



Cancer Immunotherapy

Presented to: Cancer Connections

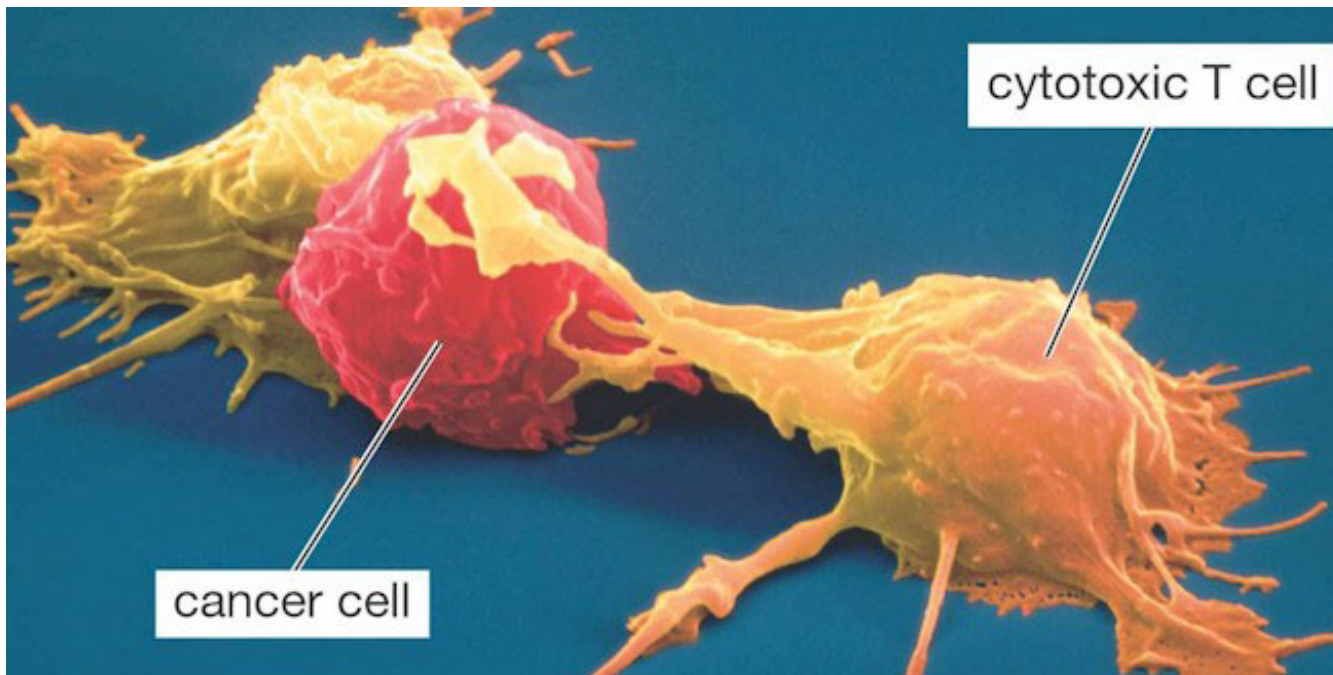
Presented on: March 3, 2018

Presented by: Jeffrey Sosman, MD & Aparna Kalyan, MBBS

What is Cancer Immunotherapy?

- Treatment that uses certain parts of a person's **immune system** to fight diseases such as cancer.

