ABSTRACT

Despite advances in chemotherapy, the death rate from ovarian cancer has not changed over two decades. Research from the Coukos lab has provided encouraging preliminary data for the development of immune therapy in ovarian cancer. Tumor-infiltrating T cells recognize tumor-associated antigens and their presence is associated with improved survival. T However, a major obstacle to adoptive therapy is cost. This proposal seeks to develop a practical, rapid and cost-efficient protocol for the generation of a tumor antigen presenting cell (APC) platform for passive and active immunotherapy in ovarian cancer using ascites-derived monocytes. Based on our data, we hypothesize that the peritoneal cavity is a large bioreactor, in which tumor-loaded APC are naturally developed and are ready for harvest and clinical use with relatively minor effort and without further need for antigen pulsing. The use of these naturally loaded APC could dramatically reduce cell culture times and production costs, and is poised to make immunotherapy available to a large number of patients. We propose to optimize a rapid protocol for the activation of ascites monocytes to transform them into phenotypic and functional immunogenic APC. Then, we will test whether ascites APC are capable, following *ex vivo* rapid stimulation, of expanding *in vitro* T effector cells that can recognize and kill autologous and HLA-matched tumor i*n vitro* and *in vivo*. At the end of this work, we expect having sufficient preclinical data to proceed to scale-up validations and a phase-I clinical trial.