



CANCER RESEARCH INSTITUTE

# IMMUNOTHERAPY **PATIENT** SUMMIT

Baltimore November 16, 2019



CANCER RESEARCH INSTITUTE  
IMMUNOTHERAPY  
PATIENT SUMMIT



# WELCOME

Brian Brewer  
Cancer Research Institute





## Scientific Experts

---

**Marijo Bilusic, M.D., Ph.D.**

National Cancer Institute

**Elizabeth M. Jaffee, M.D.**

Johns Hopkins Kimmel Cancer Center

**Ranee Mehra, M.D.**

University of Maryland Medical Center

**Suzanne L. Topalian, M.D.**

Johns Hopkins Kimmel Cancer Center

## Patient Experts

---

**Vanessa Brandon**

Colorectal cancer

**Donna Lynch**

Diffuse large B-cell (non-Hodgkin)  
lymphoma

**John Ryan**

Non-small cell lung cancer

**Adrienne Skinner**

Ampullary cancer

# Our Sponsors



This event is made possible with generous support from:



**Bristol-Myers Squibb**



**MERCK**

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*Lilly* | ONCOLOGY



Immunotherapy  
Foundation

**REGENERON**

**SANOFI GENZYME** 



**NOVARTIS**



## Thank you to those who helped promote the summit

- American Cancer Society
- Colorectal Cancer Alliance
- Crush It For Curtis Foundation
- Esophageal Cancer Action Network
- Esophageal Cancer Awareness Association
- Fight Colorectal Cancer
- FORCE
- Go2Foundation For Lung Cancer
- Imerman Angels
- HopeWell Cancer Care
- Johns Hopkins Sidney Kimmel Cancer Center
- Leukemia & Lymphoma Society
- Ludwig Cancer Research
- LUNGevity
- Melanoma Research Alliance
- Melanoma Research Foundation
- National Ovarian Cancer Coalition – Baltimore
- Nueva Vida
- Pancreatic Cancer Action Network
- Patient Empowerment Network
- SHARE
- Us TOO
- Ulman Foundation
- University of Maryland Medical Center
- Young Survival Coalition

Morning Session	10:00 AM – 12:00 PM
Lunch	12:00 PM – 1:00 PM
Afternoon Session	1:00 PM – 2:15 PM
Breakout Sessions	2:15 PM – 3:15 PM

**Clinical Trial Navigator Appointments** are available from 9:00 AM to 4:00 PM. Please stop by the check-in desk near registration to learn more.



## You will receive two emails after the summit:

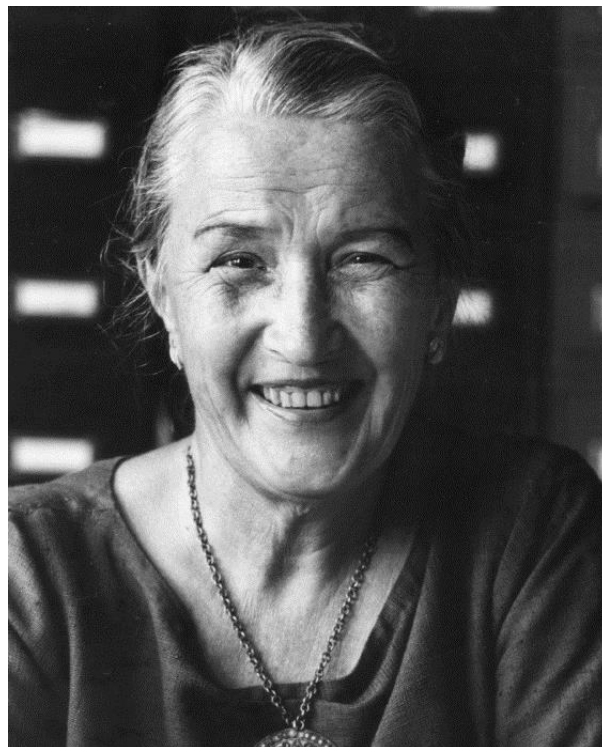
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1. **A survey** to share your feedback on the summit as well as insights into future programming.
2. **Information** from the summit day, including this presentation and instructions on how to use our [Clinical Trial Finder service](#).

# Pioneering Immunotherapy



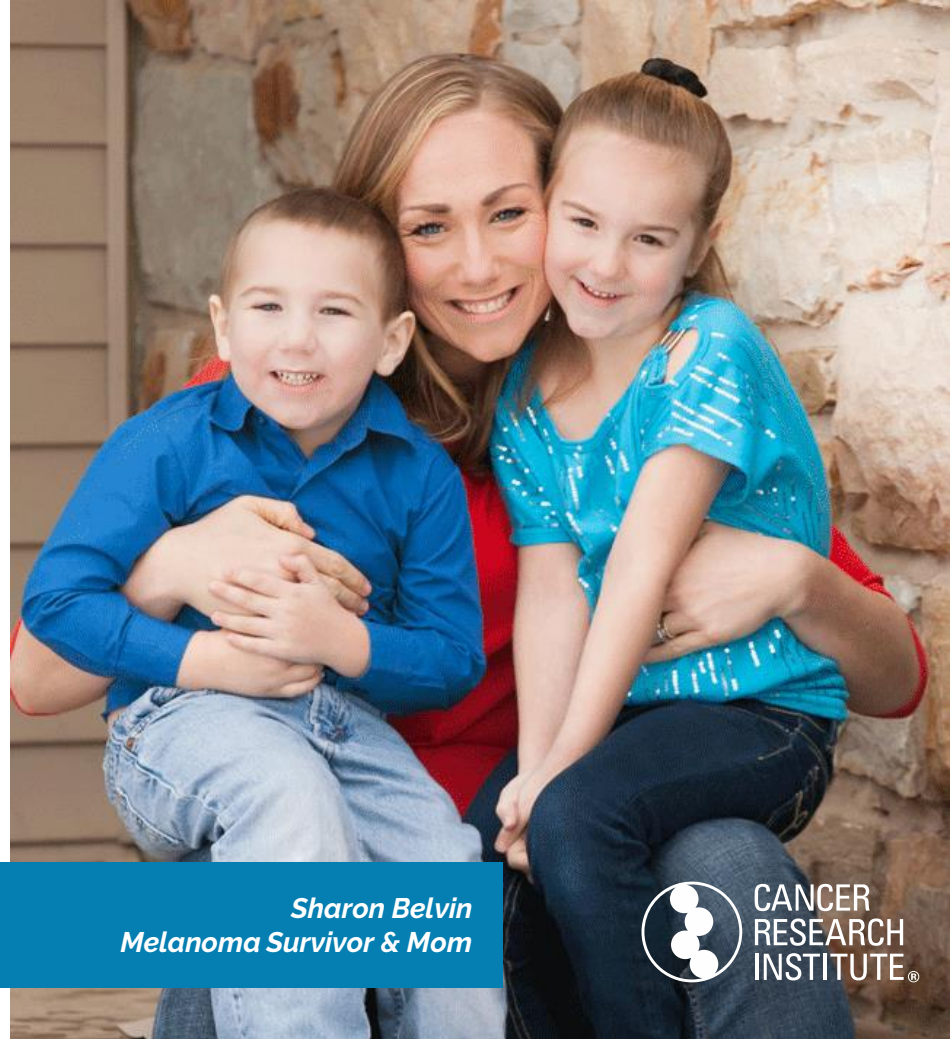
*William B. Coley, M.D.  
Father of Cancer Immunotherapy  
1862 - 1936*



*Helen Coley Nauts, D.Sc. (Hon.)  
Co-Founder, Cancer Research Institute  
1907 - 2001*

# SAVE MORE LIVES

by fueling the discovery  
and development of  
powerful immunotherapies  
for all types of cancer.



*Sharon Belvin*  
*Melanoma Survivor & Mom*

**FUNDED**

**3,300** scientists worldwide

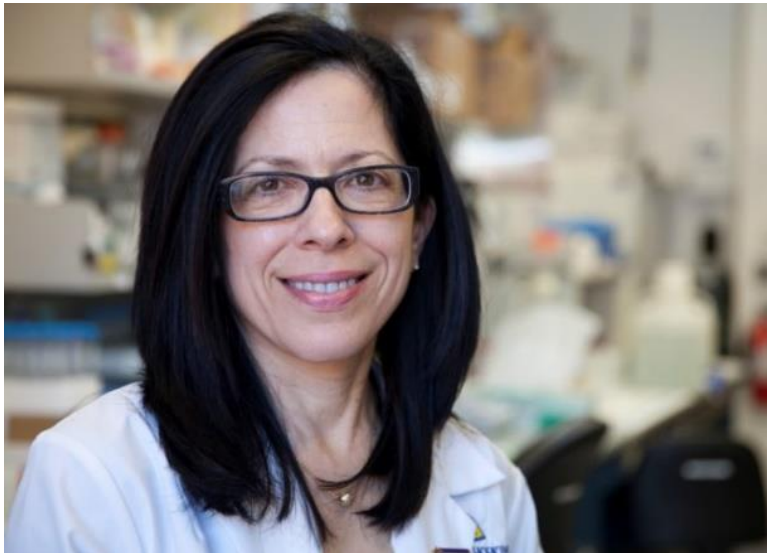
**INVESTED**

**\$420+** million

**TRUSTED**

**Platinum, A+** charity





**Elizabeth M. Jaffee, M.D.**

Deputy Director, The Sidney Kimmel  
Comprehensive Cancer Center at Johns Hopkins  
Professor of Oncology

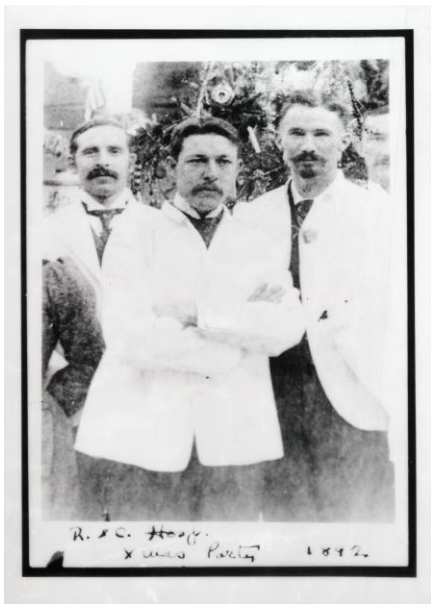
# Origin & Revival of Immunotherapy



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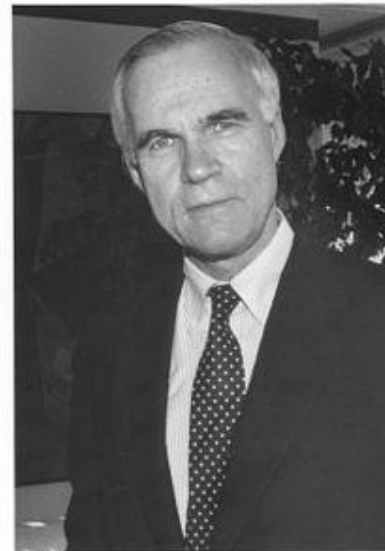
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RESEARCH  
INSTITUTE®



**1890s:**  
**William B. Coley**



**1900s:**  
**Paul Ehrlich**



**1960s:**  
**Lloyd J. Old**

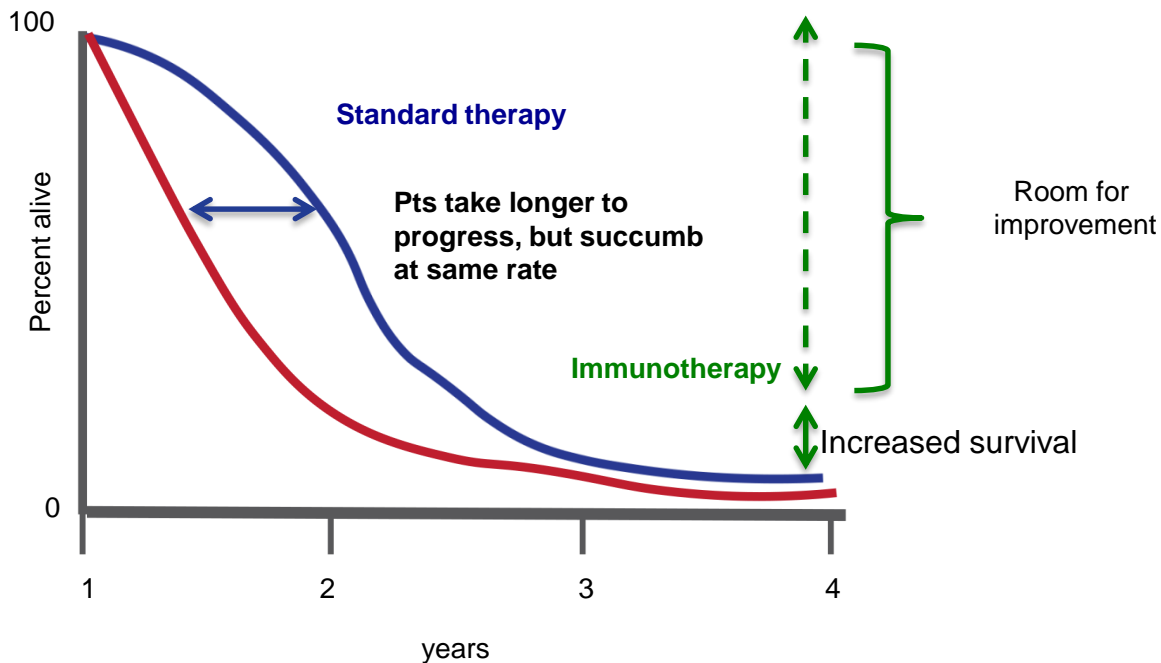
# Immunotherapy: A Potential Cure?



