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Anti-Tumor Augmentation for Epithelial Ovarian Cancer

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Keywords: epithelial ovarian cancer (EOC), anti-tumor vaccines, myeloid cells, macrophages, granulocytic MDSCs.

Collaboration Research Opportunity: Roswell Park Cancer Institute is seeking partners to help co-develop the use of vaccination followed by myeloid cell depletion as a method for treatment of cancer recurrence.

Summary: Epithelial ovarian cancer (EOC) is a significant medical problem in the U.S., and in many countries throughout the world. It is typically diagnosed at an advanced stage, and relapse of the disease occurs in the vast majority of patients, with a mean time of about 18 months after primary surgery. Patients in remission with minimal disease burdens are ideal candidates for anti-tumor immune augmentation strategies aimed at curing or prolonging disease-free periods. However, immunosuppressive pathways in the tumor microenvironment are obstacles to durable antitumor immunity. Thus, there is an ongoing and unmet need for improved treatment modalities for EOC, as well as other cancers.

Technology: The present invention provides for approaches enhancing anti-tumor vaccines. In general, the method comprises vaccinating an individual against cancer, and subsequent to the vaccination, depleting myeloid cells in the individual, such as in a tumor microenvironment. The myeloid cells are either macrophages or granulocytes or a combination thereof. The research was demonstrated using an orthotopic syngeneic mouse model of epithelial ovarian cancer (EOC), that immunosuppressive macrophages and myeloid-derived suppressor cells (MDSCs) accumulate in the local tumor environment, correlating with disease burden.

Roswell Park researchers have demonstrated that the combination of vaccination and myeloid cell depletion (via monoclonal antibody) is superior to using either approach alone. As such, it is expected that this invention is suitable for use especially with ovarian cancer as well as any other cancer, wherein a presence of undesirable myeloid cells is considered to aggravate the cancer condition and/or is positively correlated with infiltration and/or proliferation of such myeloid cells.

Potential Commercial Applications:

- Possible ideal therapy for treatment of Epithelial Ovarian Cancer (EOC) recurrence as well as any other cancer where the presence of myeloid cells is considered to aggravate the cancer condition and/or is positively correlated with infiltration or proliferation.
- Since immunosuppressive myeloid populations can accumulate systematically and in local microenvironment of numerous tumors (breast, melanoma, renal, lung) the invention in principle is applicable to all cancers.
- Possible ideal method for also identifying candidates for therapy.

Development Status: Patent Status: US PCT filed March 2014.

Inventor: [Brahm Segal, MD](#)

Additional References: