

## Learning from paraneoplastic syndromes for the development of cancer diagnostics

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We have developed a high throughput epitope cloning strategy that has identified biomarkers for the early detection of ovarian cancer. We reasoned that appearance of autoantibody biomarkers was more likely to precede the detection of serum proteins that are secreted in proportion to tumor size. Autoantibody diagnostics provide a more sensitive approach to detect smaller tumors. A subset of three from among our early detection ovarian autoantibody biomarkers have outstanding efficacy in the detection of recurrent ovarian cancer as well. One of these antigen biomarkers, histidyl t-RNA synthetase, has been associated with the development of paraneoplastic polymyositis, as the anti-Jo-1 autoantibody, which has been shown in some cases to precede the occurrence of ovarian carcinomas. Paraneoplastic syndromes are autoimmune diseases often affecting various neuronal and muscular systems leading to debilitating symptoms. Patients with certain paraneoplastic syndromes can go on to develop various cancers, most frequently small cell lung cancer and ovarian cancer. We have hypothesized that various paraneoplastic autoantibodies may occur at lower titers in ovarian cancer patients without paraneoplastic clinical symptoms and therefore we began a search of our panels of cloned autoantigen biomarkers of ovarian cancer for homology to known paraneoplastic antigens. We found that a substantial percentage of our antigen biomarkers have amino acid regions of homology to paraneoplastic antigens. In addition, we have demonstrated binding of immunoglobulins from the sera of ovarian cancer patients to known paraneoplastic antigens. Therefore paraneoplastic antigens can provide a plethora of biomarkers for the early detection and recurrence of ovarian cancer.

### Biography

Michael A. Tainsky has completed his Ph.D. at Cornell University in Biochemistry, Molecular and Cellular Biology in 1977. He has published more than 135 peer-reviewed papers. He edited a book in the Methods in Molecular Biology Series entitled *Tumor Biomarker Discovery* drawing chapters from authors around the world giving detailed protocols into the biomarker technology that he and others developed. He has guest edited Special Issues of the journal *Cancer Biomarkers* on Antibody Biomarkers and another on Ovarian Cancer Biomarkers.

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