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Fifth Edition

UNDERSTANDING CANCER IMMUNOTHERAPY

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UNDERSTANDING CANCER IMMUNOTHERAPY

Fifth Edition

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EXPLAINING THE IMMUNE SYSTEM

Your body is constantly threatened by harmful microorganisms, such as bacteria, viruses, fungi and parasites. To keep you healthy, your immune system works steadily behind the scenes to protect you from these organisms. This protection is known as immunity, and two main types protect the body in different ways: innate (natural) and adaptive (acquired).

People are born with natural immunity, which includes physical barriers to the internal body parts and offers several defenses against harmful microorganisms. The first defense is your skin, followed by your nostrils, saliva and mucus that coats the inner linings of organs, eyes and mouth. These defenses help block microorganisms from entering the body. Although babies are born with some white blood cells that will eventually increase, their immune systems are still immature at birth. They receive a boost from their mother's placenta and milk until their immune systems can mature.

The acquired immune system is built up over time through exposure to germs in the environment. It can adapt to new germs and remember them.

Even though we have these two types of immunity, germs sometimes get past these defenses and cause illness. When you skin your elbow, for example, the barrier is broken and harmful substances can easily enter the body (see Figure 1). Immediately after the injury, immune cells in the injured tissue begin to respond. They call other immune cells that have been circulating in your body to gather at the site and release messenger proteins, called cytokines, to call other immune cells to help defend the body. The immune cells can recognize bacteria or foreign substances as dangerous and begin to destroy them with a general attack. This is called an immune response.

KEY COMPONENTS OF THE IMMUNE SYSTEM

The immune system is a complex network of cells, molecules, organs and lymph tissues working together to defend the body against germs, cancer cells and other microscopic invaders. The first job of the immune system is to distinguish between what is part of the body ("self") and what is not part of the body ("non-self"). Once the immune system determines that a cell is non-self, or foreign, to the body, it begins a series of reactions to identify, target and eliminate the non-self cells.

The driver of the immune system is the lymphatic system. It contains many key components.

Lymph is clear fluid circulated through lymph nodes located throughout the body, with larger concentrations near the chest, abdomen, groin, pelvis, underarms and neck. Although lymph and lymph nodes make up a large part of the lymphatic system, it also includes other organs, such as the skin, thymus, spleen, appendix, tonsils and adenoids. These organs collect, filter and circulate lymph. Lymph moves to the lymph node, where the foreign objects, such as bacteria, viruses, toxins and chemicals, also known as antigens, are eliminated. You may notice swollen lymph nodes in your neck, for example, when you have a cold or sore throat. Those lymph nodes swell as they work to rid your body of infection. Once the immune system detects antigens, it begins to produce antibodies. Each antibody can bind to only one specific antigen, which helps destroy it. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy antigens.

Lymphocytes (white blood cells) are a significant part of the immune system. They develop in the bone marrow from lymphoblasts (immature cells found in bone marrow). Lymphoblasts mature into infection-fighting cells called B-lymphocytes (B-cells) and T-lymphocytes (T-cells).

B-cells develop in the bone marrow and mature into either plasma cells or memory cells. Plasma cells make antibodies to fight germs and infection. B-cells produce protein antibodies that attach to infectious organisms, such as bacteria and some viruses, marking them for destruction. However, they can only identify them, not destroy them. Memory cells help the body remember which antigens have been attacked previously so it can recognize them more quickly if they return.

T-cells travel to the thymus to mature into helper T-cells, killer T-cells, regulatory T-cells or memory T-cells. They are especially effective at eliminating viruses and cancer cells, and each type takes on a different role in the immune system.