Immunotherapy = T cell kills a cancer cell



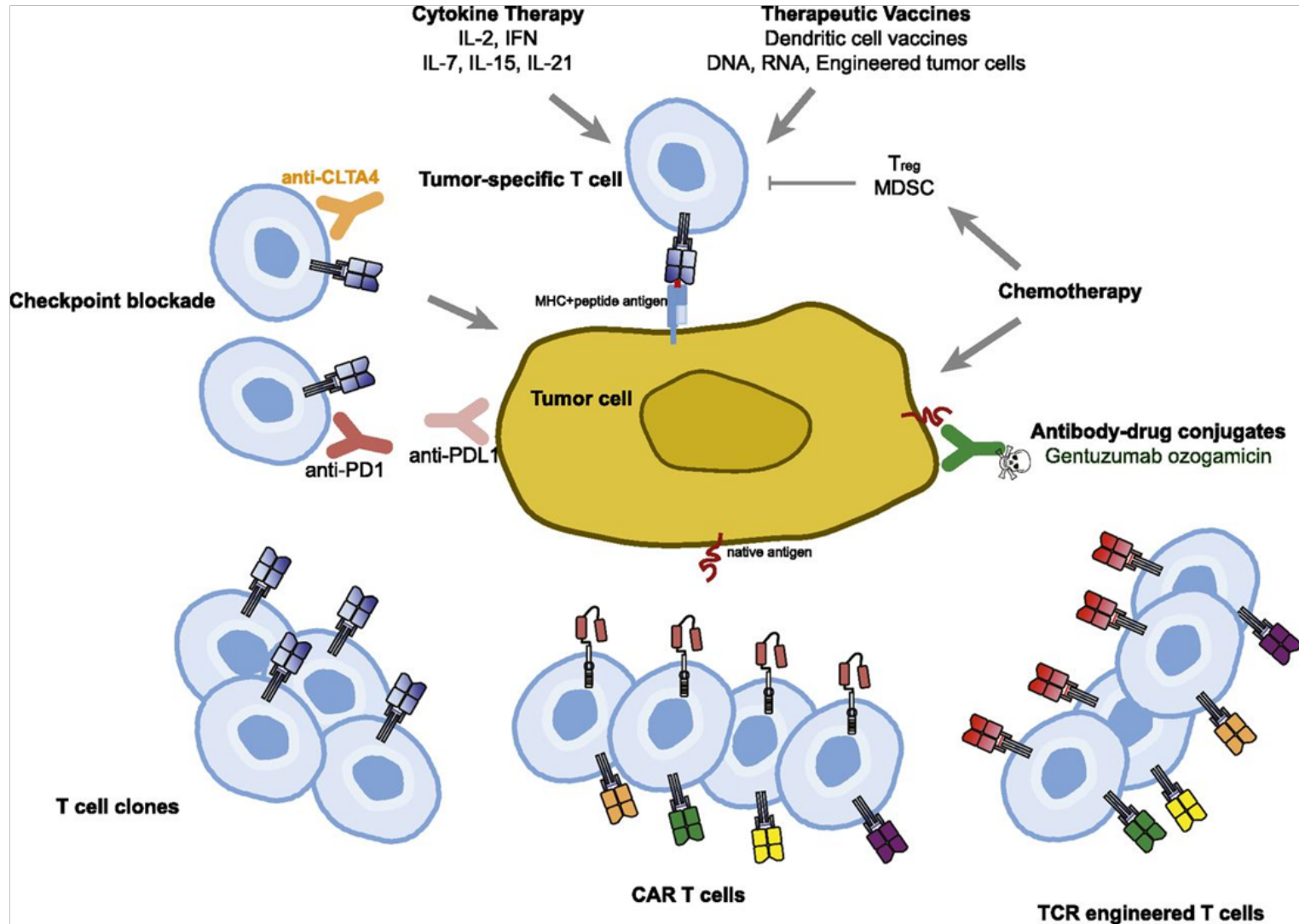
How Does Immunotherapy Work?

- **Stimulate a person's immune system to work harder or smarter to attack cancer cells**
- **Give a person immune system components, such as man-made immune system proteins**

