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Autologous PBLs Retrovirally-transduced with TCRs Targeting Neoantigens

National Cancer Institute

Source

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Autologous human peripheral blood lymphocytes (PBLs) transduced with a retroviral vector encoding T-cell receptors (TCRs) specific for a patient's individual and unique mutated antigens, with potential immunostimulating and antineoplastic activities. Tumor cells are analyzed to identify and isolate specific mutated tumor-associated antigens (TAAs) that are expressed by the patient's tumor cells; then T-cell receptor coding sequences are engineered to target the patient's TAAs and inserted into retroviral vectors. After transduction, expansion in culture, and reintroduction into the patient, neoantigen-specific TCRs retroviral vector-transduced autologous PBLs recognize and bind to tumor cells expressing the patient's neoantigens, which results in a specific cytotoxic T-lymphocyte (CTL)-mediated immune response against the patient's tumor cells.