



Virginia Espina, PhD, MT (ASCP)

Research Associate Professor, Center for Applied Proteomics and Molecular Medicine

Education

PhD, Biosciences, George Mason University

Medical Technologist certification, American Society for Clinical Pathology

Key Interests

Translational Medicine | Proteomics | Cancer | Autophagy | Signal Transduction | Laser Capture Microdissection | Reverse Phase Protein Arrays | Red Blood Cell Phenotype

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SELECT PUBLICATIONS

- › V. Espina, Ed., *Molecular Profiling: Methods and Protocols* (2nd Edition) in *Methods in Mol Biol.* (2017).
- › V. Espina *et al.*, Malignant precursor cells pre-exist in human breast DCIS and require autophagy for survival. *PLoS One.* 5(4), e10240 (2010).
- › C. Mueller *et al.*, One-step preservation of phosphoproteins and tissue morphology at room temperature for diagnostic and research specimens. *PLoS One.* 92(15), e23780 (2011).
- › A. J. VanMeter *et al.*, Laser capture microdissection and protein microarray analysis of human non-small cell lung cancer: differential epidermal growth factor receptor (EGFR) phosphorylation events associated with mutated EGFR compared with wild type. *Mol Cell Proteomics.* 7(10), 1902-24 (2008).

Research Focus

My interdisciplinary team designs and performs basic and translational research studies and human clinical trials, to elucidate potential therapeutic targets for cancer and infectious diseases. My laboratory philosophy towards research is “why, what if, and just try it.” With this mindset, my basic research projects explore interconnections between seemingly disparate diseases, proteomics, and glycomics. Laser capture microdissection, immunohistochemistry, and reverse phase protein arrays are core technologies that allow us to analyze specific cell populations within the complex tissue microenvironment for each patient. Using these technologies, we elucidate potential therapeutic targets for cancer and infectious diseases. Protein signaling pathways of interest are autophagy, hormone regulation, and endocannabinoid receptor interactions.

I direct our CAP/CLIA accredited clinical proteomics laboratory which facilitates clinical trials and collaborative projects with pharmaceutical/biotechnology companies. We develop and patent technologies to address critical health care needs in the areas of tissue preservation, mechanisms of development/treatment of pre-malignant lesions, and novel diagnostic methods.

Current Projects

- PINC trial (Preventing Invasive breast Neoplasia with Chloroquine): Deciphering signaling pathways in early stage breast cancer that are modulated by chloroquine.
- Developing immunological portraits of breast ductal carcinoma in situ (DCIS) for potential therapeutic interventions.
- Identifying potential biomarkers of energy metabolism of breast cancer cells.
- Creating novel diagnostic technologies to decipher glycoprotein interactions.