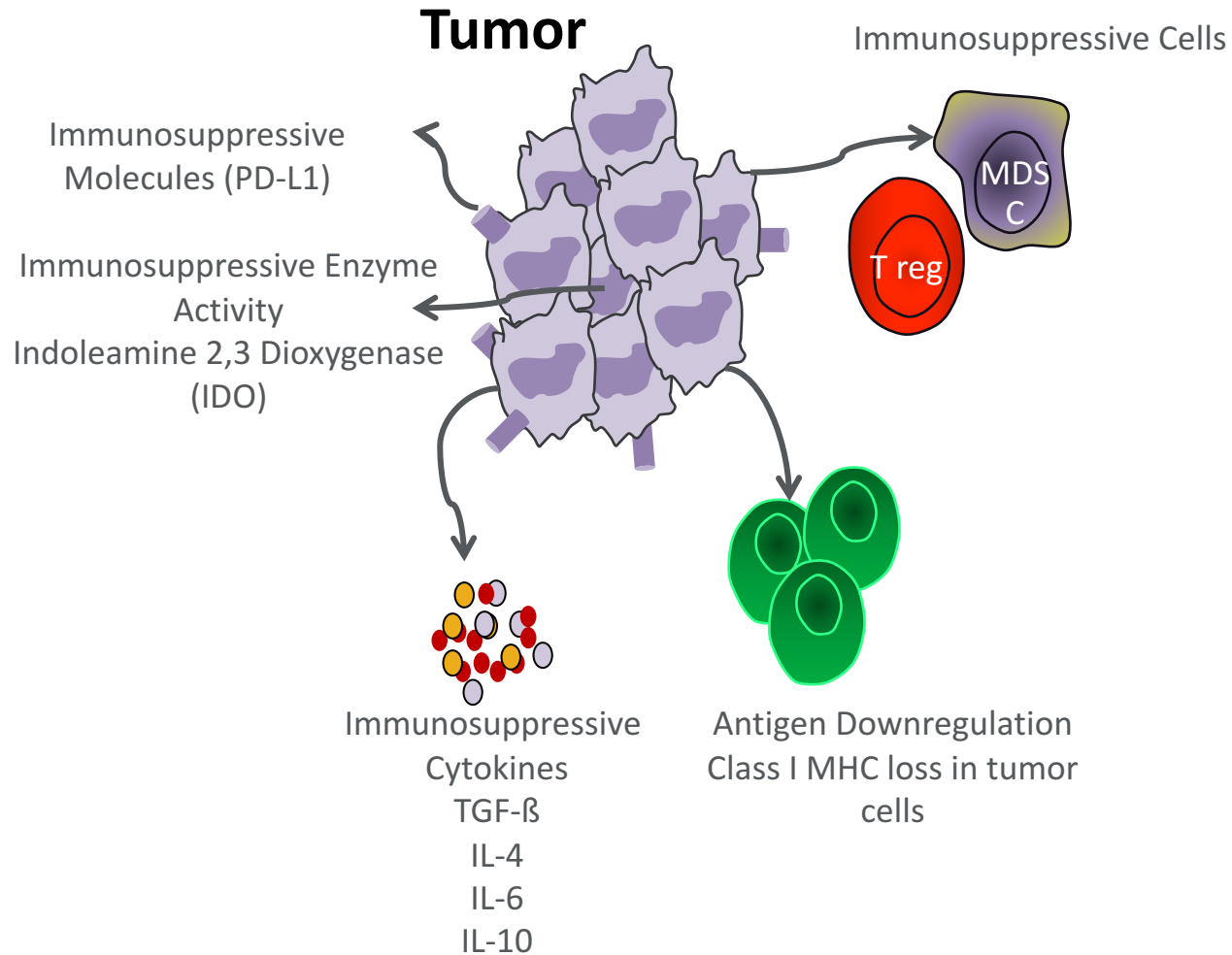
- American Cancer Society