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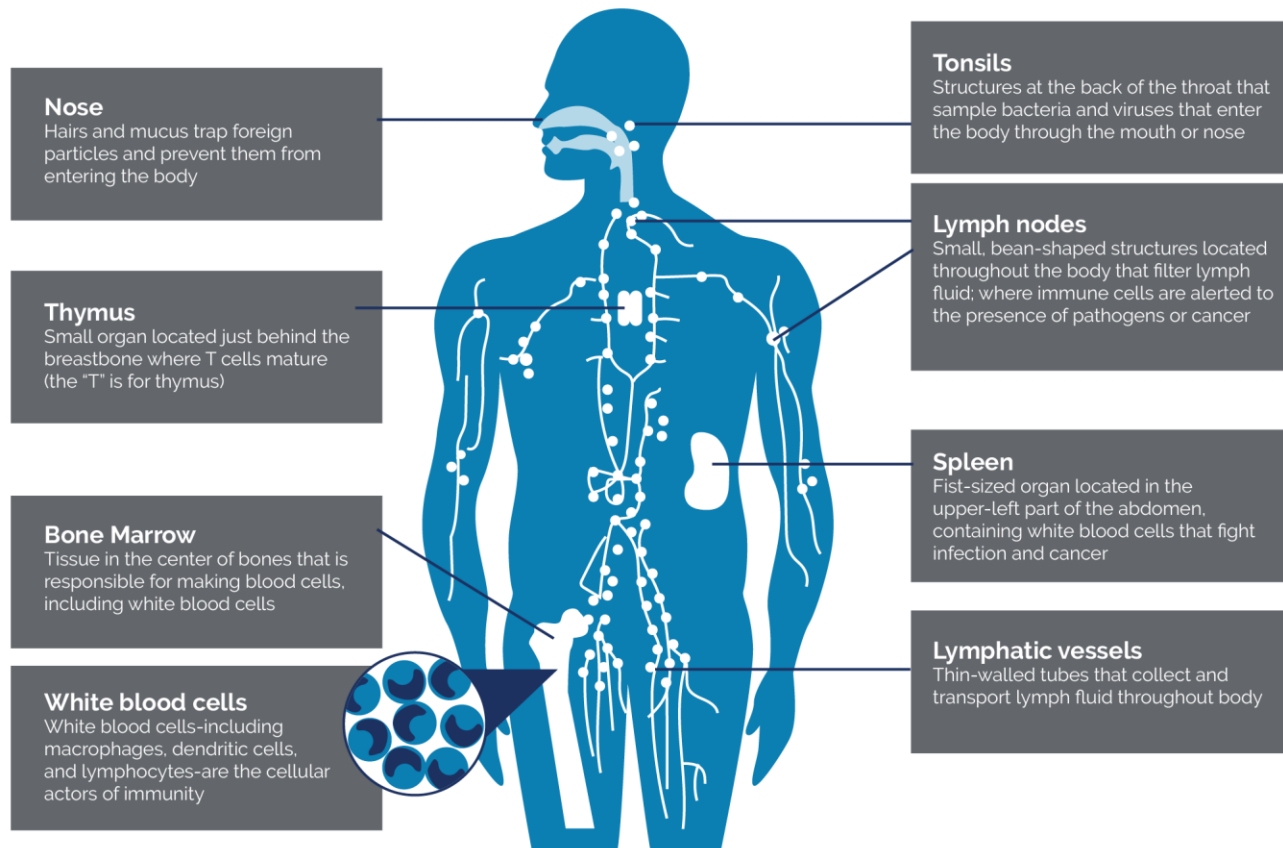
# The Immune System at a Glance: Our Natural Defense System



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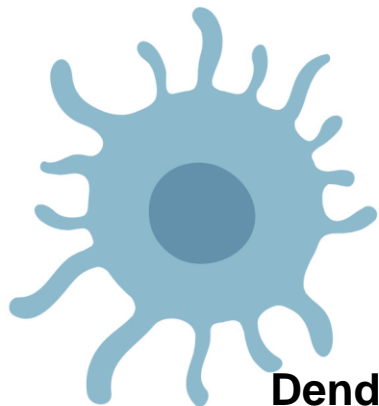
# The Cells of the Immune System: The “Soldiers” in our Army



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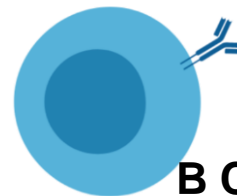
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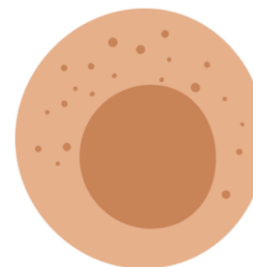
**Dendritic  
Cell**



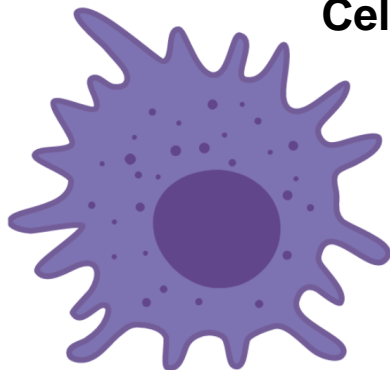
**Monocyte**



**B Cell**



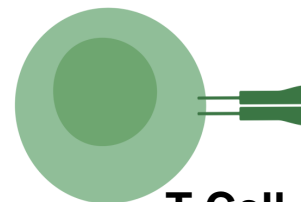
**Natural  
Killer Cell**



**Macrophage**

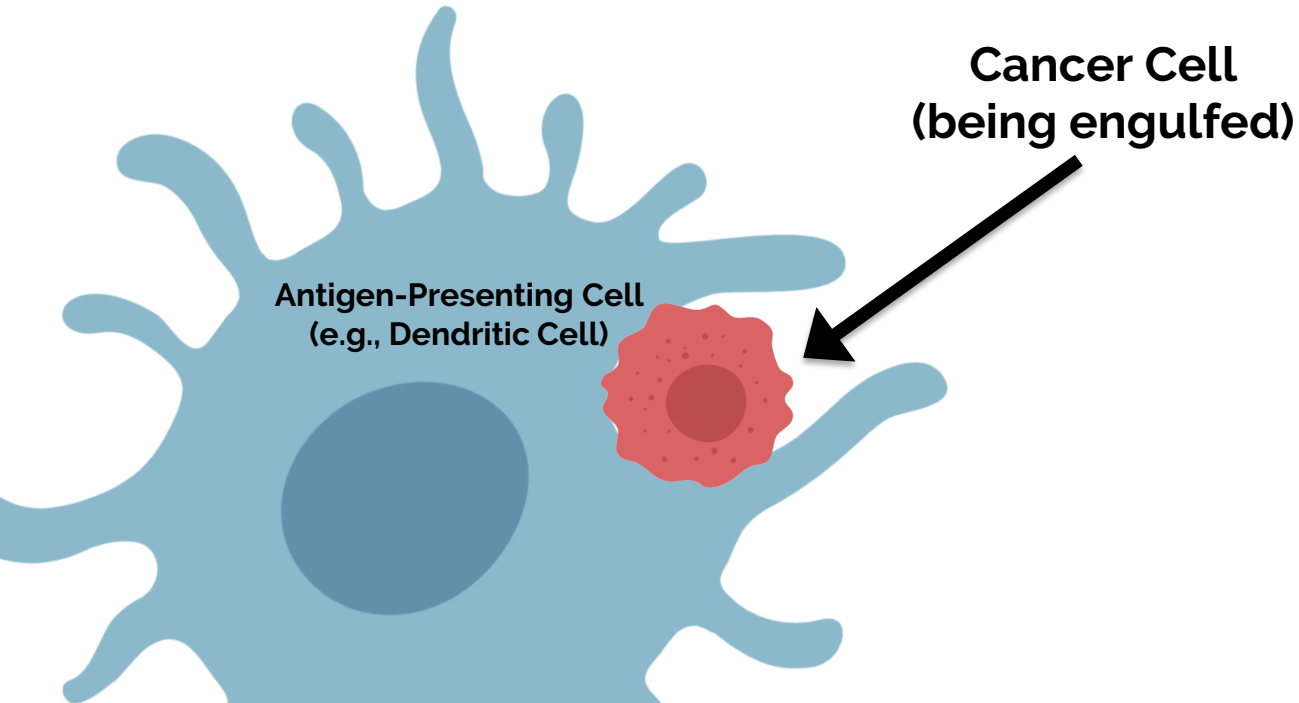


**Neutrophil**

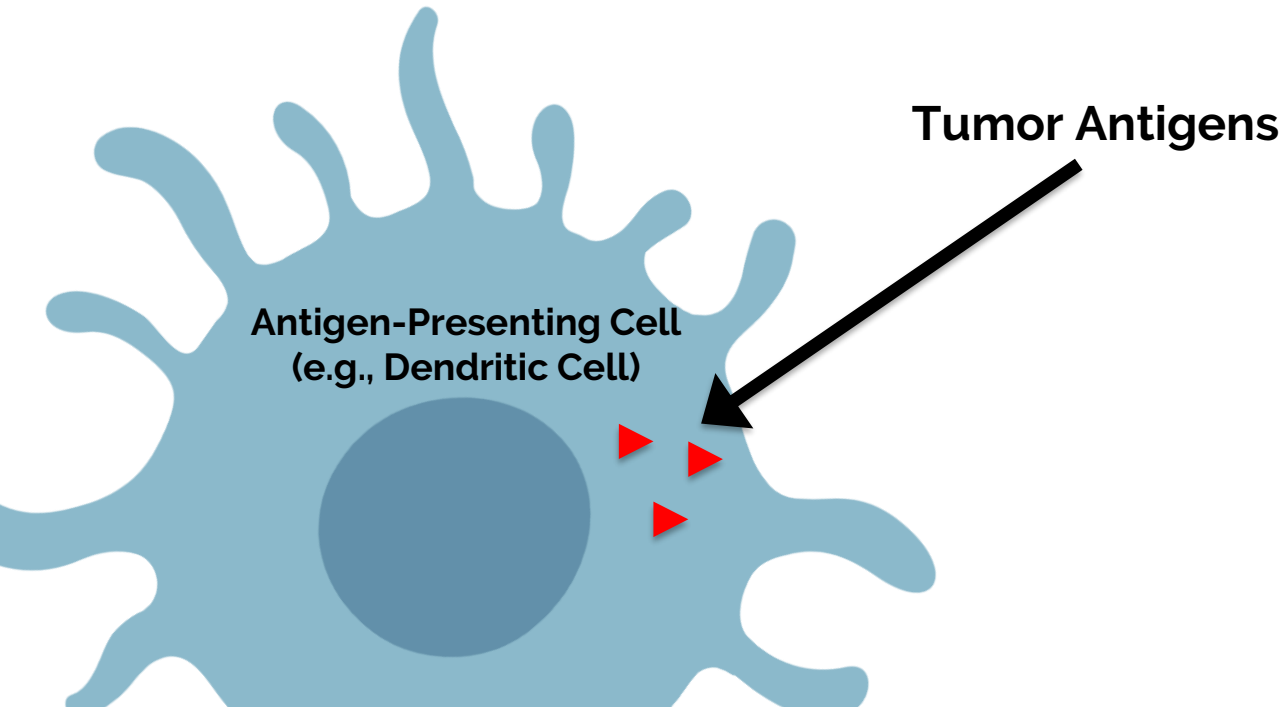


**T Cell**

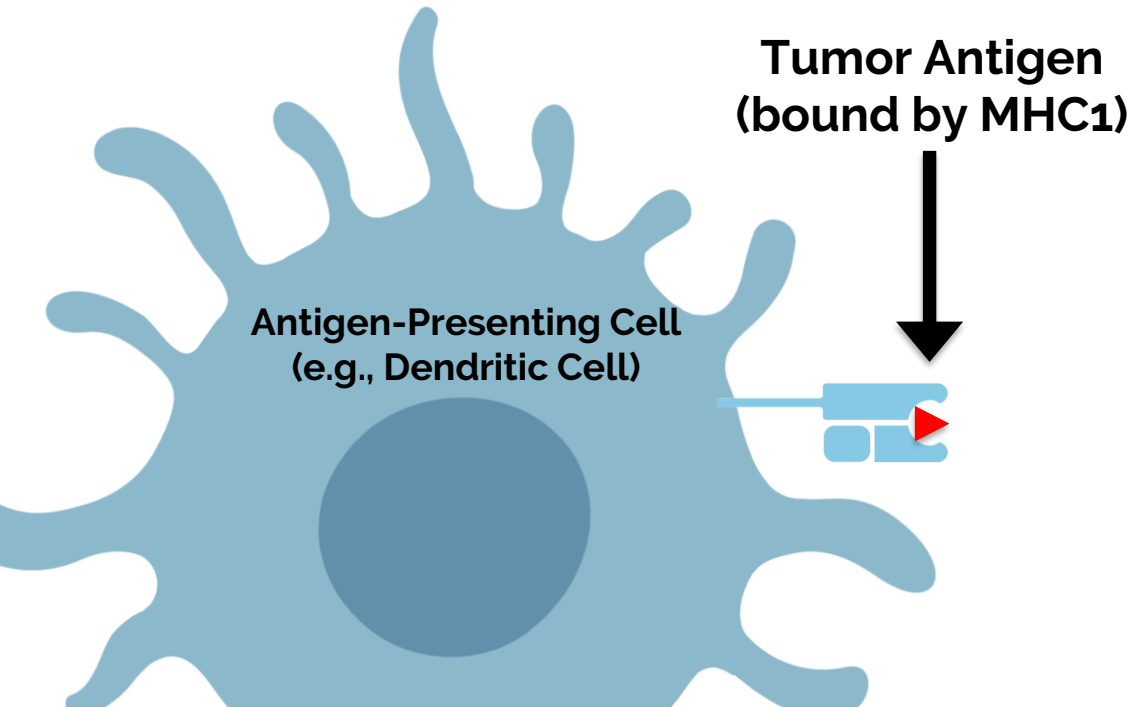
# Adaptive Immune Responses Against Cancer



