

## **DARPA Contract to Evaluate Clinical Applications of Giant Macrophages in the Blood of Cancer Patients**

**Creatv MicroTech, Inc. December 8, 2014**

Montgomery County-based Creatv MicroTech has received a multi-year contract from Defense Advanced Research Projects Agency (DARPA) to evaluate a new cancer marker. The marker is a previously unreported giant cell found in the peripheral blood of patients with solid tumor cancers. Under the DARPA contract, Creatv and its clinical collaborators will evaluate the utility of the cells for early detection of cancer and to indicate a patient's response to therapy. The study will involve breast, prostate, lung, colorectal, pancreatic, kidney, liver and melanoma.

Creatv discovered the previously unreported cells while studying Circulating Tumor Cells (CTCs), which are disseminated from solid tumors into a patient's blood stream. The discovery was based on the company's CellSieve™ technology for isolating tumor cells from patient blood samples.

In addition to the CTCs, Creatv noticed other, larger cells that did not fit any known description, but were present in the blood of almost all solid tumor patients. These unusual cells were named "circulating cancer-associated macrophage-like cells" (CAMLs). CAMLs are large, typically 25-300 µm, compared to 6-8 µm for red blood cells, 10-20 µm for white blood cells and 10-30 µm for most CTCs. CAMLs have features that are distinctly different from CTCs.

"We find CTCs and CAMLs using a precision microfilter designed to separate cells based on size and plasticity," said Dr. Cha-Mei Tang, Creatv's President and CEO. "We then characterize the cells using fluorescent antibodies to identify the cells and analyze the cancer. We do not find CTCs and CAMLs in healthy people". The biological implications of CAMLs were published in the proceedings of the National Academy of Science in February 2014 ([http:// www.pnas.org/content/early/2014/02/14/1320198111](http://www.pnas.org/content/early/2014/02/14/1320198111)).

Although CTCs have proven clinical utility as a prognostic biomarker, they are not consistently found in all patients, even in late-stage disease. By contrast, Creatv found CAMLs in all stages of all solid tumor blood samples that it has examined thus far. Creatv believes that the macrophage-like characteristics of CAMLs provide clues to the body's immune response to disease. The DARPA contract will evaluate whether CAMLs can be applied to monitor cancer treatment response and used as a biomarker for early cancer detection.

The DARPA contract is funded in FY2015 for one year, with potential to continue for a second year. Several prominent universities and cancer centers will collaborate with Creatv to study the biology of CAMLs and CTCs.

Additionally, the DARPA contract will fund an evaluation of the potential for CAMLs to be used to screen dogs for cancer. The research will focus on identification of cancer in service dogs to allow early treatment and extending length of their service.