

# 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.

The IMF InfoLine is staffed by trained information specialists.

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## Using the immune system to treat 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.

## Approved new immunotherapies

### **Empliciti® (elotuzumab)**

An engineered anti-SLAM F7 monoclonal antibody that attaches to NK cells and then stimulates the NK cells to attach to and attack myeloma cells via a receptor called SLAM F7. This type of antibody is effective in combination with other anti-myeloma therapies.

### **Darzalex® (daratumumab)**

An anti-CD 38 monoclonal antibody that targets and attaches to a specific antigen (CD 38) 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.

## Immunotherapies in clinical trials

### **Check-point inhibitors**

Studies are being conducted to see if these drugs can prevent abnormal proteins in cancer cells from helping tumors evade the immune response.

### **Virotherapy**

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

### **CAR T-cell therapy**

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.