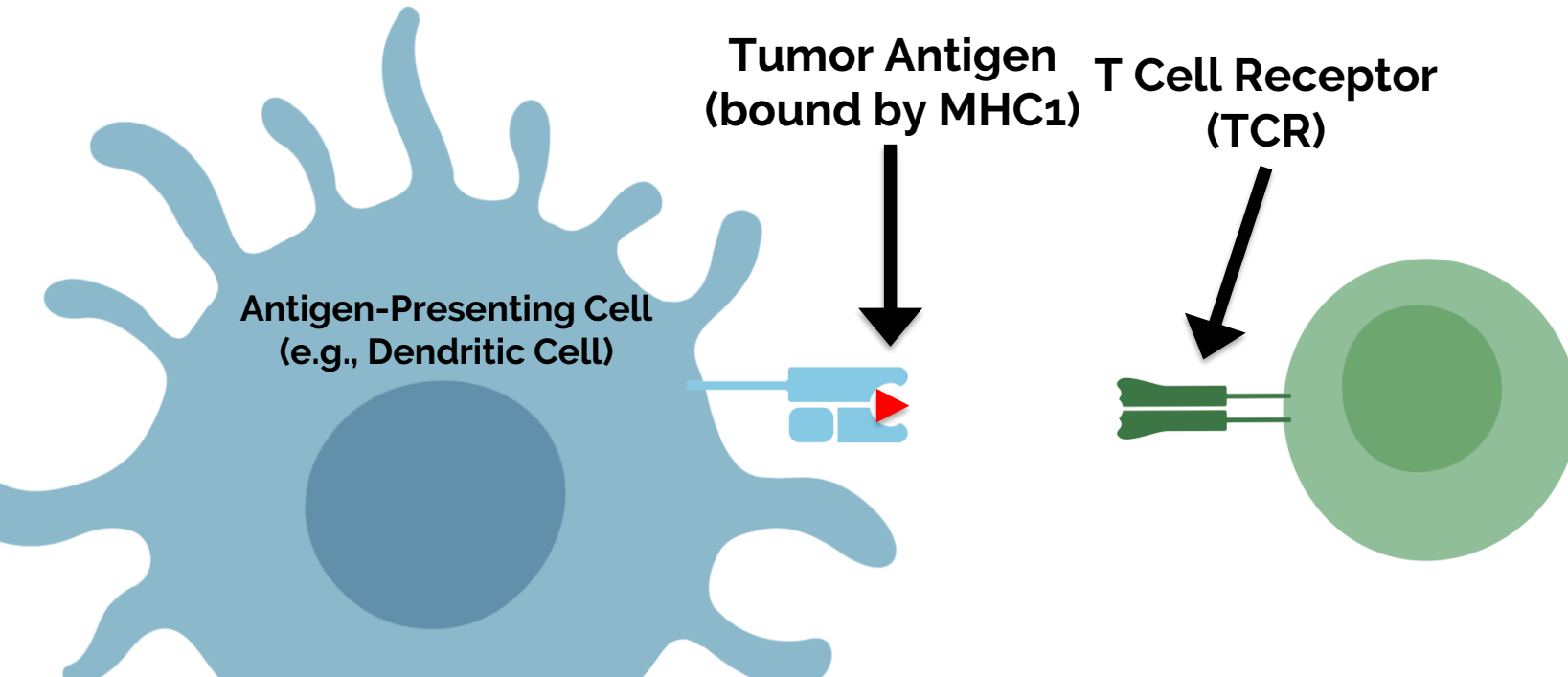
# Adaptive Immune Responses Against Cancer



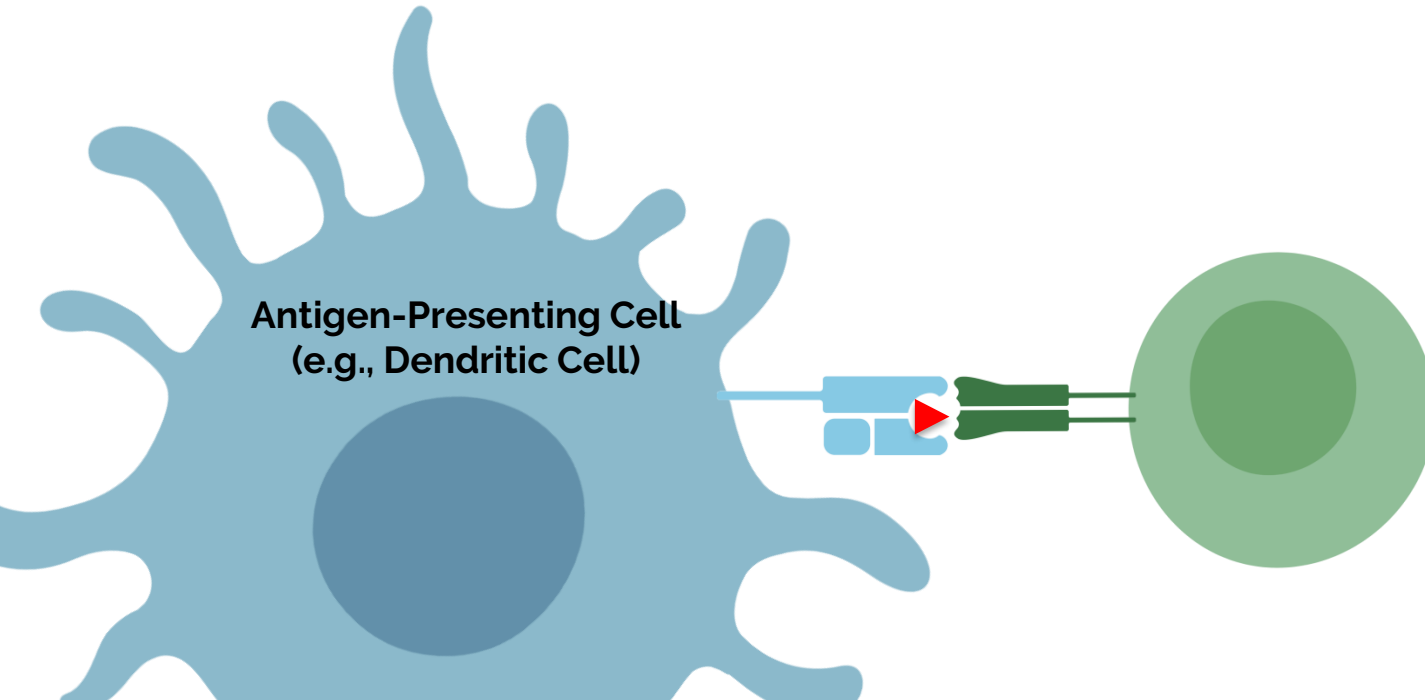
# Adaptive Immune Responses Against Cancer



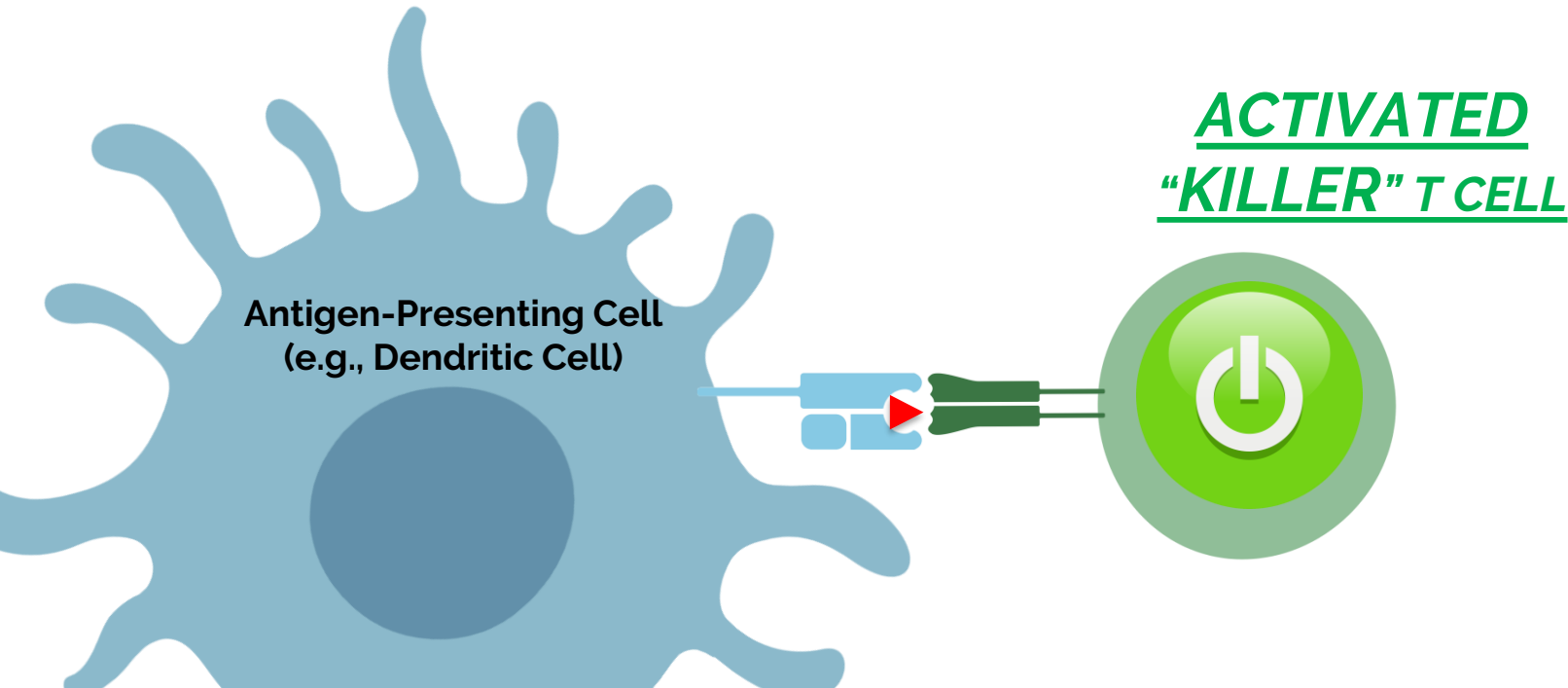
# Adaptive Immune Responses Against Cancer



# Adaptive Immune Responses Against Cancer

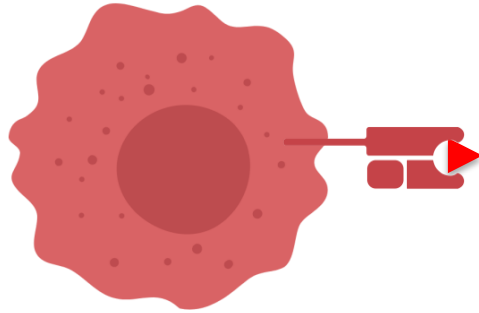


# Adaptive Immune Responses Against Cancer

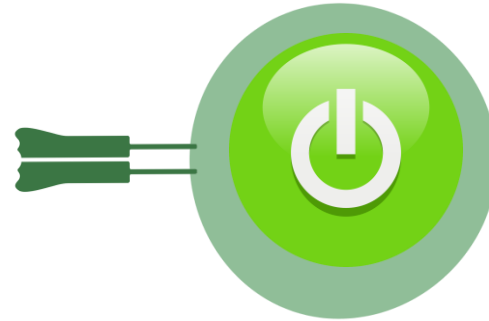


# Adaptive Immune Responses Against Cancer

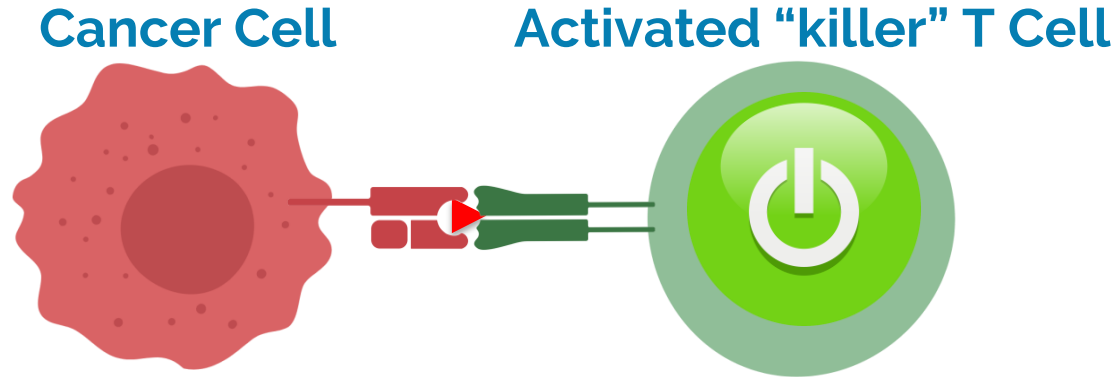
Cancer Cell



Activated “killer” T Cell



# Adaptive Immune Responses Against Cancer

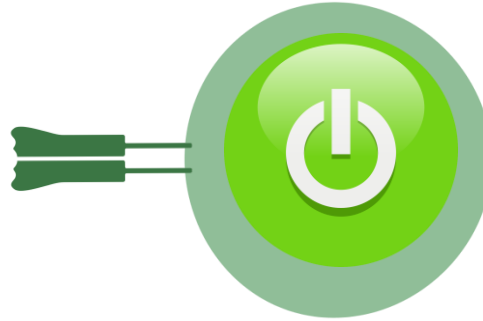


# Adaptive Immune Responses Against Cancer

Cancer Cell



Activated “killer” T Cell

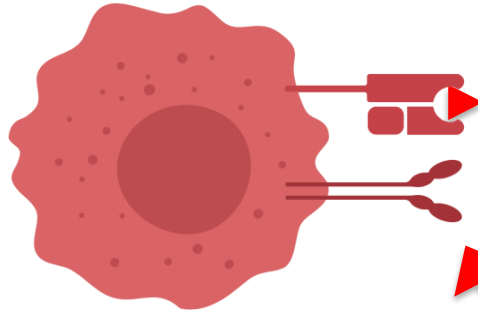


**CANCER CELL ELIMINATED!**

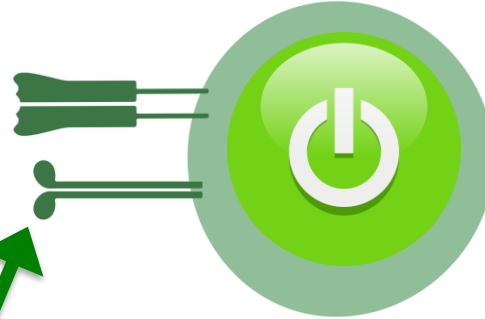
# Immune Checkpoints Can Suppress Immune Responses



