

GLOSSARY

Terms from the film Jim Allison: Breakthrough

Antibody – A protein made by plasma cells (a type of white blood cell) in response to an antigen (a substance that causes the body to make a specific immune response). Each antibody can bind to only one specific antigen. The purpose of this binding is to help destroy the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. An antibody is a type of immunoglobulin.

Antigen – Any substance that causes the body to make an immune response against that substance. Antigens include toxins, chemicals, bacteria, viruses, or other substances that come from outside the body. Body tissues and cells, including cancer cells, also have antigens on them that can cause an immune response. These antigens can also be used as markers in laboratory tests to identify those tissues or cells.

Asparaginase – A drug that is used to treat acute lymphoblastic leukemia (ALL) and is being studied in the treatment of some other types of cancer. It is an enzyme taken from the bacterium *Escherichia coli* (E. coli). It breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. Also called Elspar and L-asparaginase.

Autoimmune Disease – An autoimmune disease is an illness that causes the immune system to produce antibodies that attack normal body tissues. Autoimmune is when your body attacks itself. It sees a part of your body or a process as a disease and tries to combat it.

B-Cell – A type of white blood cell that makes antibodies. B cells are part of the immune system and develop from stem cells in the bone marrow. Also called B lymphocyte.

Chemotherapy – Treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. Chemotherapy may be given by mouth, injection, or infusion, or on the skin, depending on the type and stage of the cancer being treated. It may be given alone or with other treatments, such as surgery, radiation therapy, or biologic therapy.

Clinical Trial – A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called clinical study.

CTLA-4 – A protein found on T cells (a type of immune cell) that helps keep the body's immune responses in check. When CTLA-4 is bound to another protein called B7, it helps keep T cells from killing other cells, including cancer cells. Some anticancer drugs, called immune checkpoint inhibitors, are used to block CTLA-4. When this protein is blocked, the “brakes” on the immune system are released and the ability of T cells to kill cancer cells is increased.

FDA – An agency in the U.S. federal government whose mission is to protect public health by making sure that food, cosmetics, and nutritional supplements are safe to use and truthfully labeled. The FDA also makes sure that drugs, medical devices, and equipment are safe and



effective, and that blood for transfusions and transplant tissue are safe. Also called Food and Drug Administration.

Immune Checkpoint Inhibitor – A type of drug that blocks proteins called checkpoints that are made by some types of immune system cells, such as T cells, and some cancer cells. These checkpoints help keep immune responses from being too strong and sometimes can keep T cells from killing cancer cells. When these checkpoints are blocked, T cells can kill cancer cells better. Examples of checkpoint proteins found on T cells or cancer cells include PD-1/PD-L1 and CTLA-4/B7-1/B7-2. Some immune checkpoint inhibitors are used to treat cancer.

Immunology – The study of the body's immune system.

Immunotherapy – A type of therapy that uses substances to stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases. Some types of immunotherapy only target certain cells of the immune system. Others affect the immune system in a general way. Types of immunotherapy include cytokines, vaccines, bacillus Calmette-Guerin (BCG), and some monoclonal antibodies.

Ipilimumab – A drug that binds to the protein CTLA-4 to help immune cells kill cancer cells better and is used to treat many different types of cancer. These include cancers that have certain mutations (changes) in genes involved in DNA repair. Ipilimumab is used alone or with other drugs to treat certain types of colorectal cancer, melanoma, non-small cell lung cancer, renal cell carcinoma (a type of kidney cancer), and hepatocellular carcinoma (a type of liver cancer). It is also being studied in the treatment of other types of cancer. Ipilimumab may block CTLA-4 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor.

Macrophage – A type of white blood cell that surrounds and kills microorganisms, removes dead cells, and stimulates the action of other immune system cells.

Melanoma – A form of cancer that begins in melanocytes (cells that make the pigment melanin). It may begin in a mole (skin melanoma), but can also begin in other pigmented tissues, such as in the eye or in the intestines.

Radiation Therapy – The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy or brachytherapy).

T-Cell – a type of immune cell that recognizes and binds to foreign substances.

T-Cell receptor – A group of proteins found on T cells. T-cell receptors bind to certain antigens (proteins) found on abnormal cells, cancer cells, cells from other organisms, and cells infected with a virus or another microorganism. This interaction causes the T cells to attack these cells and helps the body fight infection, cancer, or other diseases. Also called TCR.

Source: [NIH National Cancer Institute](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4111111/)

