Research Round-Up: 10th Biennial Ovarian Cancer Research Symposium

By Annie Ellis

The 10th Biennial Ovarian Cancer Research Symposium held September 8-9, 2014 in Seattle, WA was presented by Marsha Rivkin Center for Ovarian Cancer Research, Swedish Medical Center, and the American Association for Cancer Research (AACR). The Symposium was established by Dr. Saul E. Rivkin, MD in honor of the memory of his first wife Marsha and is the longest running scientific meeting in the U.S. focused exclusively on ovarian cancer. A new partnership with AACR and collaboration with experts in basic science disciplines have brought synergy to the community of ovarian cancer researchers. Sessions were divided into several important areas of focus:

Technologies that Drive Ovarian Cancer Research

Many ovarian cancers exhibit a phenomenon called "genomic instability" where the chromosomes (made up of DNA – our genetic material) within the tumor cells is radically different and unstable compared to normal cells within the body. Understanding the pathways of genomic instability will lead to the insights necessary for control high grade serous ovarian cancer.

Dr. Richard Kolodner of the University of California San Diego, Ludwig Institute for Cancer Research presented the development of three types of assays to study accumulation of gross chromosomal rearrangements (GCRs) in yeast – a surrogate for ovarian cancer tumor cells. This work has identified a genetic network and 44 essential genes associated with increased GCRs when mutated.

Dr. William Hahn of Harvard Medical School and Dana-Farber Cancer Institute discussed the tools and libraries used to interrogate both structural genomics and functional genomics of ovarian cancer cell lines. This work has identified new oncogenes, which may play a role in driving ovarian cancer. Dr. Hahn added that understanding the metabolic pathway is also important.

Strategies for Controlling Ovarian Cancer

While the results of the United Kingdom Collaborative Trial of Ovarian Cancer Screening (UKCTOCS) study are eagerly anticipated to be announced in early 2015, Dr. Usha Menon of University College London gave a review of prior ovarian cancer screening research. As Type II ovarian cancer appears to spread when the mass is small and tumor volume may be more critical than stage, perhaps the focus of screening should shift from detecting low stage to low volume disease. (For more information on the UKCTOCS study: http://www.instituteforwomenshealth.ucl.ac.uk/womens-cancer/gcrc/ukctocs)

Dr. Clayton Boldt, MD Anderson Cancer Center discussed the need for a plasma biomarker of early disease for the 20% of ovarian cancer patients who present with low CA-125. They are in the process of validating promising biomarkers.

Biology of Ovarian Cancer

Dr. Charles Roberts of Harvard Medical School and Dana-Farber Cancer Institute discussed the role of ARID1A, a subunit of a chromatin remodeling complex, which can be exploited to overcome therapeutic blockade of cancer driving pathways. Through Project Achilles (http://www.broadinstitute.org/achilles), cancer genetic dependencies are being linked to their molecular characteristics to guide development of targeted therapies.

Dr. Sohrab Shah from the British Columbia Cancer Agency shared their work studying the genomic differences between primary tumors and metastatic tumors and whether driver mutations are present before the presence of widespread genomic instability.

Dr. Yang Yang-Hartwich from Yale University School of Medicine discussed the hypothesis that the wound repair from ovulation recruits malignant cells from outside the ovary and provides an area for malignant cells to adhere.

Novel Therapeutics for Ovarian Cancer

Dr. Kunle Odunsi from Roswell Park Cancer Institute discussed the exciting area of immunotherapy for ovarian cancer. Under normal circumstances, the immune system is able to identify abnormal cells within the body (such as ones that might become cancerous) and eliminate them. However, many tumors have the ability to block recognition by immune system and therefore evade being eliminated. Immunotherapy works by not allowing tumor cells to "hide" from the immune system, meaning they can be targeted for elimination. Dr. Odunsi discussed several of the ways that immunotherapy drugs can target the tumor cells, including through a gene called NY-ESO-1, which he is currently investigating.

Dr. James Bryan from VentiRx Pharmaceuticals discussed the results of recent studies of novel immunotherapy VTX-2337, which targets another component of the immune system-tumor interaction called TLR-8. VTX-2337 is currently in a Phase II clinical trial (GOG-3003) and recently received FDA Fast Track Designation for Ovarian Cancer. Preliminary results presented at the conference suggest that VTX-2337 given in combination with pegylated liposomal doxorubicin (PLD; also called Doxil) is more effective than PLD alone.