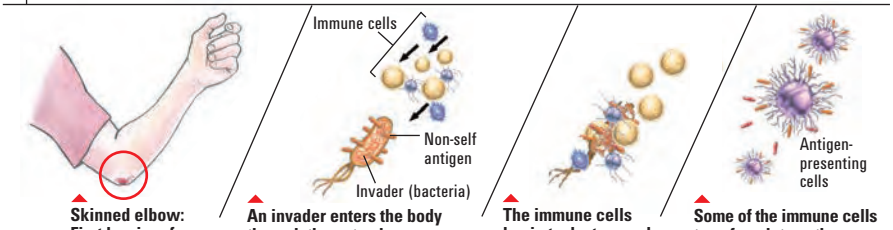
- **Helper T-cells** identify non-self antigens and tell other immune system cells to coordinate with the B-cells for an attack.
- **Killer T-cells** directly attack and destroy infected or cancer cells by releasing a protein that causes targeted cells to enlarge and burst. One type of killer T-cell is cytotoxic, which means it specifically targets cancer cells.
- **Regulatory T-cells** slow down the immune system after an immune response, and they inhibit T-cells that attack normal, healthy cells that weren't eliminated before leaving the thymus. These cells can also inhibit immune responses in body tissues.
- **Memory T-cells** recognize and respond to previously encountered non-self antigens, and do so very quickly. Memory T-cells stay alive in your blood for years, continuing to fight the same invading cells. Memory is the basis of immune protection against disease in general and explains why we don't usually become infected with some diseases, such as measles or chicken pox, more than once.

HOW CELLS "TALK" TO EACH OTHER

Each part of the immune system plays an individual role in defending the body. But like any good team, these parts must be able to signal each other and communicate messages so the system can work together to respond quickly to threats. Most cells communicate by sending chemical signals. The others respond to physical stimuli, such as sensory cells on your skin or cells in your ear that react to sound waves.

To understand how cells communicate, it's important to know that the surface of each cell is not completely round and smooth. Cells are covered with receptors and proteins, which work like puzzle pieces. Proteins have "tabs" that stick out, and receptors

FIGURE 1
NORMAL IMMUNE RESPONSE



Skinned elbow: First barrier of protection is broken.

An invader enters the body through the cut, where immune cells have begun to gather to protect the body.

The immune cells begin to destroy and digest the invader and its antigens.

Some of the immune cells transform into antigen-presenting cells that tell other immune cells about the invader.

have "spaces" that curve inward. When the puzzle pieces fit together (known as binding), chemical signals and information are exchanged in a biochemical reaction.

Once a cell receives a signal, it reacts by sending its own chemical signals to communicate or coordinate with other cells. Cells can amplify a signal so it can travel to distant areas of the body. For example, hormone cells in the brain must travel and communicate with cells in the ovaries to release an egg.

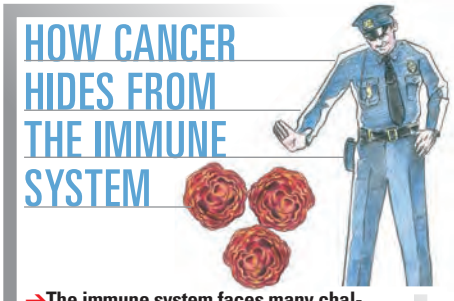
Not all cells contain the same receptors, but they can have multiple receptors for specific proteins. Some receptors even exist within a cell and bind only with molecules that can pass through the cell's outer membrane.

HARNESSING THE POWER OF THE IMMUNE SYSTEM

Doctors realized the amazing power of the immune system years ago and wanted to harness it to fight cancer. In the 1950s, some researchers thought that in addition to protecting the body against bacteria and viruses, the immune system looked for abnormal cells and killed them before they could become tumors. This theory, called cancer immunosurveillance, was initially rejected, but it has become the foundation upon which immunotherapy was built.

