

# 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, T cells, and NK (natural killer) cells – are the white blood cells responsible for the adaptive immune response.
- NK cells are responsible for tumor surveillance; they can recognize and kill infected cells without recognition of specific antigens.

## Using the immune system to treat myeloma

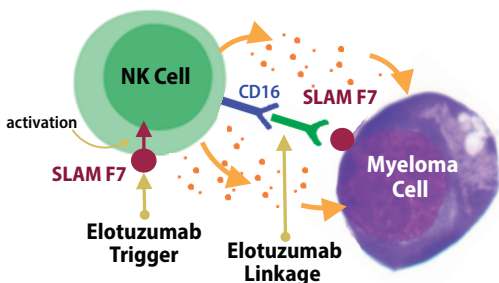
- Immuno-oncology is the treatment of cancer with therapies that trigger cells in the immune system.
- Immunotherapies can help restore the immune system's ability to find and fight cancer cells.
- Many types of therapies that are already approved for myeloma have immune system effects, and other immunotherapies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



## Immunotherapies in clinical trials for myeloma

- **Anti-SLAM F7 monoclonal antibodies:** These engineered antibodies attach to NK cells, and then stimulate 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.
- **Anti-CD 38 monoclonal antibodies:** These monoclonal antibodies target and attach to a specific antigen (CD 38) on the surface of myeloma cells and then signal NK cells to attack and kill them. While they are effective as single agents, they may be even more effective as part of combination therapies.
- **Check-point inhibitors:** These drugs prevent abnormal proteins in cancer cells from helping tumors evade the immune response. They are more effective in myeloma clinical trials when used in combination with the immunomodulatory drug (IMiD®) Revlimid® (lenalidomide).
- **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 against antigens on the patient's tumor cells.

### Using Your Own NK (Natural Killer) Cells to Attack with Elotuzumab (Anti-SLAM F7)



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**800.452.CURE (2873)** in the US & Canada



International  
**Myeloma**  
Foundation

12650 Riverside Drive, Suite 206, North Hollywood, CA 91607 USA  
818.487.7455 myeloma.org