

Dendritic Cell Vaccines

Dendritic cells are specialized antigen-presenting cells that help the immune system to recognize cancer cells. They break down the antigens from the cancer cells into smaller pieces, then hold out, or "present," those antigen pieces to T cells, making it easier for the immune system cells to react with and attack them. Dendritic cells are the most effective antigen-presenting cells now known.

Dendritic cell vaccines, like autologous cell vaccines, are patient-specific and must be made individually for each patient. The process used to create them is involved and expensive:

- Scientists remove some dendritic cells (from the blood) and treat them in the lab to make them reproduce rapidly, creating many more than were withdrawn.
- These dendritic cells are then "taught," in the lab, to recognize cancer antigens. This is done by exposing them to the antigens in a dish, or by genetically modifying them so that they make their own antigens. Some newer studies are even looking at fusing dendritic cells with tumor cells, creating dendritic cells with tumor antigens on their surface.
- The dendritic cells are then injected back into the body.
- The "trained" dendritic cells are better able to help the immune system recognize and destroy cancer cells that have those antigens on them.

The dendritic cell vaccine approach has shown a great deal of promise in tests done in lab animals and in early studies in humans. These vaccines are only available through clinical trials at this time. They are being studied for use in people with these and other cancers:

- prostate cancer
- melanoma
- kidney cancer
- colorectal cancer
- lung cancer
- breast cancer
- leukemia
- non-Hodgkin lymphoma