# The Food and Drug Administration's (FDA's)
# 2015 ORSI Science Symposium
# April 27, 2015
***SPEAKER ABSTRACTS AND BIOGRAPHIES***

**Session 4: Broad Agency Announcement (BAA) Research Contract Program Presentations – 1:45-3:00 PM**

| | |
|---|---|
| Speaker name and title | **Garry P. Nolan, Ph.D.**<br>**Rachford and Carlota A. Harris Professor** |
| Contractor | **Stanford University School of Medicine** |
| Biography | **Garry P. Nolan, Ph.D. is the Rachford and Carlota A. Harris Professor, Baxter Laboratory for Stem Cell Biology, Department of Microbiology and Immunology, Stanford University; Director, NHLBI Proteomics Center for Systems Biology at Stanford University.**<br><br>**He trained with Leonard Herzenberg (for his Ph.D.) and Nobelist Dr. David Baltimore (for postdoctoral work for the first cloning/characterization of NF-kB p65/RelA and the development of 293T rapid retroviral production systems). He has published over 180 research papers, is the holder of 17 US patents, and has been honored as one of the top 25 inventors at Stanford University. He has trained more than 30 graduate students and 40 postdoctoral or clinical fellows.**<br><br>**Dr. Nolan's areas of research include hematopoiesis, cancer and leukemia, autoimmunity and inflammation, and computational approaches for network and systems immunology. His most recent efforts are focused on a single cell analysis advance using a mass spectrometry-flow cytometry hybrid device, the so-call "CyTOF". The approach uses an advanced ion plasma source to determine the levels of tagged reagents bound to cells—enabling a vast increase in the number of parameters that can be measured per cell. Another recent innovation is termed molecular ion beam imaging (MIBI) a system that also uses mass tags that will enable sub-light imaging (5 nm resolution) of tissue sections with 50 or more parameters per image. His laboratory has already begun a large scale mapping of the hematopoietic hierarchy in healthy human bone marrow at an unprecedented level of detail. Dr. Nolan's efforts are to enable a deeper understanding not only of normal immune function, trauma, and other inflammatory events but also detailed substructures of leukemias and solid cancers—which will enable wholly new understandings that will enable better management of disease and clinical outcomes.**<br><br>**For more information on his lab and their studies visit the Nolan Lab website http://www.stanford.edu/group/nolan/** |
| Title of the project | **The Immune Atlas** |
| Presentation Abstract | **Animal models are critical parts of disease modeling and drug development, especially in the context of The Animal Rule. It is critical that we understand the differences between model organisms and humans such that the immunotherapeutics developed in model organisms have the anticipated behavior in humans, and that disease models accurately reflect the immunological events that occur in humans. The low drug approval rate indeed suggests that our animal models are weak links in the drug development process. To help remedy this issue, we are systematically defining the differences and similarities between and within large numbers of healthy humans, mice and three species of non-human primates. Using phospho-flow assays measured by CyTOF mass cytometry, we can interrogate the behavior of all of the major innate immune pathways in all of the major immune cell types simultaneously, including co-variance and cross-talk between these pathways and cells. This is being prepared in the context of an online "Immune Atlas" by which researchers will be able to query datasets prepared under the context of this study and also upload their own datasets for automated comparison. The study prepares the framework for a Human Reference map—the online equivalent of the Human Genome Reference that has propelled genomic studies in the last decade. We expect a similar framework for Immunology will greatly facilitate immune studies in clinical and pharmaceutical medicine as well as basic research.** |