



# Myeloma and the Immune System

- Myeloma is a cancer of the immune system cells (plasma cells) that make antibodies to help fight infection.
- When even one part of the immune system is affected, the whole system suffers.
- Myeloma suppresses the immune system as a whole, reducing the number of normal antibodies and affecting all the cells that patrol for and attack abnormal cells.
- Successful treatment brings with it recovery of the immune system.

## What are the key immune system cells?

- The immune system has two major components: the innate response, made up of cellular proteins and killer cells, and the adaptive response, based on the ability of immune system cells to recognize and attach to specific antigens on the surface of infected cells and tumor cells.
- The immune system is made up of white blood cells that circulate in the bloodstream and the lymphatic system.
- Lymphocytes (B cells and T cells) are the white blood cells responsible for the adaptive immune response.
- Natural killer (NK) cells are responsible for tumor surveillance. They can recognize and kill infected cells without recognition of specific antigens.

## Using the immune system in myeloma

- Immuno-oncology is the treatment of cancer with therapies that trigger cells in the immune system.
- Immunotherapies can help restore the immune system's ability to find and fight cancer cells.
- Many types of therapies that are already approved for myeloma have immune system effects, and other immunotherapies are in clinical trials for myeloma.

### International Myeloma Foundation

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## Approved immunotherapies

**Darzalex® (daratumumab):** An anti-CD38 monoclonal antibody that targets and attaches to a specific antigen (CD38) on the surface of myeloma cells and then signals NK cells to attack and kill them. While it is effective as a single agent, it is even more effective as part of FDA-approved combination therapies.

**Empliciti® (elotuzumab):** An engineered anti-SLAMF7 monoclonal antibody that attaches to NK cells and then stimulates the NK cells to attach to and attack myeloma cells via a SLAMF7 receptor. This type of antibody is effective in combination with other myeloma therapies.

## Promising clinical trials

**CAR (chimeric antigen receptor) T-cell therapy** is a technique in which a patient's T cells are collected and genetically engineered to attack the patient's tumor cells. Investigators are testing new approaches to increase the efficacy and reduce the toxicity of T-cell therapy.

**Monoclonal antibodies** targeting various myeloma cell surface antigens. A promising new approach is the antibody-drug conjugate, which teams a monoclonal antibody directed at myeloma cells with a cell-killing (cytotoxic) agent.

**Anticancer vaccine therapies** are designed to activate the body's immune response against cancer cells, just as vaccines are used to promote our immune defenses against infections. Vaccine therapy may be useful in maintaining remission and prolonging survival in myeloma. Several promising types of vaccine therapy are in trials.

**Oncolytic virotherapy** uses very high doses of engineered viruses to directly target and kill cancer cells.

*As always, the IMF urges you to discuss all medical issues with your doctor, and to contact the IMF's trained InfoLine specialists with your myeloma questions and concerns.*

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