Although tumors may develop in spite of a functioning immune system, the way a tumor grows and develops is influenced by the body's immune response. Based on this evidence, and confirmed by studies conducted by cancer researcher Dr. Robert Schreiber, the theory was renamed "cancer immunoediting." Dr. Schreiber's theory of cancer immunoediting is composed of the Three Es:

1. **Elimination.** The immune system sees and destroys cancer cells. In this phase, our bodies may be regularly introduced to cancerous changes, and our immune systems are capable of handling and eliminating them.
2. **Equilibrium.** If the cancer cells are not destroyed right away, they may exist in a delicate balance between growth and control by the immune system. During equilibrium, the body's immune system is able to keep the cancer cells in check but unable to kill them completely. In this phase, a tumor may remain dormant for an unknown length of time and evade medical testing. According to the theory, however, the constant interactions between the tumor cells and immune system cells may lead to tumors that can adapt to the immune response. This means the immune system may no longer be able to recognize tumors and attack them. Tumors that avoid the immune response can no longer be controlled and move on to the third phase.
3. **Escape.** The escape phase refers to the disruption of equilibrium, which allows tumors to escape and begin growing in an environment of immune "tolerance." It's at this point that the symptoms of cancer begin to appear. Tumors in the escape phase can grow by using a number of methods to alter the body's immune response.



→The immune system faces many challenges as it attempts to protect the body from cancer. Imagine a police officer (a T-cell) who encounters an unexpected person (a cancer cell). The officer asks for identification to determine if the person should be let go or stopped. If the police officer thinks the person does not pose a threat (a healthy cell), he will let him go. But he may call for backup (activate the immune system) if there is reason to believe the person is dangerous (a cancer cell). However, the unexpected person may use fake identification or a disguise to appear friendly, so the police officer will think he is a normal person and send him on his way. To disguise itself, the cancer cell produces proteins on its surface to alter its appearance, making it look like a normal, healthy cell. If the cancer cell is successful, the T-cell will be fooled and will let the cancer cell continue to attack the body.

THE IMMUNE SYSTEM VS. CANCER

The immune system uses the same process to recognize and eliminate cancer as it does to remove other non-self cells. But the process is more complicated because cancer cells are created by the body, so the normal ways to find and fight invading cells from outside the body aren't always effective.

The normal process for an immune response begins when B-cells and helper T-cells identify the threat and tell the rest of the immune system. The body then ramps up its production of T-cells to fight. Killer T-cells are sent to destroy the non-self cells. To prevent the T-cells from attacking healthy parts of the body, regulatory T-cells are sent to slow the immune system down once the non-self cells have been eliminated. As a result, the body slows production of T-cells, which then return to normal levels.

Cancer develops when one or several abnormal cells divide and multiply to become a mass (tumor). The tumor may become different enough from the body that the immune system recognizes it as non-self and stimulates an immune response. However, the immune system may have difficulty identifying cancer cells as non-self. It may still see them as part of the body and not coordinate an attack. If the body can't tell the difference between tumor cells and normal cells, the tumor cells may be able to "hide" and evade the immune system (see *How Cancer Hides from the Immune System*).

The longer the cancer cells face a weakened immune response, the more they're able to adapt, and the easier it is for them to manipulate immune cells inside the tumor's location, sometimes called the microenvironment area.

Immunotherapy offers the immune system reinforcements to keep up its fight, whether that is through taking the brakes off the system, boosting it with modified T-cells or combining it with chemotherapy or radiation therapy (see *Exploring Immunotherapy,* page 4). ■

EXPANDING THE IMMUNE SYSTEM'S MEMORY

Although cancer cells can be clever, the immune system has a long memory when it comes to battling dangerous cells. When your immune system encounters a virus, such as chicken pox, the memory T-cells check to see if that virus has any characteristics of cells they have attacked in the past. If so, your memory T-cells offer you immunity from that virus, and most of the time, you don't get the chicken pox again. The memory T-cells alert the rest of the immune system and tell it to make more immune cells to attack the virus and keep you from getting the disease again. Memory T-cells stay alive and store this information for a long time, remaining effective long after treatment ends. Investigators believe that effective immunotherapy can result in cancer-specific memory cells that provide long-term protection against cancer.