Cancer Cell

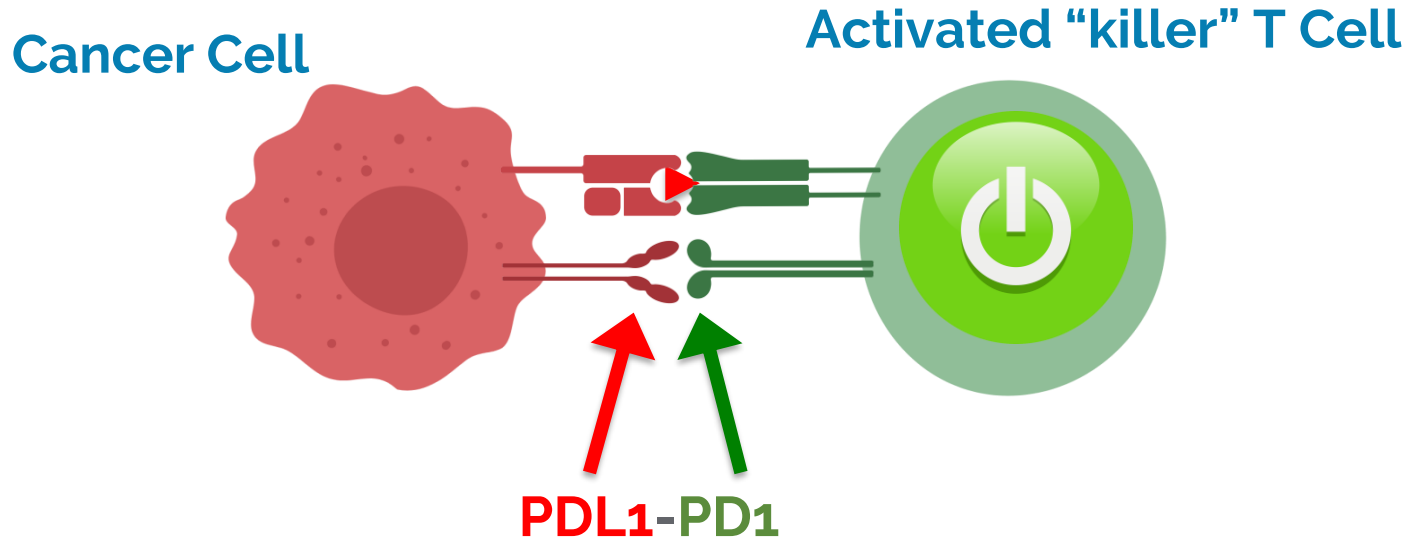


Activated “killer” T Cell

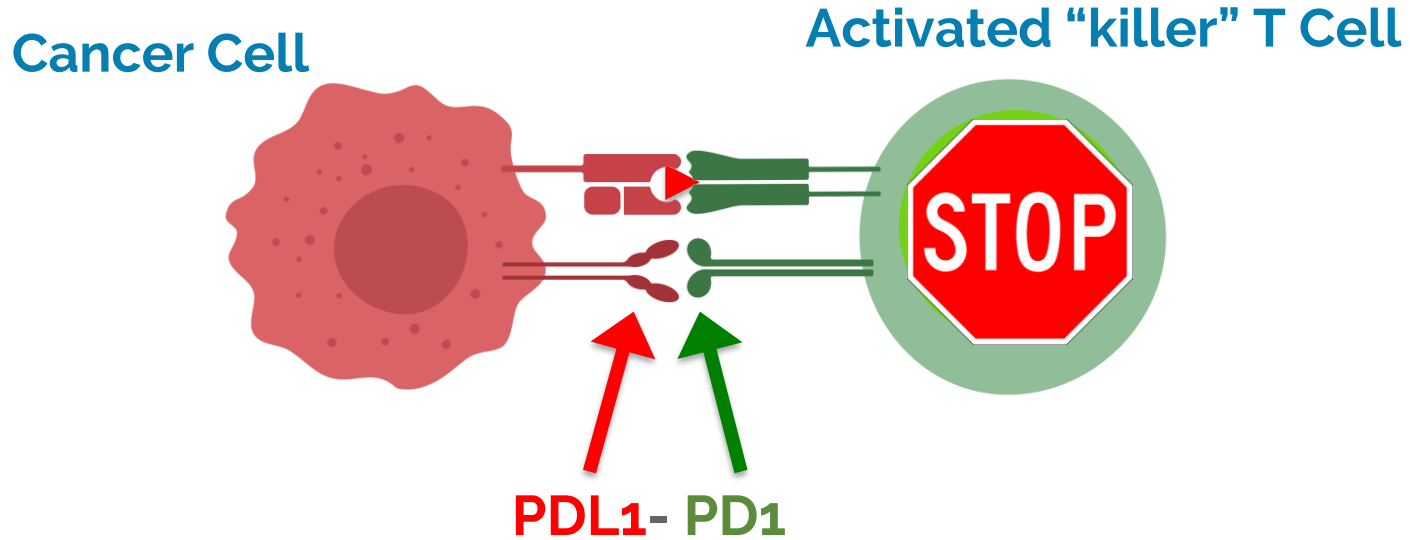


PDL1 PD1

# Immune Checkpoints Can Suppress Immune Responses



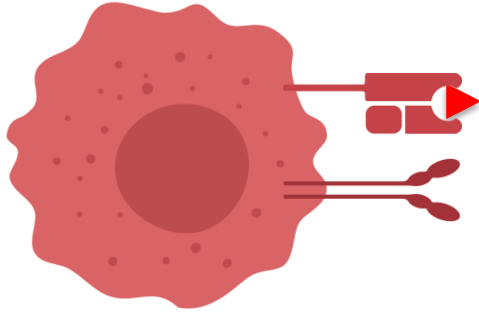
# Immune Checkpoints Can Suppress Immune Responses



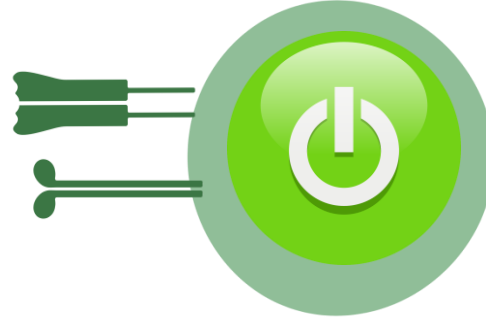
Normally, **PDL1**-**PD1** leads to T cell "exhaustion"

# Checkpoint Immunotherapy Can Promote Anti-Cancer Activity

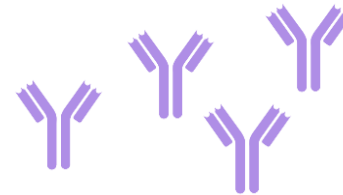
Cancer Cell



Activated “killer” T Cell



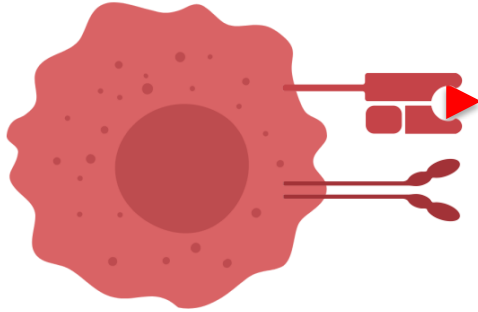
PD-1/PD-L1  
Checkpoint Inhibitors



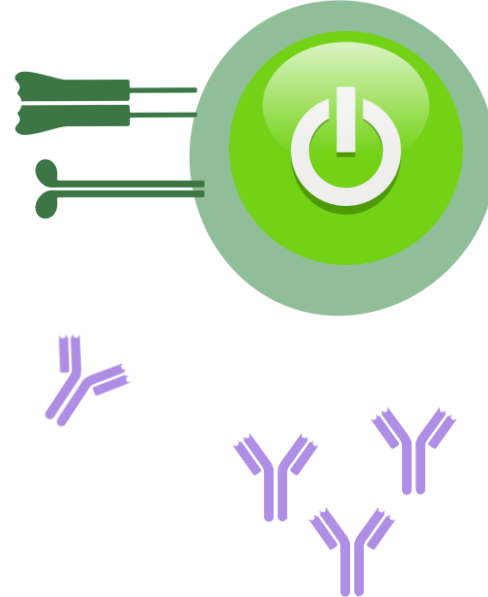
# Checkpoint Immunotherapy Can Promote Anti-Cancer Activity



Cancer Cell



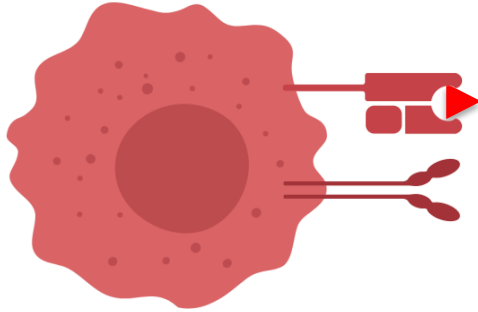
Activated “killer” T Cell



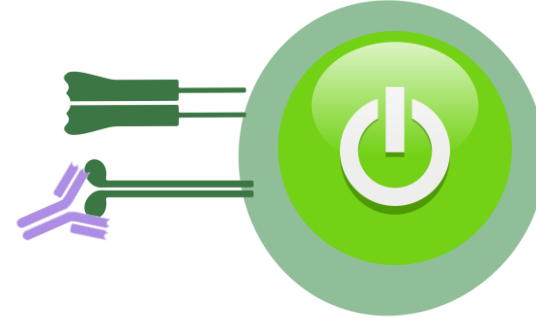
# Checkpoint Immunotherapy Can Promote Anti-Cancer Activity



