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The necessity to stratify gynecologic patients *in-vitro* prior to *in-vivo* treatment modalities

Cancer remains one of the most challenging diseases to treat. This, in part, is due to the heterogeneity of tumors. Most cancers are monoclonal in origin, however, due to innate genetic instability subsequent cell generations take on new characteristics. But, tumor cells are not the only contributors of tumor heterogeneity, the entire microenvironmental constituents and its non-tumorous cells have an absolute influence as well. Thus, there exists a reciprocal and dynamic interaction between tumor cells, microenvironment constituents and non-tumorous cells that produce a well-defined individualistic tumor phenotype. The clinical relevance is that the tumor and its microenvironment heterogeneity contribute significantly to the efficacy of drug therapy. Also, transporter genetic variants cause population-specific differences in drug transport and therefore impart considerable inter-individual variation in pharmacotherapy and thus clinical response to a myriad of agents. This divergence underscores the necessity of personalized medicine wherein the data garnered from a person's own cancer is utilized to develop a highly individualized therapeutic regimen. Our lab briefly delineates a reliable *in-vitro* test that employs a more scientific and logical approach to identify drug(s) and drug combinations that may be efficacious against a specific patient's tumor *in-vivo*. The patient's own tumor mass is fully disaggregated and as such, all cells (microenvironment) that compose the tumor are subjected to cytotoxic/cytolytic agents. The end-point is cell death (not cell-growth), which correlates to clinical outcomes. Albeit, the entirety our data is not shown our gynecologic studies validate that *in-vitro* testing does qualify as a tool that can assist and guide oncologists to the most efficacious therapy(s) for their patients. While the heterogeneity of tumor types and its microenvironment, validates the necessity to individualize chemotherapy, a randomized controlled clinical trial must be designed to further correlate and validate our studies and to fully appreciate the impact of *in-vitro* chemoresistance and sensitivity testing on cancer recurrence and survival rates.

Biography

Sherry Bradford attended undergraduate school at SUNY at Buffalo and was awarded a full tuition scholarship to pursue her PhD graduate degree (Biochemistry) from the University of Buffalo/Roswell Park Cancer Institute Division of SUNY at Buffalo School of Medical and Biomedical Sciences. There, she successfully led the research on the use of human micro vascular umbilical cord endothelium for lining stents. It was while Sherry was at Millard Fillmore Hospital, that she was awarded the "1st Place - Award for Excellence in Research" from the American Federation for Clinical Research In 1997. In 2008, she and colleagues form AccuTheragnostics and the idea on Oncology Personalized Medicine based on the specific patient's own biochemical and genetic profile to administer personalized treatment regimens. She is also a member of many professional organizations including (but not limited to): International Metabolic Cancer Group, AACR, ASCO, and GLIFCA.

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