ADDITIONAL RESOURCES

- **Society for Immunotherapy of Cancer:** www.sitcancer.org
- **American Cancer Society:** www.cancer.org
  What is Cancer Immunotherapy?
- **American Society of Clinical Oncology:** www.cancer.net
  Understanding Immunotherapy
- **National Cancer Institute:** www.cancer.gov
  Immunotherapy for Cancer

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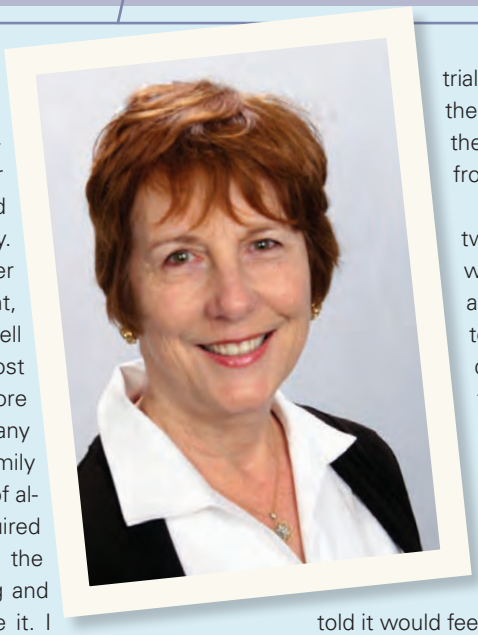
The Plan That Saved My Life

Peggy Zuckerman received a shocking diagnosis of metastatic renal cell carcinoma in 2004. She credits the expert medical team at a leading cancer facility and a successful immunotherapy treatment with saving her life. Today, she is devoted to cancer education and helping shape medical research and care for other cancer patients.



Routine lab work in 2003 showed I was extremely anemic. I was sent to the emergency room and hospitalized for two nights. I received three units of blood and had an endoscopy and colonoscopy. My doctor said I had a tiny, scabbed-over stomach ulcer. I was a compliant patient, following his recommendations to eat well and take iron supplements. Instead, I lost weight, had night sweats and felt even more run down. My doctor attributed it to many things, including menopause, running a family and a business, and even a family history of alcoholism. He ordered a test that first required an ultrasound. Within seconds of starting the ultrasound, the technician stopped talking and turned the screen away so I couldn't see it. I knew then that something was wrong. Hours later, my doctor told me I had a mass on my kidney.

After researching kidney masses, my husband and I realized mine could, and should, have been found much earlier by a simple ultrasound. In the previous eight months, despite my failing health, my doctor hadn't ordered one. The pathology report showed there was never a stomach ulcer, and I lost confidence in my doctor. Adamant about finding a kidney cancer expert, I sought a second opinion at a well-known hospital across the country.

When I arrived at the hospital, all I really knew was that I had a mass. After more tests, I met with a doctor the same day, who told me I had metastatic renal cell carcinoma (RCC). The mass on my kidney was 10 centimeters — the size of a softball. It was bigger than my kidney. Even more shocking, my lungs were filled with metastases. The mets looked like snowflakes all over a black background. Even before we realized what all of this meant, the doctor said he had a plan.

Removing the tumor was the first order of business, followed by immunotherapy. I met with an oncologist and was overwhelmed. I didn't know anyone who'd had RCC, and I'd never heard of this type of treatment. I learned it was the only medicine at the time approved to treat metastatic RCC. I was desperate to know what to expect, so my oncologist gave me the name of a patient who'd been treated with this type of immunotherapy. That patient told me honestly that the treatment was hell, and he would do it again in a heartbeat.

Less than a week later, I had the surgery. The oncologist gave me the option of receiving immunotherapy there or at a hospital near our home. I chose to be closer to our children, so I flew home a week after the surgery.

