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Education

PhD, Microbiology, University of Maryland

Key Interests

Proteomics | Precision Medicine | Signal Transduction | Cancer | Infectious Diseases | Biomarkers | Traumatic Brain Injury | Neurodegenerative Disease | Cardiovascular Disease

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SELECT PUBLICATIONS

- › M. J. Pishvaian *et al.*, Molecular profiling of patients with pancreatic cancer: initial results from the Know Your Tumor initiative. *Clin Cancer Res* 24(20), 5018-5027 (2018).
- › J. D. Wulfkuhle *et al.*, Evaluation of the HER/PI3K/AKT family signaling network as a predictive biomarker of pathologic complete response for patients with breast cancer treated with Neratinib in the I-SPY 2 TRIAL. *JCO Precis Oncol* 2, 1-20 (2018).
- › J. G. Einspahr *et al.*, Protein activation mapping of human sun-protected epidermis after an acute dose of erythemic solar simulated light. *NPJ Precis Oncol* 1, 34 (2017).
- › M. Pierobon *et al.*, Enrichment of PI3K-AKT-mTOR pathway activation in hepatic metastases from breast cancer. *Clin Cancer Res* 23(16), 4919-4928 (2017).

Research Focus

I co-lead the Center of Applied Proteomics and Molecular Medicine (CAPMM) with Dr. Lance Liotta. The CAPMM team's mission is to conduct research on mechanisms of disease related to protein structure and function, and to translate the findings to patient benefit through early stage disease diagnoses, prevention, personalized precision medicine, and the discovery of novel therapies. The scientists of the Center comprise a multidisciplinary team of physicians, molecular biologists, medical technology experts, bioengineer, nanotechnology experts, and biochemists. The CAPMM team invents new technology to address questions in medical science that could not be answered in the past. We use our novel technologies to conduct research on disease mechanisms. The CAPMM has invented, developed, published, and patented transformative technologies and research discoveries in medical fields under the Center mission.

Current Projects

- Individualized therapy of breast cancer, Side-Out Trial: This is the first trial for individualizing therapy for metastatic breast cancer. The "multi-omic" study combines proteomic and genomic data to provide physicians in community hospitals with key missing information concerning treatment options for each patient's tumor.
- Discovering more effective breast cancer therapies. I-SPY2 Trial: This trial evaluates the efficacy of neoadjuvant breast cancer treatments in different types of tumors based on molecular biomarkers of the disease. The purpose is to identify tissue and blood biomarkers that predict how the tumor will respond to each therapy and which early indicators of response predict successful treatment. This is the first trial sponsored through the NIH Foundation.
- Creation of a novel class of nanotechnology for identifying protein biomarkers used for early detection of cancer, infectious disease, traumatic brain injury, and Alzheimer's dementia.