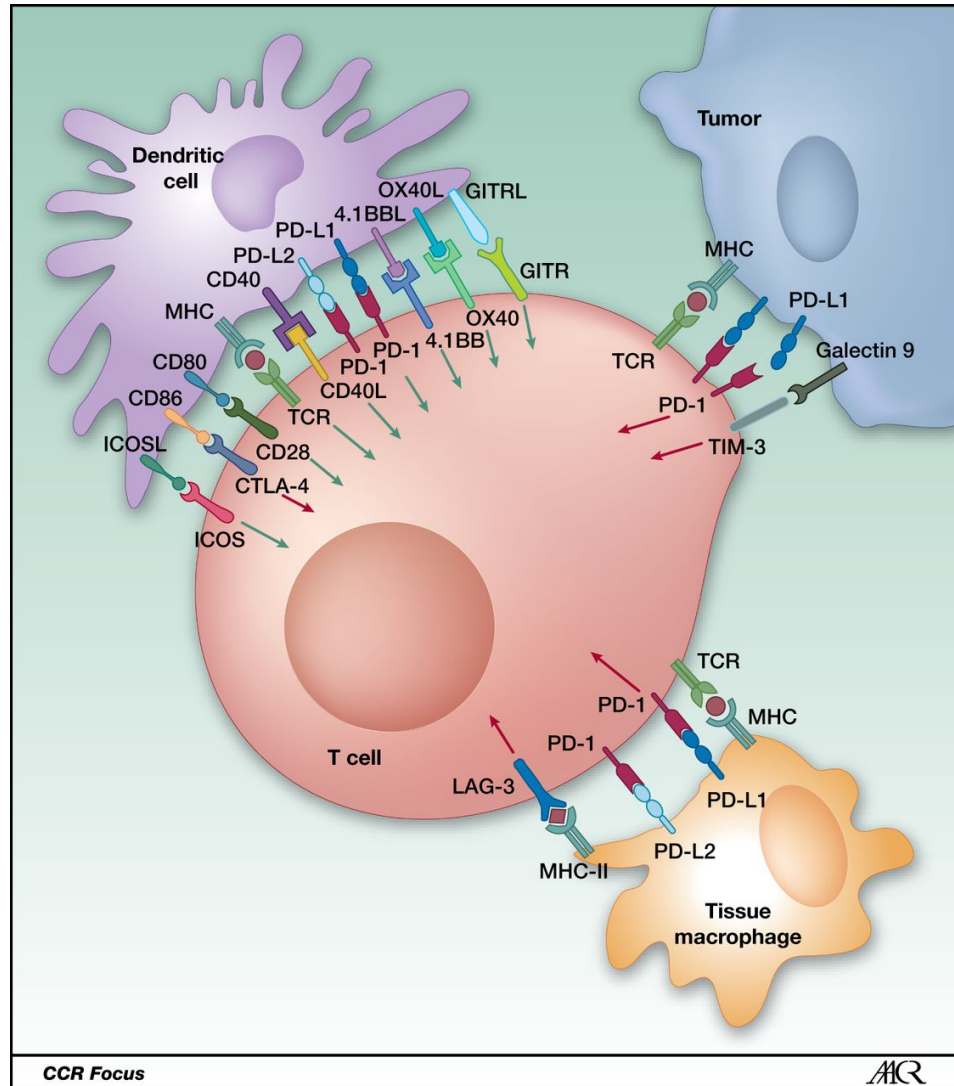
Various Classes of Immunotherapeutic Agents



