

Improving ovarian cancer diagnostics while advancing the state of metabonomics

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“Multi-class modeling of metabonomics data for the detection of early stage ovarian cancer”

A multi-disciplinary team of researchers from the University at Buffalo and Roswell Park Cancer Institute is testing a new metabonomics-based approach for screening of high-risk Epithelial Ovarian Cancer (EOC) populations.

Investigators Rachael Hageman Blair, assistant professor in the Department of Biostatistics in UB’s School of Public Health and Health Professions; Jeffrey Miecznikowski, associate dean of faculty affairs and associate professor in the Department of Biostatistics; Kunle Odunsi, professor and chair of the Department of Gynecologic Oncology, executive director of the Center for Immunotherapy and deputy director at Roswell Park; and Thomas Szyperski, a UB distinguished professor in the College of Arts and Sciences’ Chemistry Department, have begun a two-phase pilot study to test the efficacy of a metabonomics-based, non-invasive approach for early EOC detection that they have established.

If viable, the method will not only benefit women at risk for EOC, it promises to advance the state of the art in metabonomics by establishing new protocols for incorporating complex “multi-class” data into predictive models. The approach established in this pilot study will generate profiles that discriminate between blood samples from healthy women and those from women with benign or malignant tumors.

The approach relies primarily on nuclear magnetic resonance (NMR) and mass spectrometry (MS) profiles for the metabonomics of blood serum, plus additional biomarkers and clinical variables.

“We expect that combining NMR, MS and CA-125 data will significantly improve predictive accuracy,” the authors of the study write. “Metabonomics offers a vast potential to greatly enhance biomedical research, diagnosis of diseases and personalization of currently available treatments,” they added. The investigators anticipate a day when NMR/MS profiles will become a routine part of medical check-ups, possibly incorporating protocols that are under development on UB’s medical campus right now.

This pilot study is a good example of the kind of creative and innovative translational science the CTSA seeks to support, and it furthers the CTSA’s aims of fostering multi-disciplinary research

teams while addressing health disparities in Western New York. The \$75,000 research award from the Clinical and Translational Science Award (CTSA) is funded by the National Center for Advancing Translational Sciences of the National Institutes of Health under Award Number UL1TR001412.