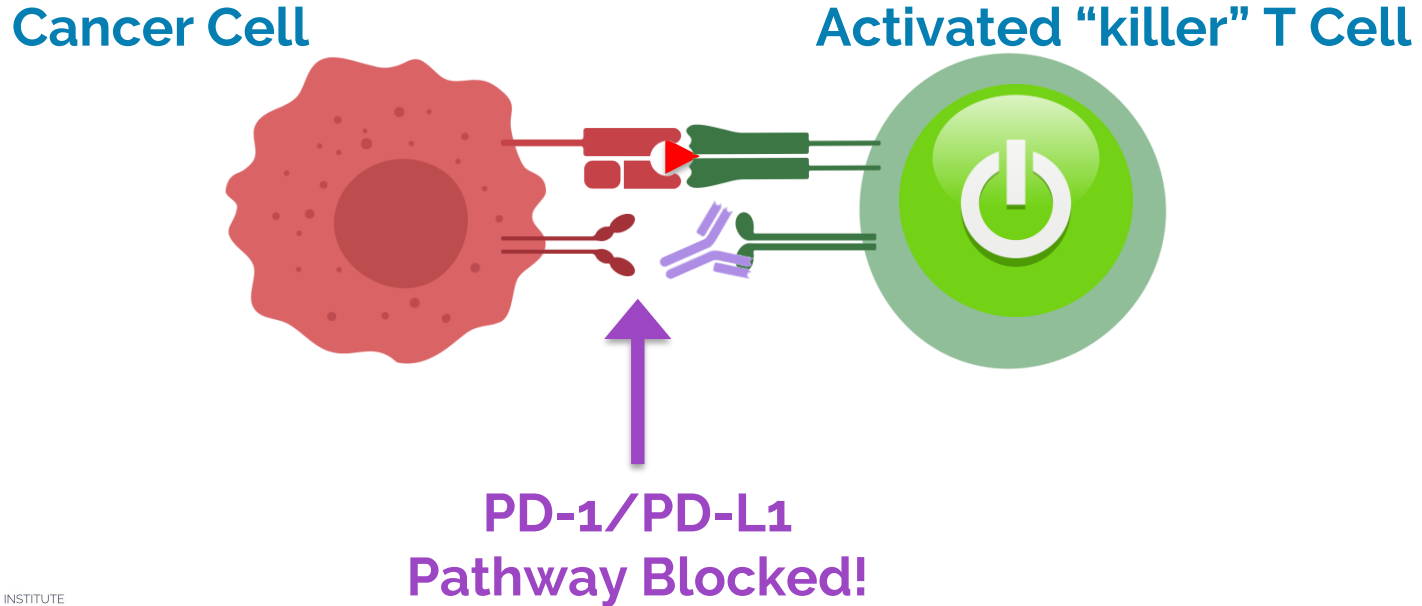
Cancer Cell



Activated “killer” T Cell



# Checkpoint Immunotherapy Can Promote Anti-Cancer Activity

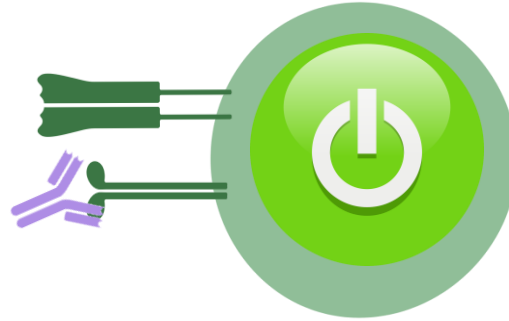


# Checkpoint Immunotherapy Can Promote Anti-Cancer Activity

Cancer Cell

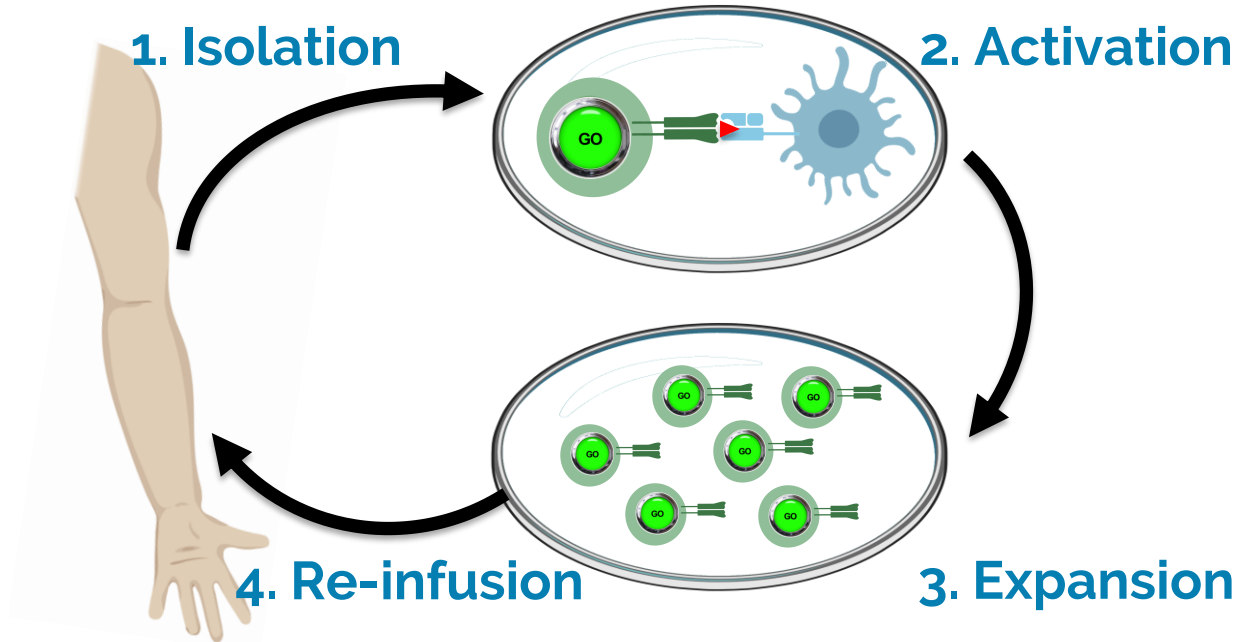


Activated “killer” T Cell

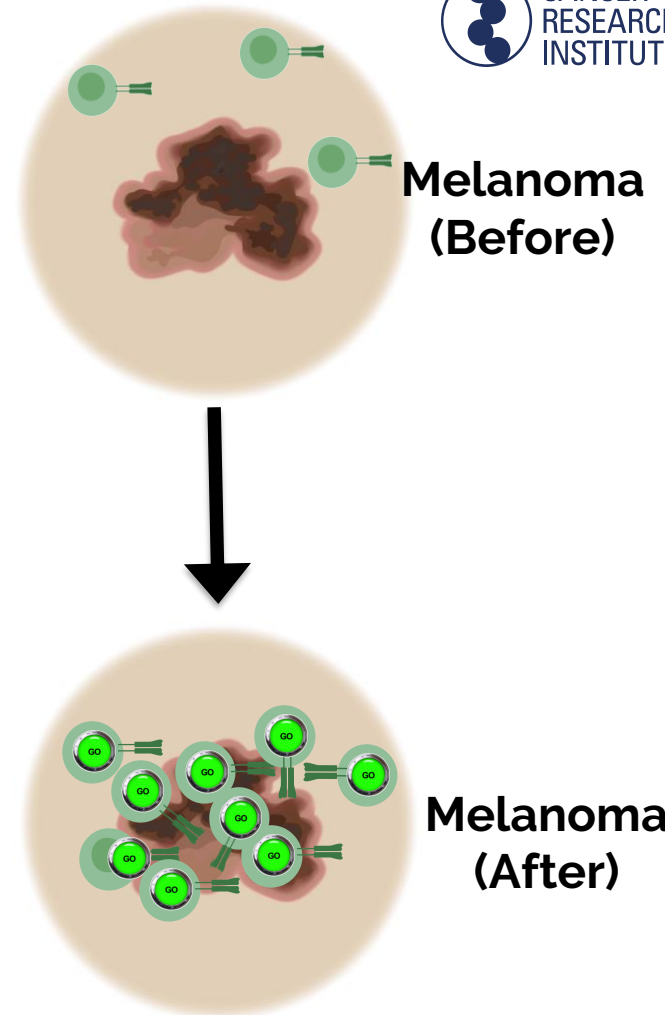
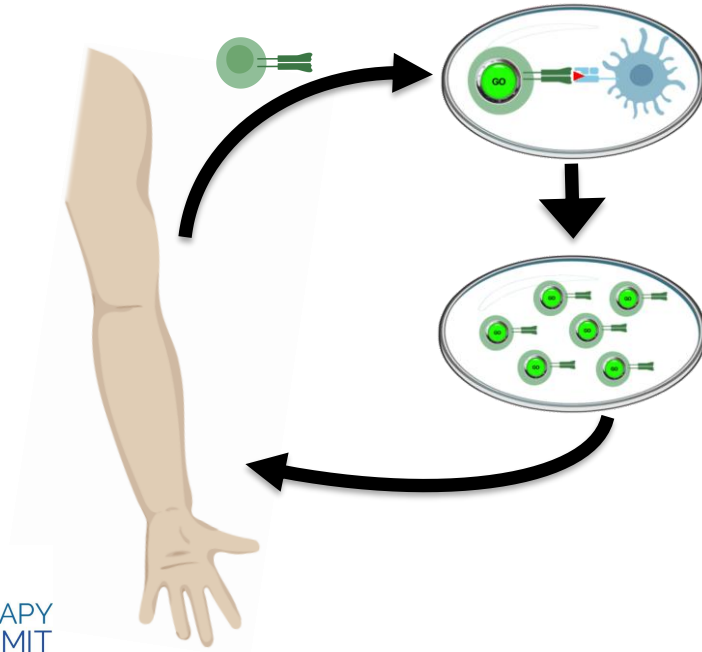


**CANCER CELL ELIMINATED!**

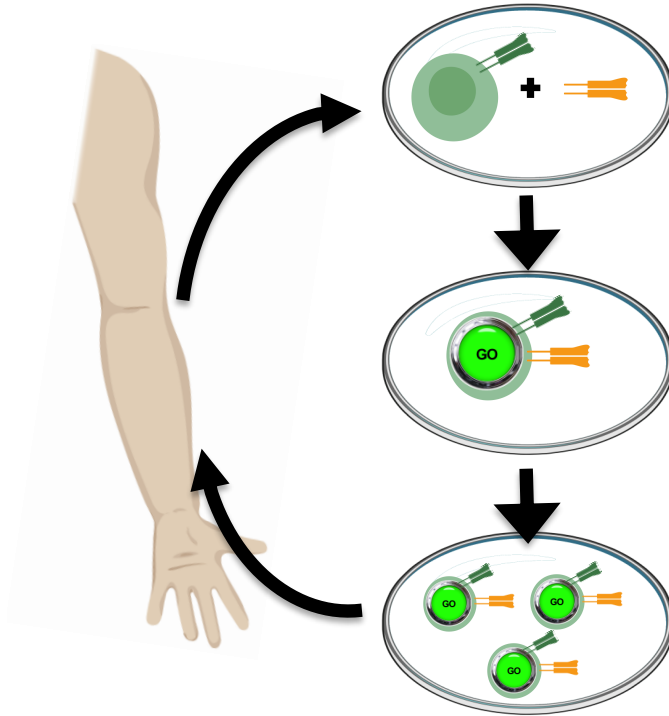
# Adoptive T Cell Immunotherapy



# Adoptive T Cells In Action (Against Melanoma)

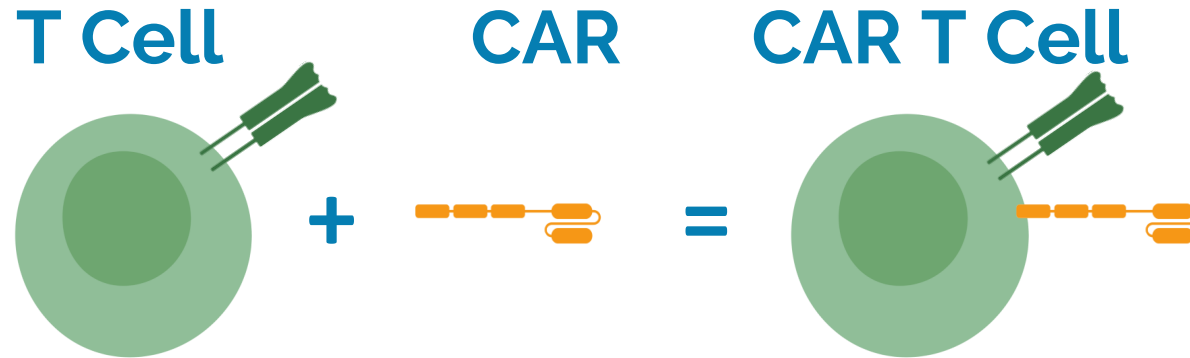


# T Cell Receptor Engineering



**Equip T cells with new,  
cancer-targeting TCR**

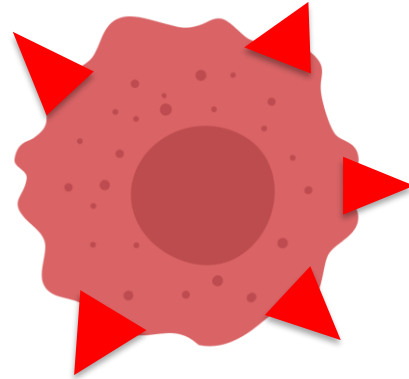
# CAR T Cell Immunotherapy (Chimeric Antigen Receptor)



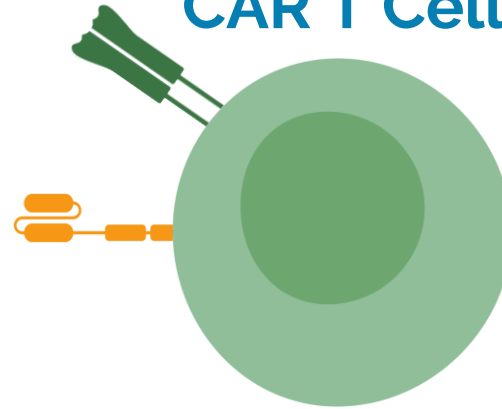
# CAR T Cell Immunotherapy (Chimeric Antigen Receptor)



Cancer Cell

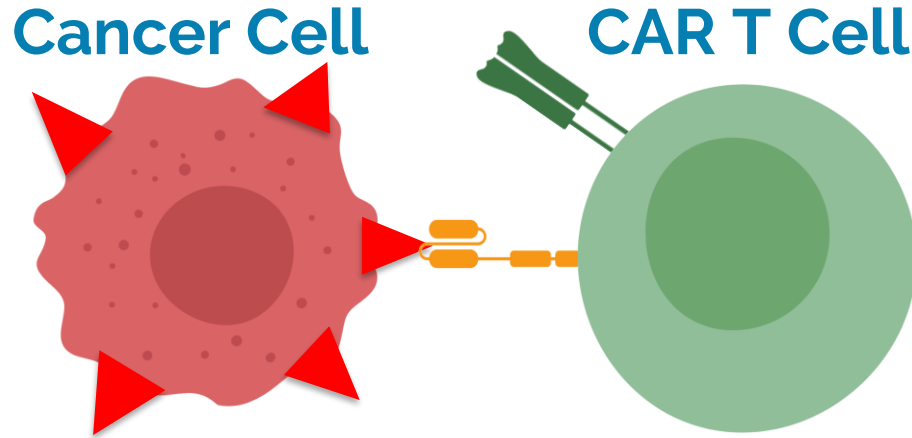


CAR T Cell



CARs enable MHC-independent targeting & killing!

# CAR T Cell Immunotherapy (Chimeric Antigen Receptor)



CARs enable MHC-independent targeting & killing!

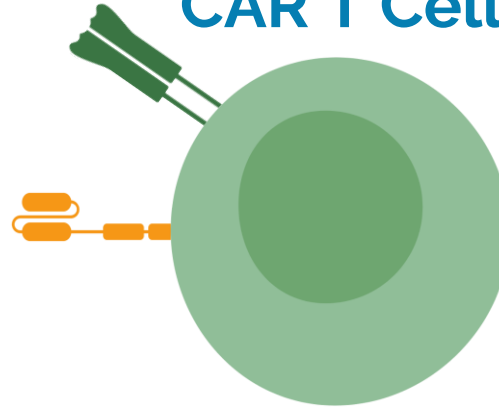
# CAR T Cell Immunotherapy (Chimeric Antigen Receptor)



Cancer Cell

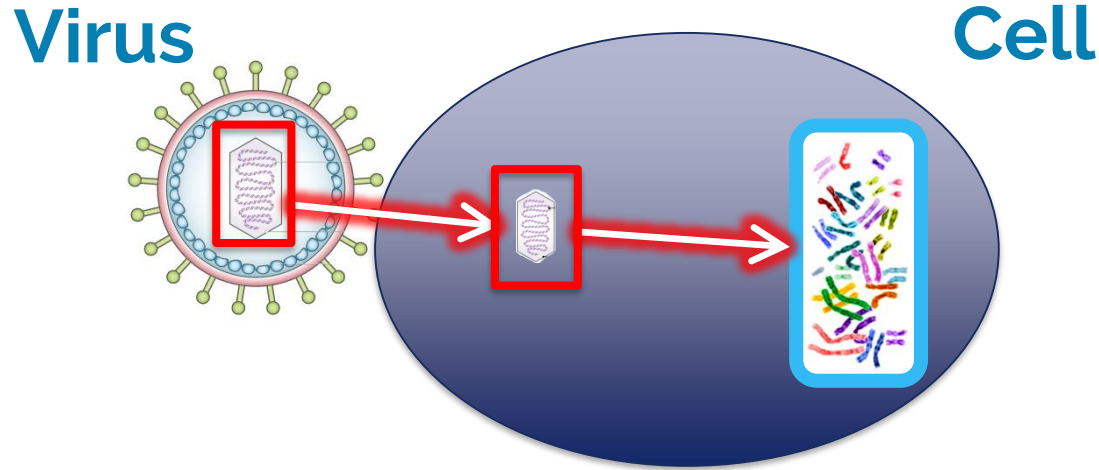


CAR T Cell

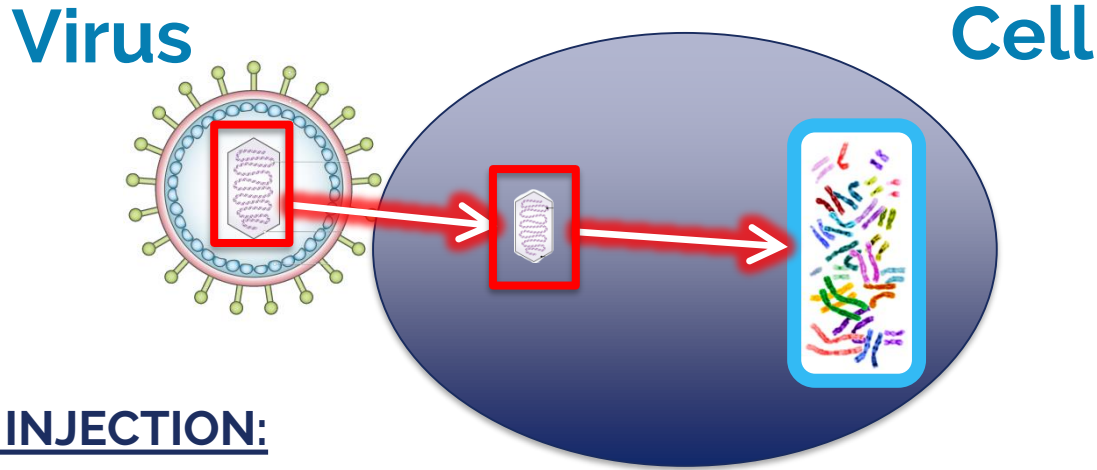


CARs enable MHC-independent targeting & killing!