Tumor-Derived Immune Suppression



Positive and Negative Signals Regulate T-Cell Activation



“Driving” an Immune Response



T-cell receptor:
Antigen-MHC



CD28: B7



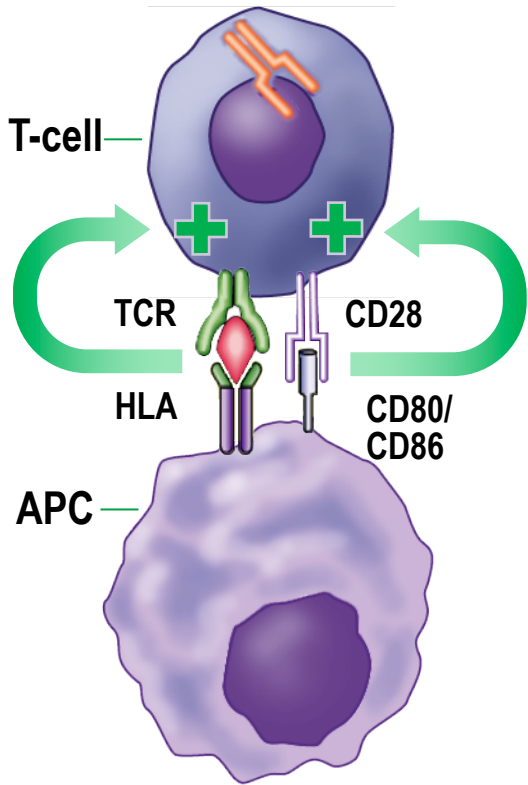
CTLA-4: B7



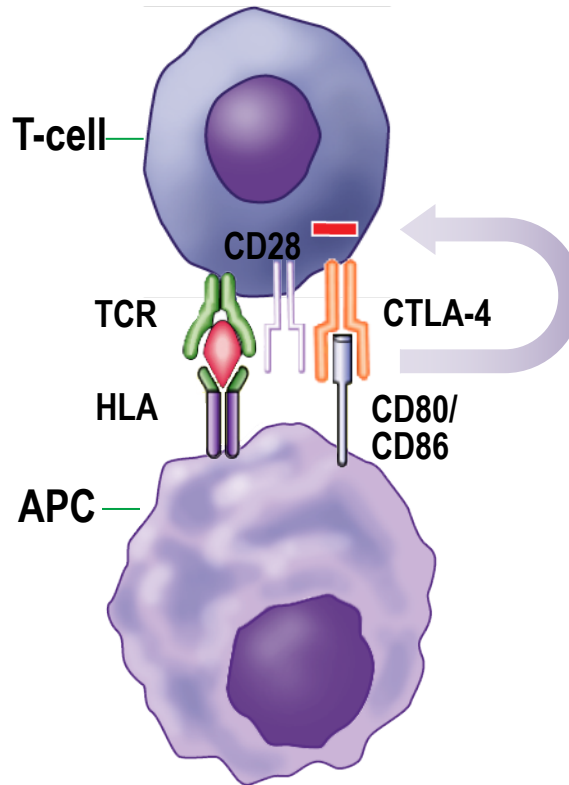
Vaccine?

