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Mining the human urinary proteome biomarker discovery for human cancer and its metastases

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The Moses Laboratory has had a long-standing interest in identifying and characterizing the biochemical and molecular mechanisms that underlie the regulation of tumor growth and progression. Dr. Moses and her laboratory have discovered a number of inhibitors of tumor neovascularization that function at both the transcriptional and translational level, some of which are in preclinical testing. Named a pioneer in the field of Biomarker Medicine by the Journal of the National Cancer Institute, Dr. Moses established a Biomarker Discovery Initiative in her laboratory to complement these studies. This has led to the identification and validation of panels of noninvasive biomarkers that can predict disease status and stage of patients with a variety of human cancers. These cancer biomarkers have been validated using our extensive IRB-approved biorepository. They are sensitive and specific markers and have been shown to be useful in monitoring the therapeutic efficacy of cancer drugs as well. Given that Dr. Moses has focused on the urinary proteome, all of these biomarkers are noninvasive. A number of these urine tests are included in her significant patent portfolio and have been made commercially available. Dr. Moses and her group have utilized two experimental approaches to discover these biomarkers, the first being a biologically-driven (candidate biomarker) approach and the second being an unbiased global proteomics approach. Examples of each of these discovery approaches and some of the biomarkers that were discovered and validated will be presented.

Biography

Marsha A Moses is the Julia Dyckman Andrus Professor at Harvard Medical School and the Director of the Vascular Biology Program at Boston Children's Hospital. She received a PhD in Biochemistry from Boston University and completed a National Institutes of Health Post-doctoral fellowship at Boston Children's Hospital and MIT. She is the recipient of a number of NIH and foundation grants and awards. She was elected to the Institute of Medicine of the National Academies of the United States in 2008 and to the National Academy of Inventors in 2013.

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