Molecular profiling reveals differences between primary and recurrent ovarian cancers

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There is a need to analyze tumor specimens at the time of ovarian cancer recurrence, according to a new study published in *Molecular Cancer Therapeutics*. Researchers used a diagnostic technology called molecular profiling to examine the differences in the molecular characteristics of primary and recurrent ovarian tumors and found significant changes for some biomarkers. This is the first study that examined potential differences in a broad biomarker panel in patient-matched primary versus recurrent ovarian cancers and underscores the importance of analyzing the most current tumor tissue in order to make the most informed decisions about treatment for recurrence.

Ovarian cancer is the most deadly of gynecological cancers, and is the fifth leading cause of cancer-related death among women in the United States. Treatment for recurrent ovarian cancer often follows a trial and error approach in spite of molecular profiling technologies available to inform treatment selection. Profiling technologies may be utilized at the time of ovarian cancer recurrence, but the tumor specimens that are analyzed are most often those obtained at initial diagnosis. This profiling of the primary tumor does not take into account changes that occur in recurrent tumors, which may have enabled their survival after chemotherapy treatment.

Lead author Deb Zajchowski, Ph.D., Scientific Director of The Clearity Foundation says, "These results highlight additional challenges for the

treatment of recurrent ovarian cancer. The study helps us appreciate the degree to which tumor characteristics that may be useful for making treatment decisions may change over the course of this disease."

Dr. Zajchowski, Clearity Scientific Advisor Beth Y. Karlan, M.D. of Cedar-Sinai's Women's Cancer Program and colleagues analyzed data already collected by The Clearity Foundation and the Diane Barton Database. They employed 18 different immunohistochemical analyses at Clinical Laboratory Improvement Amendments (CLIA)-certified labs to analyze 43 matched tumor specimens from 19 advanced stage carcinoma patients for a panel of proteins that are correlated with drug response, discovering that expression levels of five different biomarkers were discordant in more than 40% of the matched tumor samples. These differences may be sufficiently large as to impact selection of therapy.

"These results demonstrate the dynamic genetic changes in ovarian cancers between diagnosis and recurrence. While the expression of these and other candidate response biomarkers should be evaluated in larger studies to better understand the clinical utility of profiling recurrent tumor specimens, this report highlights our urgent need to individualize our treatment approaches in order to improve ovarian cancer survival," says Dr. Karlan, Director of the Cedars-Sinai Women's Cancer Program at the Samuel Oschin Comprehensive Cancer Institute and a renowned expert in the field of gynecologic oncology.

Ovarian cancers are very different from patient to patient, which means they are likely to respond differently to FDA-approved and investigational drugs. By identifying the alterations in each tumor's information pathways, molecular profiling enables the individualization of a patient's treatment by matching those tumor alterations with one or more drugs. The Clearity Foundation has developed a process for generating this personalized diagnostic information using commercially-available molecular profiling technologies and then analyzing the results

using its Diane Barton Database.

Provided by The Clearity Foundation