After healing from the surgery, I was ready for the immunotherapy, but the new oncologist told me about a clinical trial that involved a targeted therapy drug. He explained that if the clinical trial wasn't successful, I could try the immunotherapy treatment next. However, if I opted for the immunotherapy first, I would be disqualified from the clinical trial. I chose the clinical trial.

For eight weeks, I gave myself injections twice a day, and life went on as normal. I felt well enough to fly to my daughter's college and drive home with her cross-country. But test results at the end of the trial showed it didn't work. The mets in my lungs continued to grow.

More test results showed I was still healthy enough to receive immunotherapy. Because of the potential serious side effects, the treatment would be four cycles of inpatient treatment for five nights, with doses given by IV every eight hours. I was told it would feel like the worst flu I'd ever had. I'd never had the flu, so my only concern was how bored I'd be during treatment. I loaded up on books, CDs and DVDs. That plan was completely useless because I have very little memory of any of it.

I had 10 doses the first week. I slept or was out of it most of the time. That also included vomiting, diarrhea, and extremely high and extremely low blood pressure. During the second week in the hospital, I had only seven treatments. They withheld them and gave me a series of medications to treat the side effects until I was healthy enough to receive another dose. I went home for a week between treatment weeks, but I was still pretty woozy.

About halfway through the treatment cycle, CT results showed significant shrinkage of the mets. I was thrilled and eager to finish the treatment. Six weeks after my last dose, CT results showed the mets in my lungs were disappearing. I felt good and even hosted Thanksgiving. I knew I'd live to see our son graduate from high school, and maybe even get off to college.

Five months later, CT scans showed I had no more lung mets. The immunotherapy had taught my body what to do, and continued to improve my condition. My doctor told me I was cured. I hesitated to believe him because I had read that metastatic RCC could not be cured. He admitted he didn't get to use the word "cure" often, but he was using it with me!

For the past 14 or so years, I've felt like my healthy self. I've seen far more milestones with my family than expected. I travel and enjoy my wonderful grandchildren so much.

I am also a patient advocate for RCC, and I give input to a team of doctors who design clinical trials. I encourage you to advocate for yourself by becoming educated about your diagnosis. Get copies of your records, and ask about the risks and benefits of each treatment option. Ask about all potential clinical trials and if certain treatments or trials may make you ineligible for others. I was lucky that the path I chose worked for me, but my hope is that no one has to rely on luck for successful treatment. ■

EXPLORING IMMUNOTHERAPY

Immunotherapy is revolutionizing how doctors treat certain types of cancer. Sometimes referred to as biologic therapy or biotherapy, immunotherapy harnesses the potential of the body's own immune system to fight cancer. Training the immune system to respond to cancer has the potential for a more lasting response that can extend beyond the end of treatment, making it very different from the following types of cancer treatments.

- **Surgery** is the removal of the tumor and surrounding normal tissue.
- **Chemotherapy** involves drugs to stop the growth of cancer cells.
- **Radiation therapy** uses high-energy X-rays or other types of radiation to kill cancer cells or stop them from growing.
- **Targeted therapy** includes drugs or other substances that attack cancer cells directly, usually by targeting a specific abnormal gene or protein.
- **Stem cell transplantation** takes blood stem cells harvested from you or a donor and infuses them back into your body after high-dose chemotherapy.
- **Clinical trials** are research studies that investigate potential cancer treatments.

Some of these treatments, such as targeted therapy, chemotherapy and radiation therapy, may have primary effects on the tumor cell in addition to influencing the immune response. A type of targeted therapy, for example, looks for antigens on B-cells, and B-cells are part of the immune system. Research is just beginning to understand how certain agents influence immunity and how they may be used to optimize treatment by engaging the patient's immune system in the fight against cancer.

Some drug therapies, including immunotherapy, may be prescribed as brand names, generics or a new form called biosimilars.

Immunotherapy is less likely to affect healthy tissues and cells, which may reduce the likelihood and severity of side effects in general. Serious reactions called immune-related adverse events (IRAEs), however, are possible. Your doctor will let you know what to watch for. If you begin to experience any IRAEs or other side effects, contact your doctor at once (see *Side Effects,* page 15).