# Oncolytic Virus Immunotherapy



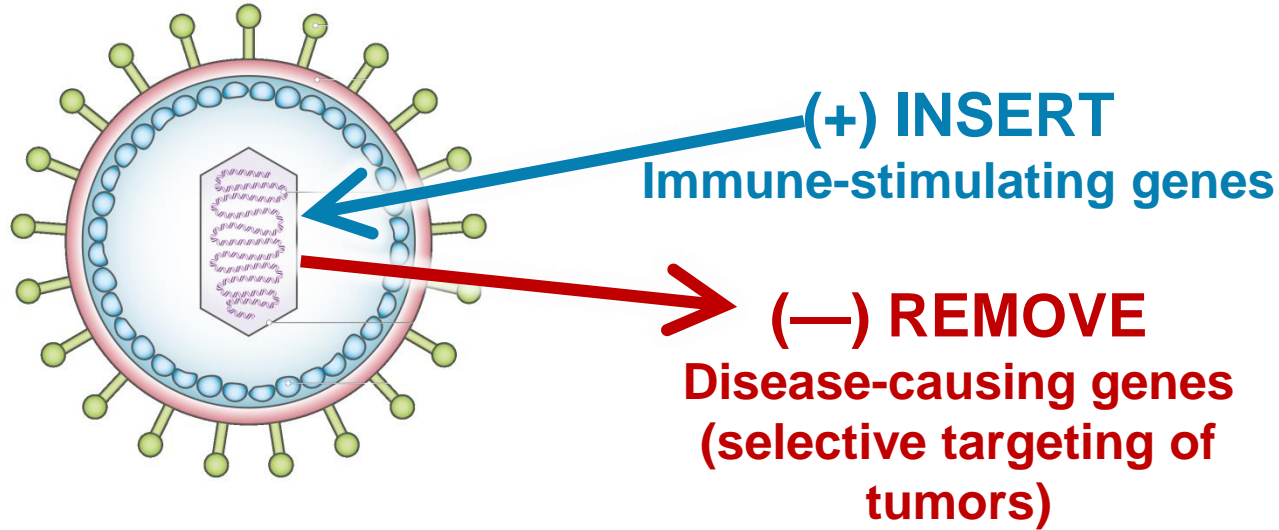
- Viruses can alter our cells' DNA, by inserting their own genetic material
- Impaired defenses make tumor cells more susceptible to infection



## AFTER INJECTION:

- 1) Viruses cause tumor cells to “burst” & release antigens
- 2) Immune cells uptake & present tumor antigens
- 3) Stimulates adaptive, and potentially systemic, immune responses

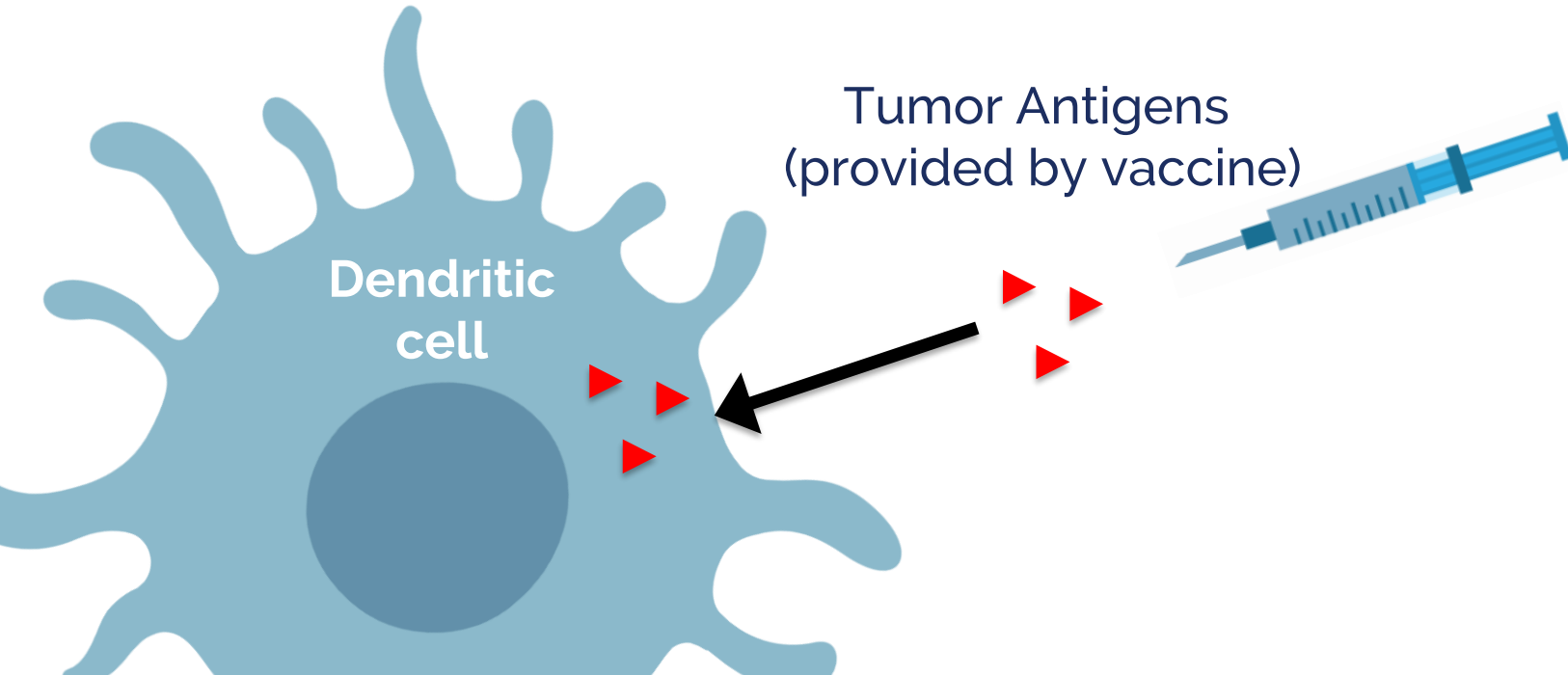
# Reprogramming Oncolytic Viruses | To Enhance Anti-Tumor Activity



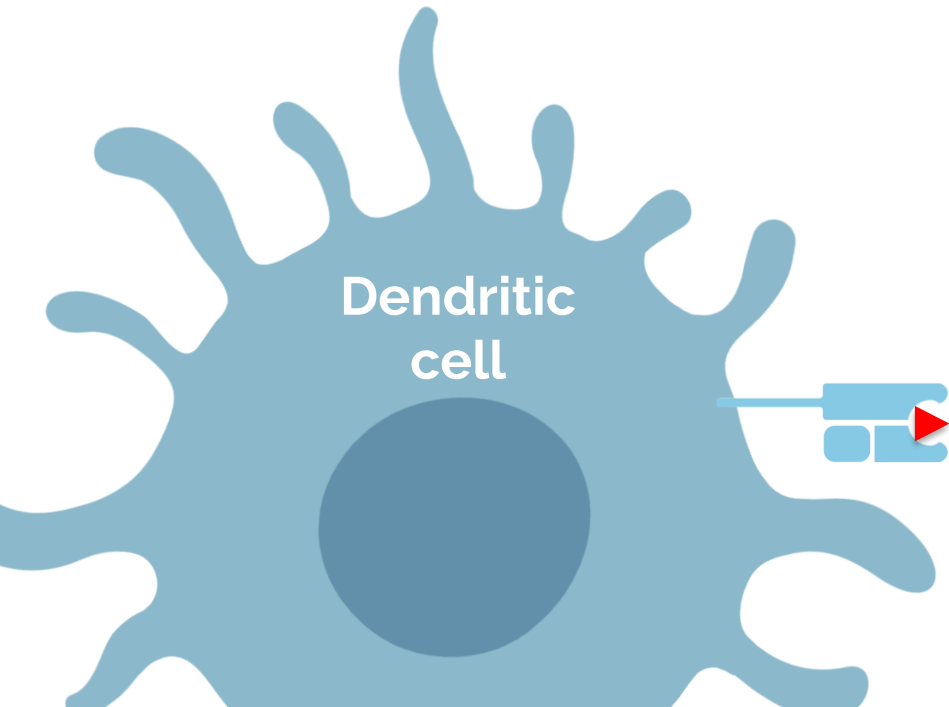
Tumor Antigens  
(provided by vaccine)