Ipilimumab Augments the Activation of the T-Cell

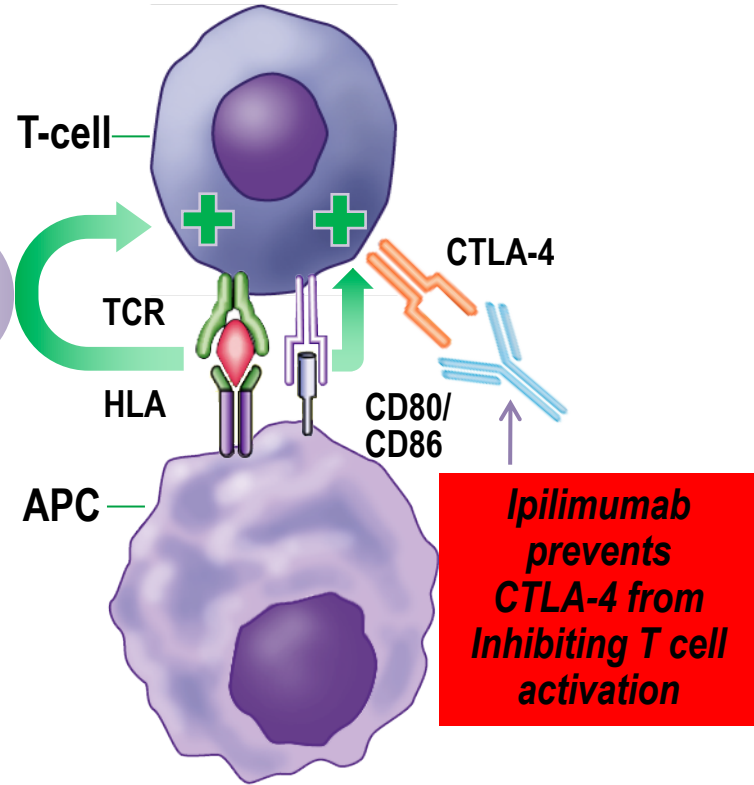
T-cell activation



T-cell inhibition

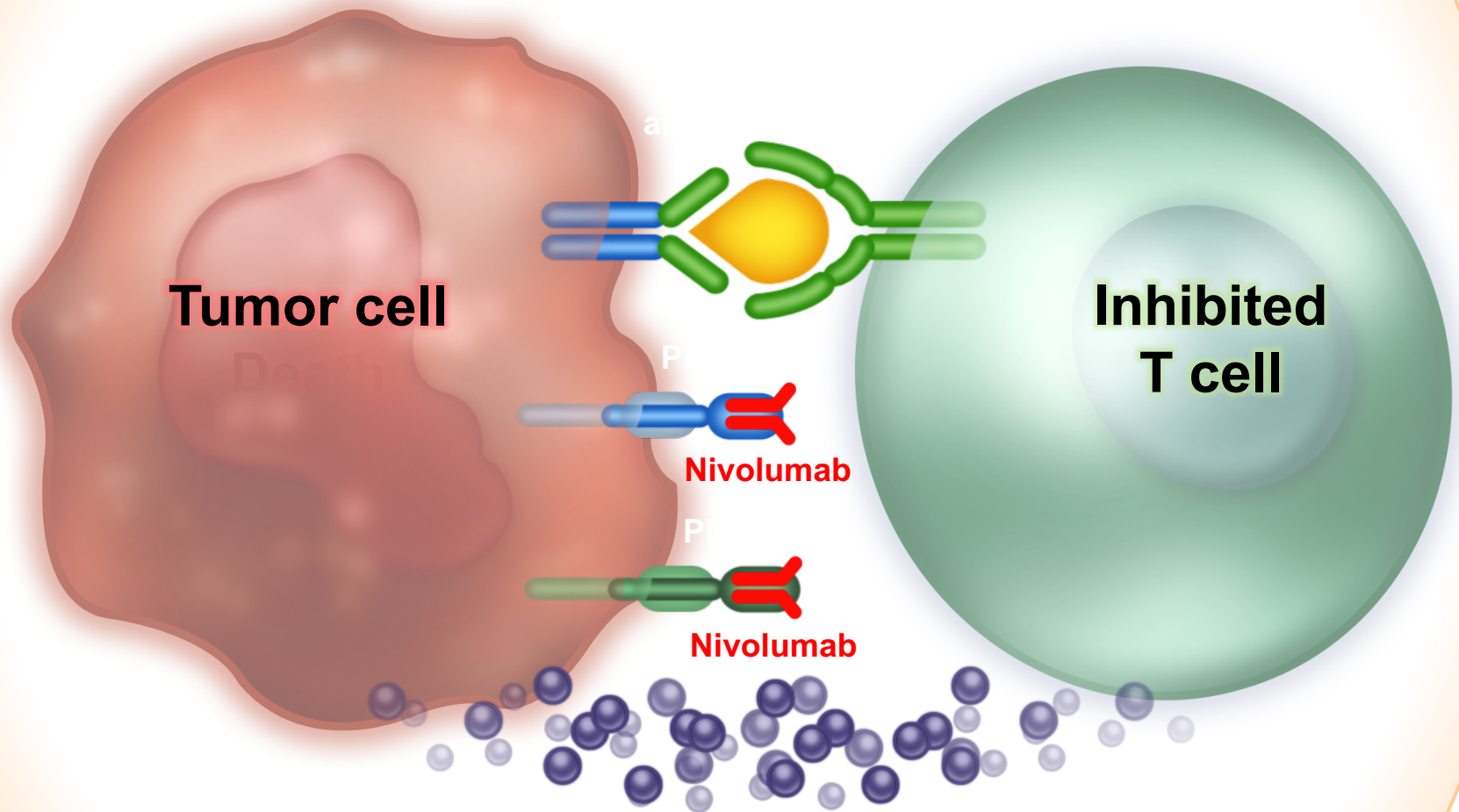


T-cell remains active



Ipilimumab prevents CTLA-4 from Inhibiting T cell activation

How do Anti-PD-1/PD-L1 Antibodies work?

