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Protein transfer approach to cancer vaccine development

Periasamy Selvaraj

Department of Pathology, Emory University School of Medicine, USA

Immune system plays an important role in controlling the development and progression of cancer and the associated metastatic disease. Many studies have shown that transfer of genes encoding immunostimulatory molecules (ISMs) into tumor cells results in induction of protective antitumor immune response. However, this gene transfer approach is time consuming and requires live tumor cell lines, which is difficult to establish for many tumors. As an alternative, we have used a proteins transfer approach to modify tumor cells or membranes derived from tumor cells to express ISMs. This procedure does not require live tumor cells and can be completed within hours if isolated tumor membranes and purified GPI-ISMs are available. We found that vaccination of mice with tumor cells or membranes expressing ISMs induced protective antitumor tumor immunity. These studies suggest that protein transfer approach can be used to develop vaccines from patients' tumor tissues, which can be easily adapted to clinical settings to vaccinate cancer patients to prevent the emergence of metastasis in the future.

Biography

Periasamy Selvaraj received his PhD from Christian Medical College, Vellore and did his postdoctoral training at Dana Farber Cancer Institute, Harvard Medical School, Boston, MA. He served on the faculty of Harvard University as an Instructor from 1988-1990 and then moved to Emory University Atlanta in 1990 as an Assistant Professor. Since 2010, Dr. Selvaraj has been Professor of Pathology in the School of Medicine of the Emory University at Atlanta, GA. His area of expertise includes development and testing of novel vaccine compositions for treatment of cancer.