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Paraneoplastic antigens as biomarkers for early detection of ovarian cancer

Paraneoplastic (PN) antigens are targets of both a developing tumor and areas of remote functional sites such as in brain, muscle, and nervous system, resulting in debilitating symptoms. A PN syndrome reported with ovarian cancer (ovca) is myositis. In a screening of 56 phage display-selected peptides against ovca sera, a highly sensitive and specific peptide, 4B7, was found to be an epitope of full-length HARS, of which the presence of anti-HARs Abs is a feature in myositis. There is a need for early detection of ovarian cancer as the majority of cases present at late stage with poor prognosis; paraneoplastic antigens have potential to detect of autoantibodies in sera of patients with high-grade serous ovarian cancer (HGSOC), as paraneoplastic syndromes are associated with HGSOC. Paraneoplastic antigens are immunogenic proteins expressed in both tumor and healthy tissue, therefore when an immune response against a tumor is unregulated, healthy tissue is also targeted, resulting in symptoms of a paraneoplastic syndrome. Cancer patients without paraneoplastic syndromes can present with paraneoplastic autoantibodies. Additional HGSOC specific epitopes previously discovered in our laboratory had both homology to paraneoplastic antigens and reactivity with PNS patient sera. These sequences were expressed in bacteria and their were proteins purified. We evaluated their reactivity on western blots and ELISAs with HGSOC sera, healthy control sera, and sera from patients with benign gynecological conditions. A panel of four paraneoplastic protein antigens (HARS, CDR2, RO52, P3F10-HGSOC-epitope) in combination was able to discriminate HGSOC sera from healthy patient sera and sera from patients with benign gynecological conditions.

Biography

Michael A Tainsky completed his PhD from Cornell University in 1977 and postdoctoral studies at the NCI in 1985. Dr. Tainsky has been at the rank of Professor with tenure since October, 1996. He came to WSU from The University of Texas M.D. Anderson Cancer Center in 1998. He has served as a KCI Program Leader for 14 years and Associate Director for Basic Research. His research identified p53 as the germline mutation in Li-Fraumeni Syndrome and novel germline mutations in hereditary ovarian cancer. He has identified a panel of autoantigen biomarkers for a blood test for the recurrence of OVCA that have homology to paraneoplastic antigens biomarkers for early detection and recurrence of ovarian cancer.

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