Research, Department of Radiology, Duke University Medical Center.

The 10th *Imaging in 2020 Conference* is scheduled to convene September 18-22, 2016 in Jackson Hole, Wyoming. For more information about *Imaging in 2020*, visit <http://www.imagingin2020.com/>

ABOUT WORLD MOLECULAR IMAGING SOCIETY

The WMIS is dedicated to developing and promoting translational research through multimodal molecular imaging. The education and abstract-driven WMIC annual meeting is held in conjunction with European Society for Molecular Imaging (ESMI) and Federation of Asian Societies for Molecular Imaging (FASMI). WMIC provides a unique platform for scientists and clinicians with very diverse backgrounds to interact, present, and follow cutting-edge advances in molecular imaging. Industry exhibits at the congress include the latest advances in preclinical and clinical imaging applications creating a complete molecular imaging educational technology showcase. For more information: www.wmis.org

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