

HISTORY OF IMMUNOTHERAPY

This timeline describes progress in the development of immunotherapy agents. These agents work by altering the immune system, either by stimulating the production of lymphocytes (a type of white blood cell) or antibodies (special proteins) or by overcoming the ability of cancer cells to “hide” from the immune system and not be recognized as a foreign invader. (Some immunotherapies are monoclonal antibodies, but they should not be confused with monoclonal antibodies that directly attack cancer cells, a type of treatment known as targeted therapy.)

- ▶ **Elotuzumab (Empliciti)**, a **SLAMF7-directed immunostimulatory antibody**, is approved for multiple myeloma.
- ▶ The first biosimilar product, **filgrastim-sndz (Zarxio)**, is approved to treat severe chronic neutropenia.
- ▶ **Nivolumab (Opdivo)** is the first checkpoint inhibitor approved for lung cancer and advanced renal cell carcinoma.
- ▶ **Pembrolizumab (Keytruda)** is approved to treat metastatic non-small cell lung cancer that has progressed after other treatments and with tumors that express a protein called PD-L1.
- ▶ **Talimogene laherparepvec (Imlygic)**, a genetically modified oncolytic viral therapy is approved for the local treatment of unresectable cutaneous, subcutaneous and nodal lesions in patients with melanoma.

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