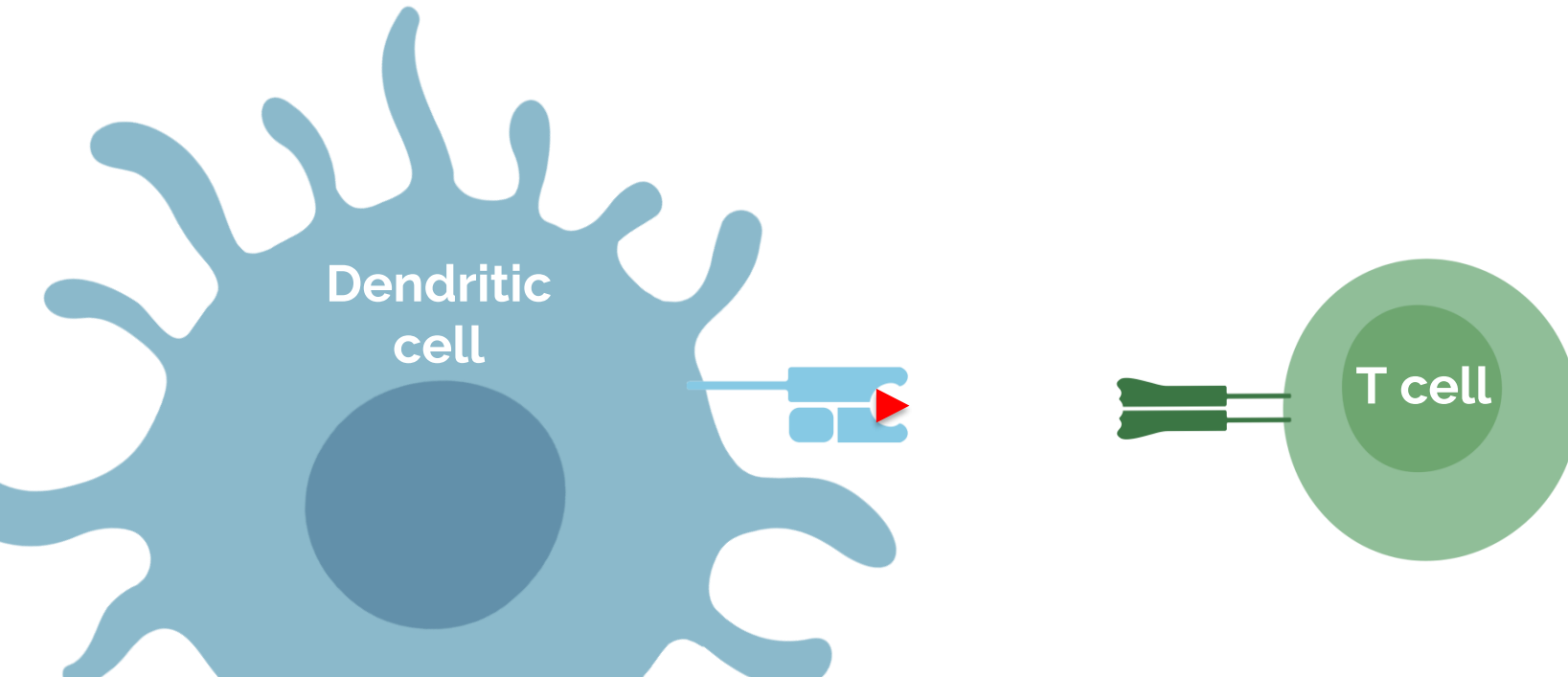
# Cancer Vaccines

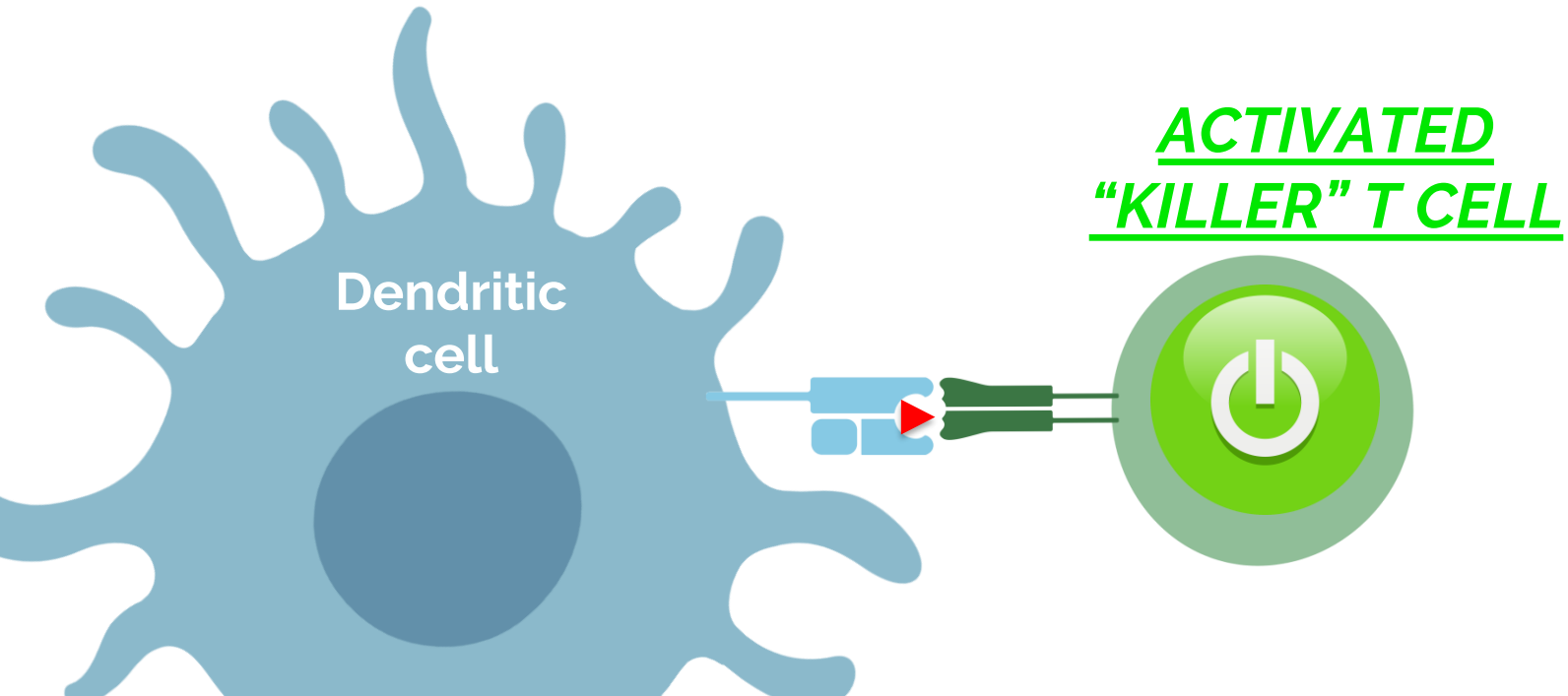


# Cancer Vaccines



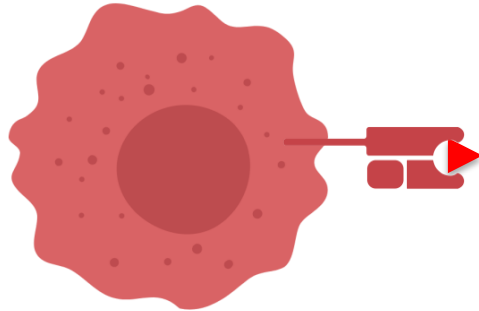
# Cancer Vaccines



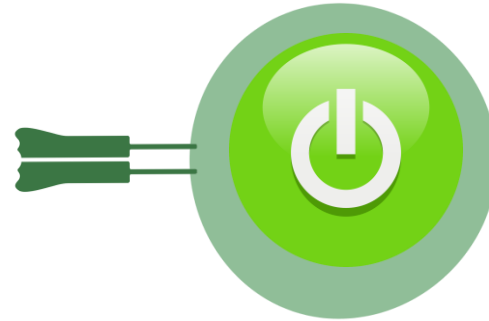


# Vaccine-Induced Elimination of Cancer Cells

Cancer Cell



Activated “killer” T Cell

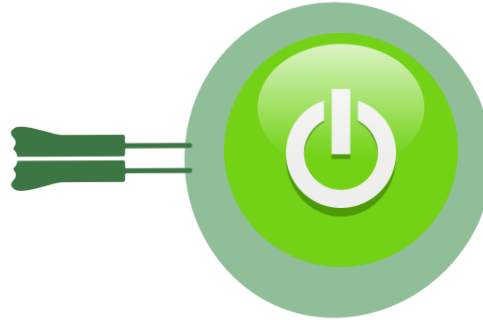


# Vaccine-Induced Elimination of Cancer Cells

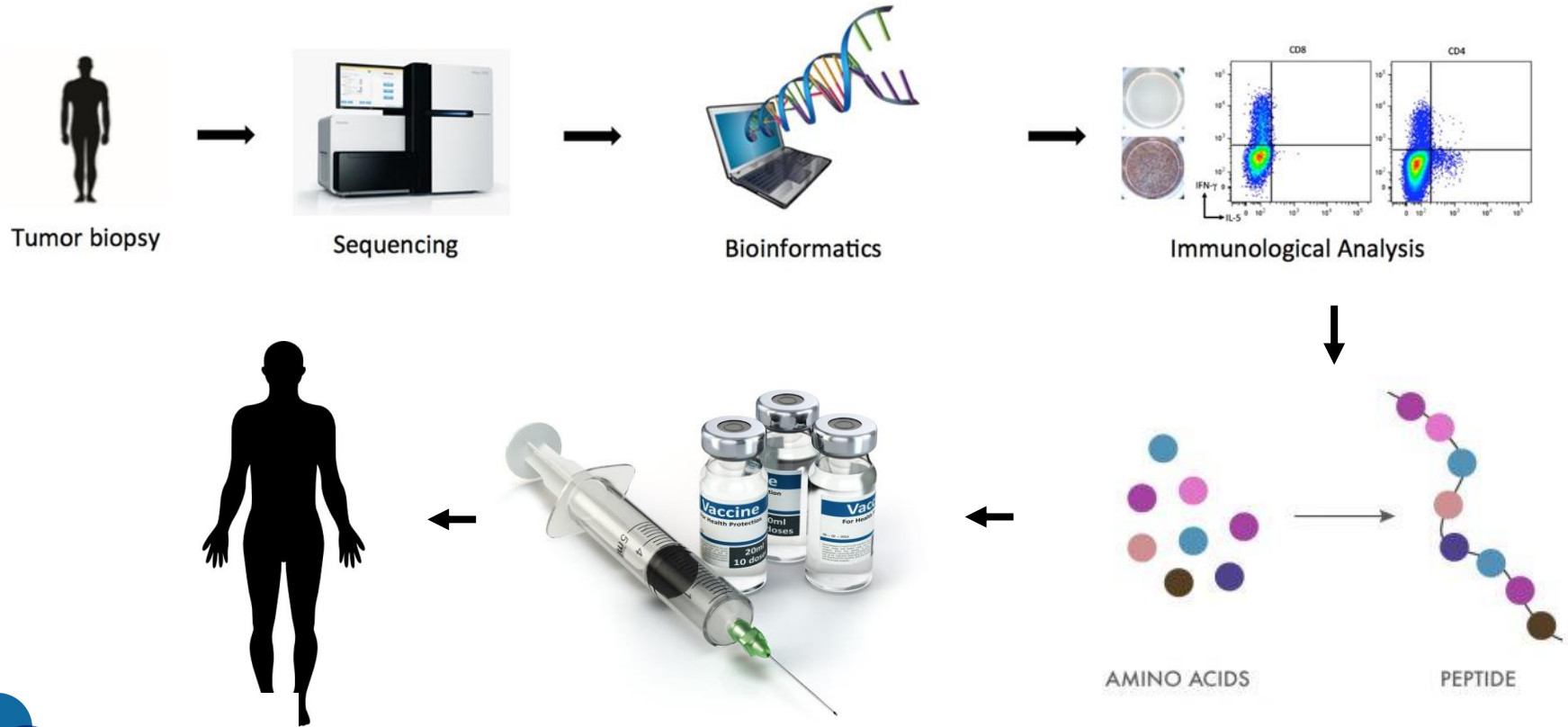
Cancer Cell



Activated “killer” T Cell



# Personalized Neoantigen Vaccine Trial

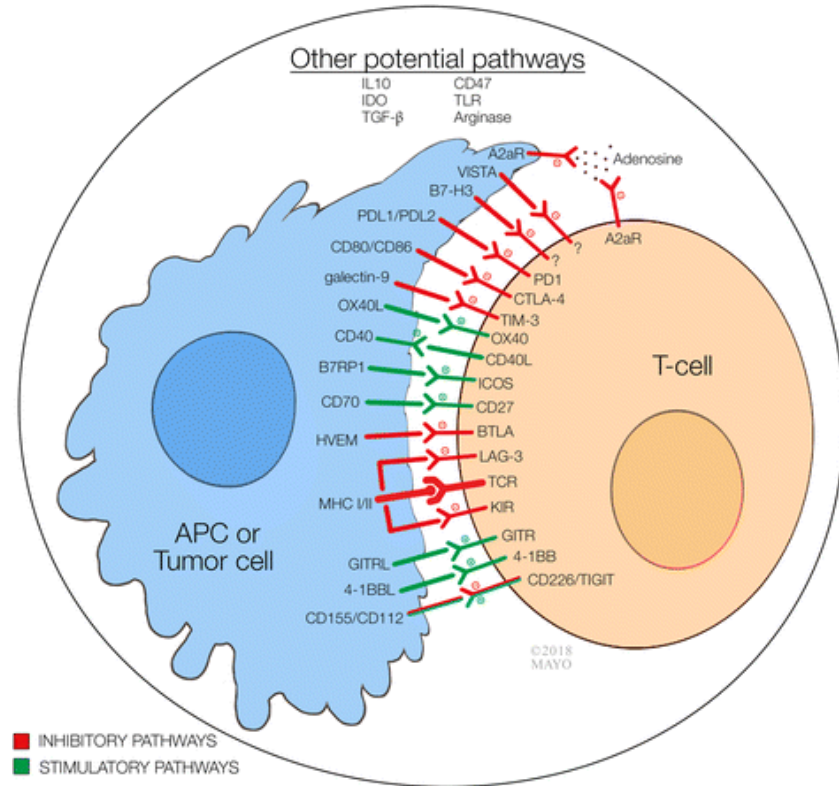


# Challenges in Cancer Immunotherapy

- Discovering and validating new biomarkers to help doctors predict which patients will respond to which immunotherapies
- Determining the best way to combine immunotherapies with each other as well other treatments to extend immunotherapy's benefits for more patients
- Learning how to decouple side effects of immunotherapy from benefit

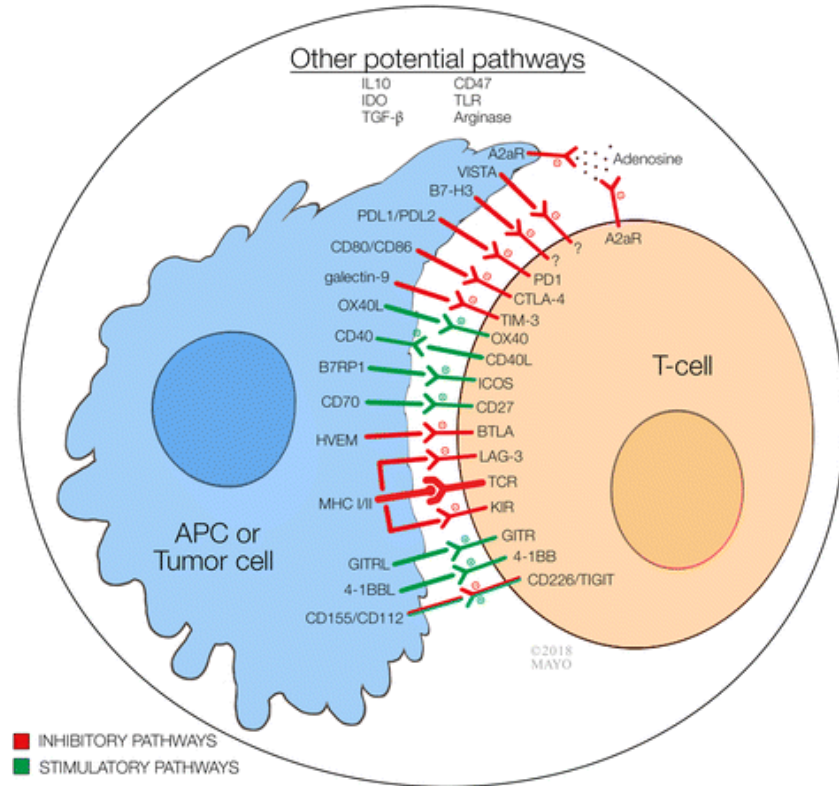
# Why have most responses been modest and why are some cancers refractory to immunotherapy?

1. Cancers upregulate molecules to turn off immune cells



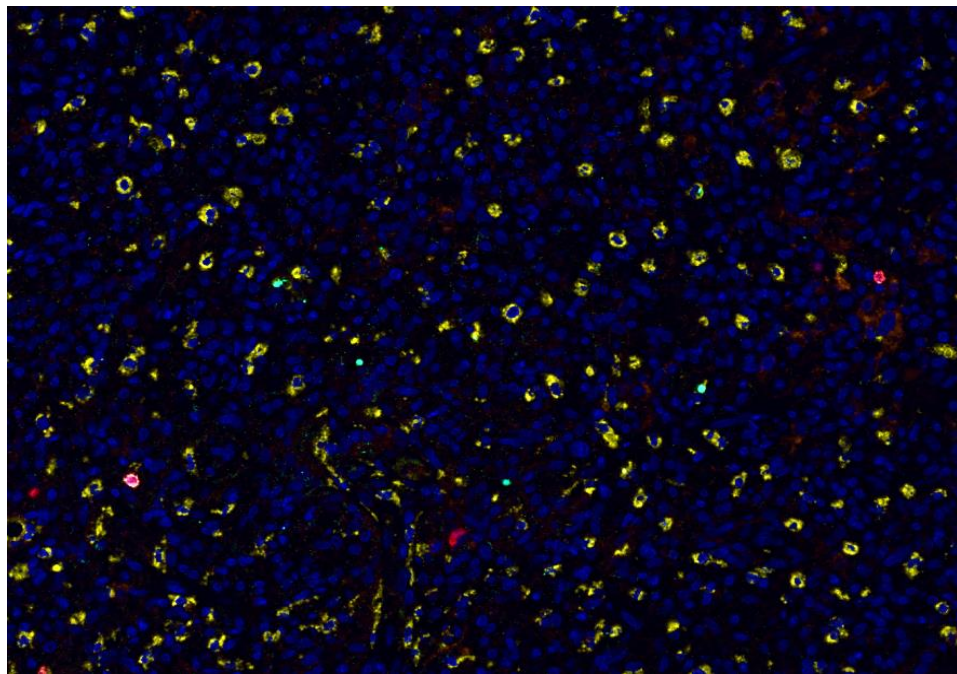
# Why have most responses been modest and why are some cancers refractory to immunotherapy?