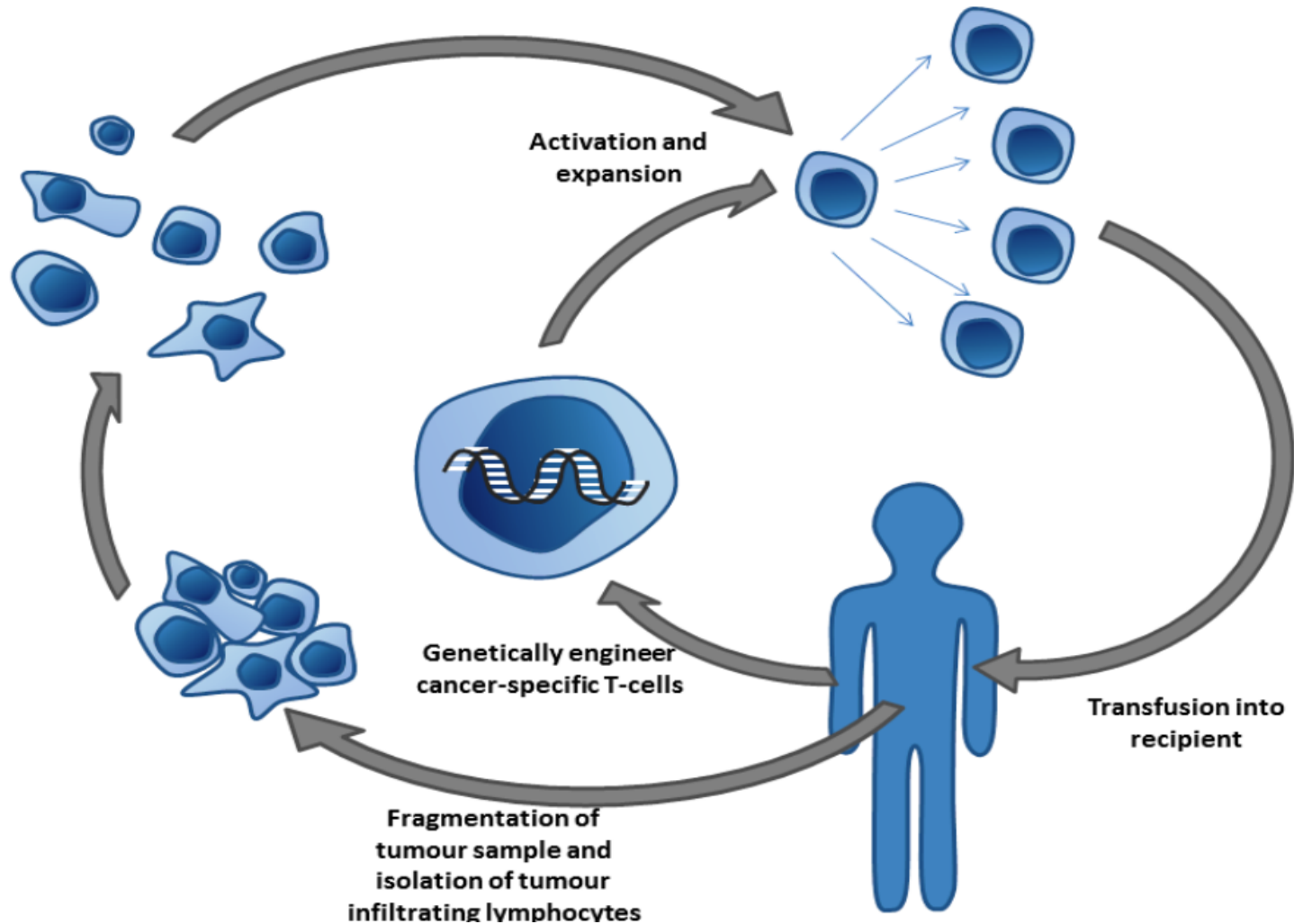


Tumor Microenvironment

Tumors Responsive to (Approved for) PD1/PD-L1 Blockade

- Melanoma
- RCC
- NSCLC
- Bladder (Urothelial)
- Head & Neck Squamous Cell Cancer
- Merkel Cell
- Hodgkin's Disease
- Gastro-Esophageal
- Hepatocellular
- Mismatch Repair Deficient Tumors

Adoptive Cellular Therapy



Antibodies Can Be Modified to Be More Human and Deliver Agents to Tumor Sites

Antibodies can act to target cytotoxic and toxic drugs, radioisotopes, immune cytokines, and immune effector cells to sites of tumor

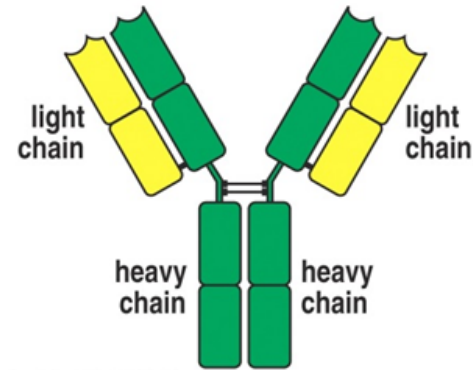
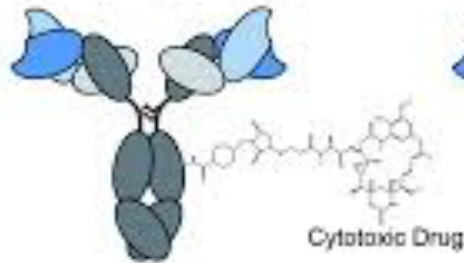


Figure 1-17 Immunobiology, 6/e. (© Garland Science 2005)

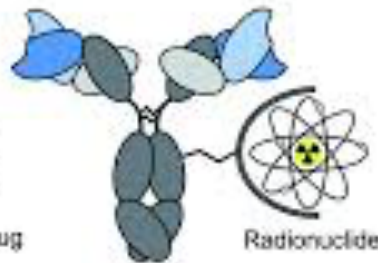
Antibodies can be modified from a foreign mouse protein (antibody) to a completely humanized antibody. This may decrease their immunogenicity and improve function.

