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Cancer vaccines and immune checkpoint blockade

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Abstract

This lecture will critically review clinical trials conducted with various forms of cancer vaccines over >3 decades. The vaccines include tumor cells, peptides, proteins, fusion proteins, carbohydrates, and viral or bacterial vectors expressing tumor antigens. Possible explanations for why only one vaccine has been approved for patients' treatment by the FDA will be discussed with emphasis on failure of most vaccines to activate therapeutic anti-tumor immunity. Recently, immune checkpoint blockade has proven effective to activate therapeutic immune responses in cancer patients by removing blockade of immune effector cell activity with antibodies. The antibodies studied the most clinically thus far are directed to the inhibitory molecules CTLA-4 or PD-1 which are expressed by lymphocytes and/or antigen-presenting cells. Novel avenues for combination cancer treatments capitalize on the complementarities of immune checkpoint blockade and cancer vaccines as the induction of tumor-associated immunity is greatly aided by activation of adaptive and innate immunity after removal of immune effector cell blockade. Clinical trials with such combination therapies have just begun.

Biography

Dr. Dorothee Herlyn has studied cancer immunotherapy for 36+ years during which time she has authored more than 170 peer-reviewed reports. She has served on the editorial boards of 8 cancer-related international journals, including *Cancer Research, Cancer Immunology & Immunotherapy and Cancer Gene Therapy*. Dr. Herlyn has been a member of 6 professional societies and has served on numerous review committees for the NCI, including Subcommittee D Initial Review Group, and Experimental Immunology Study Section. She is currently chair of the grant review committee for the Melanoma Research Foundation.