

IMMUNOTHERAPY IS DESIGNED TO HARNESS THE POWER OF THE IMMUNE SYSTEM SO IT CAN SEEK OUT AND ATTACK CANCER CELLS THROUGHOUT THE BODY.

DISCOVERY OF IMMUNOTHERAPY



1904

Physicians observe women with cervical cancer experiencing short-term remission after receiving rabies vaccination¹



1940-50

Patients with leukemia or lymphoma experienced short-term remission after herpes, hepatitis or measles infections^{2,3}



1974

The mumps virus was shown to be effective in treating some cancers⁴



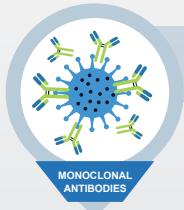
1990s

Recombinant DNA technology is developed, allowing manipulation of viral genomes⁵

THERE ARE TWO MAIN WAYS IMMUNOTHERAPY MAY BE DESIGNED TO WORK IN THE BODY

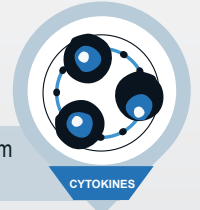
PASSIVE IMMUNOTHERAPY

- Enhances pre-existing immune response



MONOCLONAL ANTIBODIES

- Manmade versions of immune system proteins
- Antibodies can be designed to attack a very specific part of a cancer cell

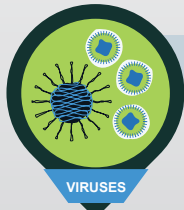


CYTOKINES

- Diverse group of proteins that play a role in cell signaling and help regulate the immune system
- Used to help enhance immune response in cancer

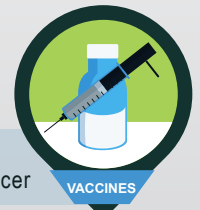
ACTIVE IMMUNOTHERAPY

- Engages the immune system



VIRUSES

- Genetically modified viruses are designed to attack cancer cells while not harming healthy cells



VACCINES

- Administered to trigger immune response against certain diseases typically to help prevent infections, but some may prevent or treat cancer

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- ² Bierman HR, Crite DM, Dod KS, et al. Remissions in leukemia of childhood following acute infectious disease. Cancer. 1953;6:591-605;
- ³ Kelly E, Russell SJ. History of oncolytic viruses: genesis to genetic engineering. Mol Ther. 2007;15:651-659;
- ⁴ Kelly E, Russell SJ. History of oncolytic viruses: genesis to genetic engineering. Mol Ther. 2007;15:651-659.
- ⁵ Martuza RL, Malick A, Markert JM, Ruffner KL, Coen DM. Experimental therapy of human glioma by means of a genetically engineered virus mutant. Science. 1991;252:854-856.