1. Cancers upregulate molecules to turn off immune cells
2. Cancers secrete chemicals to turn off the immune system



# Why have most responses been modest and why are some cancers refractory to immunotherapy?

1. Cancers upregulate molecules to turn off immune cells
2. Cancers secrete chemicals to turn off the immune system
3. Cancers recruit suppressive cells to inactivate/block the immune response



DAPI  
(nuclear)

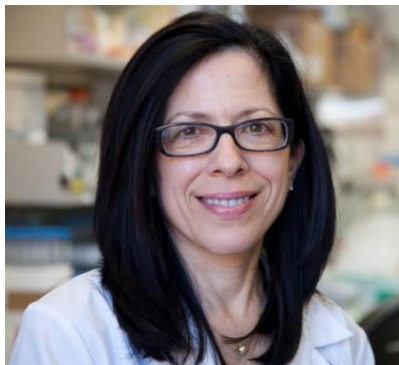
CD68  
(macrophage/  
microglia)

CD8  
(cytotoxic T cell)

CD3  
(T cell)

## LATEST RESEARCH UPDATES

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### **Moderator**

**Elizabeth M. Jaffee, M.D.**

Pancreatic cancer



### **Panelist**

**Marijo Bilusic, M.D., Ph.D.**

Genitourinary cancer



### **Panelist**

**Raneer Mehra, M.D.**

Lung cancer



### **Panelist**

**Suzanne L. Topalian, M.D.**

Melanoma



**Adrienne Skinner**

**Ampullary Cancer Veteran**

# Adrienne's Immunotherapy Experience

## Adrienne's Guidelines

- ***Clinical trials' success depends on specific characteristics for each trial:***  
Find out what those are and be prepared to answer questions about your ability to meet them
- ***Cancer treatment is a journey:*** Make sure you are exploring all roads
- ***Become educated:*** However, trust but verify your sources
- ***Remember there are thousands of people who are working to help you:*** Your experience is important in ways you may never know. Help the process of improving results for all
- ***Persistence and positivity makes a difference***
- ***Take control where you can***
- ***Marshall your support team***

## Adrienne's Immunotherapy Experience



Cancer makes you feel like  
your body is out of control.

Choosing when my hair  
would be gone felt better  
than waiting for it.

Taking control of my hair loss in 2013.

## Adrienne's Immunotherapy Experience



No one really knew I was sick unless I told them. How you behave is what people read. Make-up, wigs and false eyelashes hid the physical impact for me.

This is my 'fancy girl' wig. She came to work with me.

# Adrienne's Immunotherapy Experience



These are the amazing doctors who led the clinical trial for the immunotherapy solution that saved my life.

Dr. Luis Diaz and Dr. Yung Le, my heros!

## Adrienne's Immunotherapy Experience



My four daughters

Support from them was, and is, crucial. And for them, knowing there is a potential solution should they get cancer is a relief (three of them have Lynch Syndrome, too).

## Adrienne's Immunotherapy Experience



Support from family and friends is essential. Be open about what you need.

So lucky to have Joe in my life!

## Adrienne's Immunotherapy Experience



What a joy to be here for my first grandchild.

My newest team support member!



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# Lunch and Networking North and South Dining Terrace



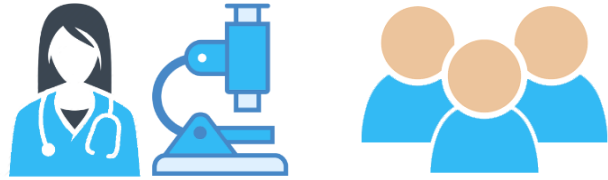
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# LEARN ABOUT CLINICAL TRIALS

Brian Brewer  
Cancer Research Institute

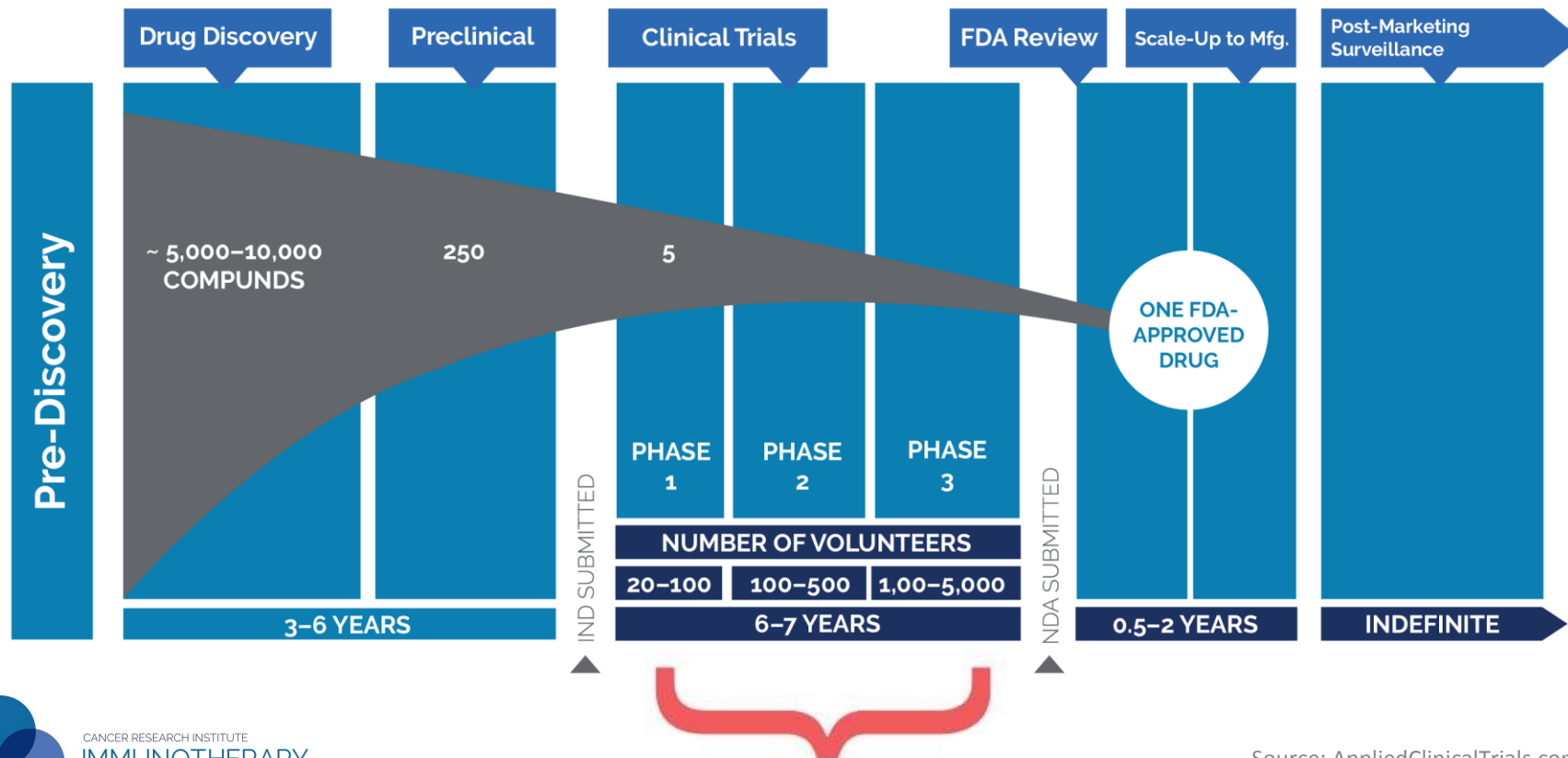


# What Are Clinical Trials?



- Research studies that involve people
- Designed to answer specific questions about new and existing treatments
- Aim to improve treatments and the quality of life for people with disease

# Getting from Discovery to Approval



# What Are Clinical Trial Phases?

## Phase 1



**Is the treatment safe?**

Purpose:

- First study in humans
- Find best dose, delivery method, and schedule
- Monitor for side effects
- Determine safety

Number of people: 20-100

## Phase 2



**Does it work?**

Purpose:

- Look for effect on specific type(s) of cancer
- Continue monitoring for side effects and safety

Number of people: 100-500

## Phase 3



**Does it work better?**

Purpose:

- Compare new treatment (or new use of a treatment) with current standard treatment
- Determine risk vs. benefit

Number of people: 1,000-5k+

# Pros and Cons of Clinical Trials

Potential Advantages	Potential Disadvantages
Access to best possible care	Unknown side effects or risks
Receiving new drugs before they're widely available	Unknown benefits—drugs may not work as intended
Close monitoring by medical team	Not all patients may benefit
Chance to play active role in healthcare and research	Frequent tests and clinic visits
Help future generations	Possible need to travel to trial sites

*Patient Resource, "Understanding Clinical Trials: A Guide for Patients and Their Families"*

# Questions to Ask Before Volunteering

- Why is this trial being done?
- Why is it believed that the treatment being studied may be better than the standard treatment?
- What are my other options (standard treatments, other trials)?
- How did patients do in any previous studies of this treatment?
- How will the doctor know if treatment is working?
- How long will the trial last?

# Questions to Ask Before Volunteering

- Can I continue to receive this treatment after the trial ends?
- What kinds of procedures or tests are involved?
- What impact with the trial have on my daily life?
- Will I have to travel for treatment? Will I be compensated?
- How often will I need to travel to receive treatment?
- Will I be hospitalized as part of the trial?
- What costs (if any) will be my responsibility to pay?

# Getting into a Clinical Trial Isn't Always a Given

Trials are designed to ask specific questions, and must adhere strictly to entry criteria to ensure data is accurate and meaningful.

This also helps ensure patients who could be made worse by treatment are not exposed to the risk.

Common criteria include:

- **cancer type or stage**
- **treatment history**
- **genetic factors**
- **age**
- **medical history**
- **current health status**



I might only get placebo  
("sugar pill") instead of treatment.



Placebos are rarely used and never given  
in the absence of some form of treatment.



Trials are only for people who have run out of treatment options (a “last resort”).



Clinical trials are designed for people with cancer of all types and stages.



I need to travel to a large hospital or cancer center to participate in a clinical trial.



Trials take place at local hospitals, cancer centers, and doctors' offices in all parts of the country, in both urban and rural areas.



My health insurance doesn't cover the cost of care in a clinical trial.



Doctor visits, hospital stays, and certain testing procedures may be covered by insurance. Research costs are typically covered by the trial sponsor.



Signing a consent form “locks” me into staying in a trial.



Fact: You are free to change your mind for any reason about participating in a trial anytime before or during a trial.



**MYTH**

I will be made to feel like a  
“guinea pig” experiment.



**FACT**

Fact: The overwhelming majority of trial participants say they were treated with dignity and respect, and report having had a positive experience in a trial.



**MYTH**

Clinical trials aren't safe.



**FACT**

Fact: Safeguards including an Institutional Review Board, Data and Safety Monitoring Board, and an ongoing informed consent process ensure patients' rights and safety are protected.

## Informed consent = having all the facts before and during a trial

- Study purpose
- Length of time of the study
- Predictable risks
- Possible benefits
- Expectations
- Patient's rights
- Treatment alternatives
- Patient health monitoring
- Safeguards in place
- How to withdraw from study

**Be bold in asking for details.  
It's YOUR treatment plan.**

# How Can I Find a Clinical Trial?

- Ask your doctor
- Ask another doctor if necessary...
- Contact a patient advocacy organization
  - Seek assistance from a clinical trial navigator, if offered
  - CRI Clinical Trial Finder: 1 (855) 216-0127
- Search online
  - <https://www.cancerresearch.org/patients/clinical-trials>
  - <https://clinicaltrials.gov/>



## Moderator

**Brian Brewer**

## Panel

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**Vanessa Brandon**

Colorectal cancer

**Donna Lynch**

Diffuse large B-cell (non-Hodgkin)  
lymphoma

**John Ryan**

Non-small cell lung cancer



CANCER RESEARCH INSTITUTE  
**IMMUNOTHERAPY  
PATIENT SUMMIT**

# BREAKOUT SESSIONS

# Breakout Session Rooms



**General Immunotherapy**  
**Elizabeth M. Jaffee, M.D.**

**Level 1**  
**Pullen Plaza**

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**Melanoma**  
**Megan D. Schollenberger, MSN, CRNP**

**Level 2**  
**Room 200**

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**Lung Cancer**  
**Ranee Mehra, M.D.**

**Level 2**  
**Room 202**

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**Genitourinary Cancer**  
**Marijo Bilusic, M.D., Ph.D.**

**Level 3**  
**Mt. Washington Room**

# Our Sponsors



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## Thank you to those who helped promote the summit

- American Cancer Society
- Colorectal Cancer Alliance
- Crush It For Curtis Foundation
- Esophageal Cancer Action Network
- Esophageal Cancer Awareness Association
- Fight Colorectal Cancer
- FORCE
- Go2Foundation For Lung Cancer
- Imerman Angels
- HopeWell Cancer Care
- Johns Hopkins Sidney Kimmel Cancer Center
- Leukemia & Lymphoma Society
- Ludwig Cancer Research
- LUNGevity
- Melanoma Research Alliance
- Melanoma Research Foundation
- National Ovarian Cancer Coalition – Baltimore
- Nueva Vida
- Pancreatic Cancer Action Network
- Patient Empowerment Network
- SHARE
- Us TOO
- Ulman Foundation
- University of Maryland Medical Center
- Young Survival Coalition

### You will receive two emails after the summit:

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1. **A survey** to share your feedback on the summit as well as insights into future programming.
2. **Information** from the summit day, including this presentation and instructions on how to use our [Clinical Trial Finder service](#).



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# IMMUNOTHERAPY **PATIENT** SUMMIT

Baltimore November 16, 2019