Antibody-Drug Conjugate



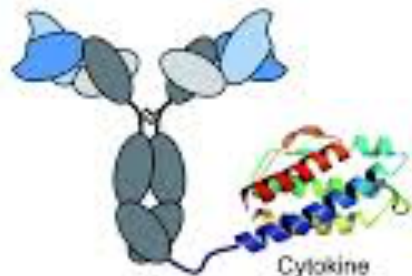
Cytotoxic Drug

Radioimmunoconjugate



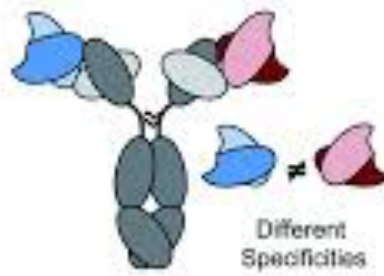
Radionuclide

Immunocytokine



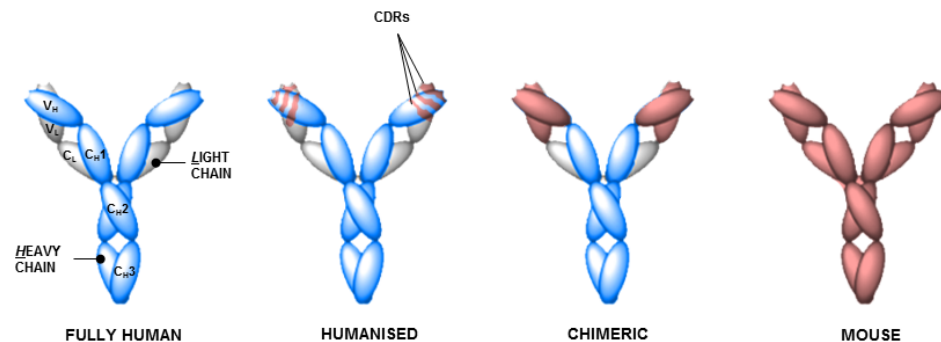
Cytokine

Bispecific Antibody



Different Specificities

BITE



FULLY HUMAN

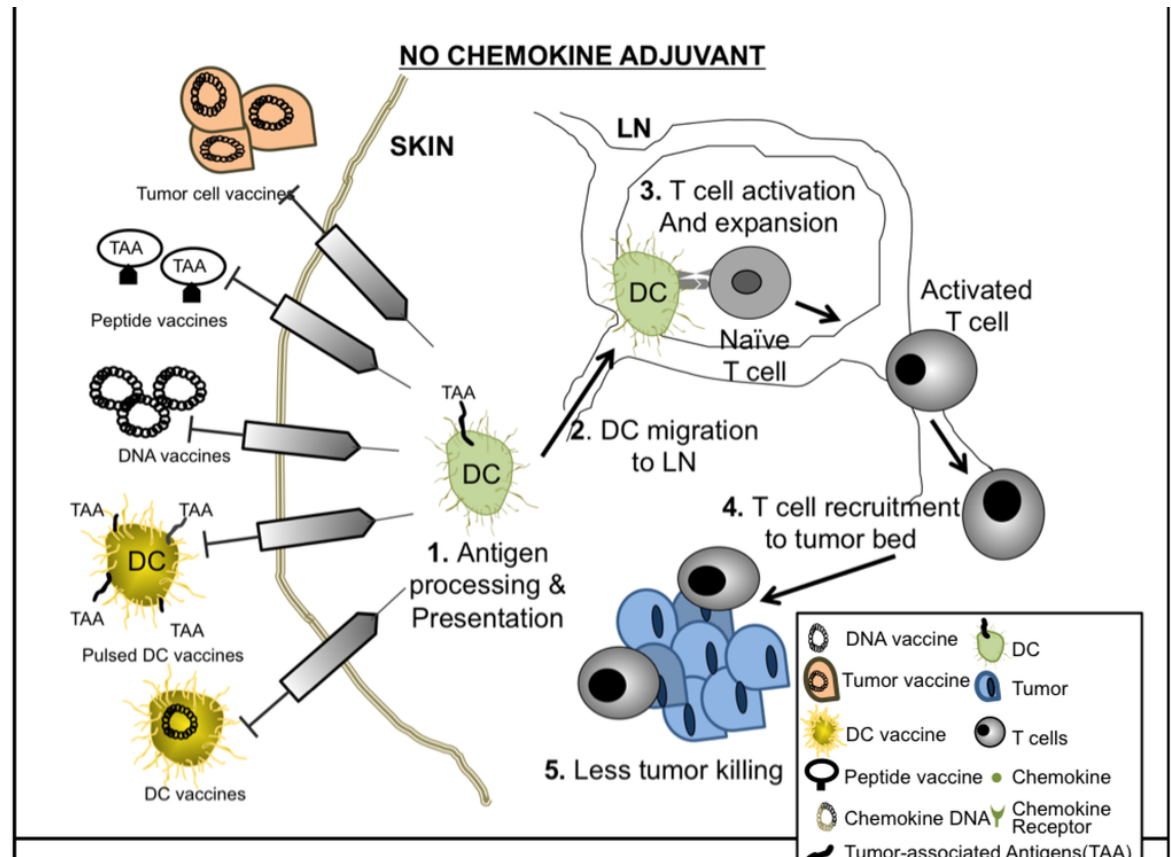
HUMANISED

CHIMERIC

MOUSE

Tumor Vaccines

1. Whole Tumor Cell Vaccines
2. Peptide Vaccines from tumor associated proteins (TAA)
3. DNA Vaccines – isolated tumor DNA
4. Dendritic Cell (DC) Vaccines pulsed with peptides (TAA)
5. DC Vaccines into tumors





Questions? Ask the Experts!