To be a candidate for immunotherapy, you must meet certain criteria, such as having a functioning immune system, not having an autoimmune disorder and not taking immunosuppressive medications.

Biomarker testing may also be required because some immunotherapies are approved to treat cancers in people with specific biomarkers present. Biomarkers, also known as tumor markers, molecular markers, biological markers or serum markers, are substances, such as genes, proteins or molecules that are produced by cancer cells or other cells of the body in response to cancer. They can be measured in the blood, plasma, urine, cerebrospinal fluid or other body fluids or tissues. Not all patients respond to immunotherapy, and doctors are now using biomarker testing to determine who is most likely to respond.

A prognostic biomarker provides information about a person's overall cancer outcome, regardless of therapy. A predictive biomarker helps doctors guide and monitor a specific treatment approach. Research is ongoing to find more predictive and prognostic biomarkers and to better determine which patients may respond to immunotherapy.

This guide offers an easy-to-understand explanation of immunotherapy and explores several types that are approved to treat cancer. Other novel treatments that are not yet FDA-approved for these and other cancers may be available through clinical trials as researchers continue to improve existing therapies and explore new ones. Additional strategies, such as using pembrolizumab (Keytruda) for the treatment of some solid tumors that are microsatellite instability-high cancer (MSI-H), may also be considered.

ADOPTIVE CELLULAR THERAPY (T-CELL THERAPY)

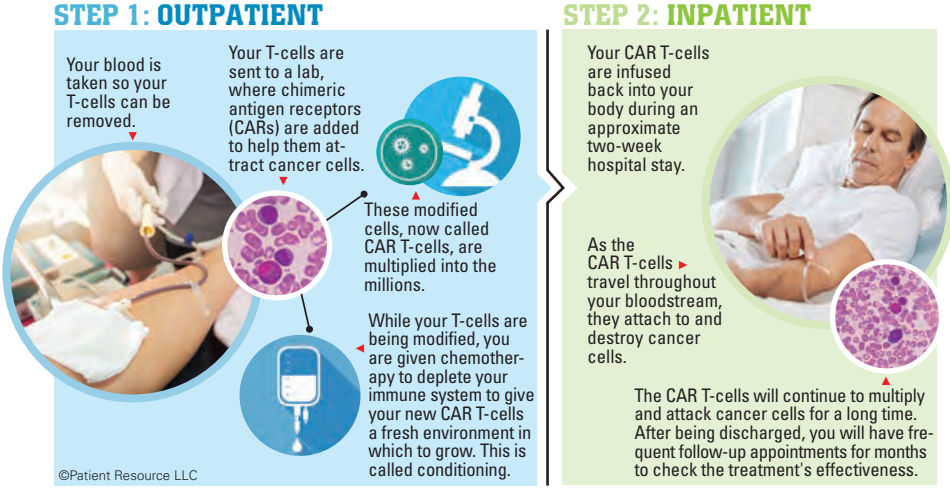
Adoptive cellular therapy is a treatment that enhances or changes the body's own immune cells to be able to fight cancer. There are two main strategies. In one strategy, the doctor isolates T-cells that have attached to a patient's tumor (tumor-infiltrating lymphocytes, or TILs), helps them multiply outside of the body, and then administers them back to the patient.

In the second strategy, a patient's T-cells are collected from a blood sample, and new receptors called chimeric antigen receptors (CARs) are added that enable the T-cells to recognize specific antigens (foreign substances such as bacteria, viruses or parasites) on cancer cells. These engineered T-cells are called CAR T-cells. They are multiplied in a laboratory and then infused back into the patient. The goal is for the T-cells to multiply, seek and destroy the cancer cells that carry those specific antigens.

The first two CAR T-cell therapies were recently approved to treat certain blood cancers (see *Development Milestones,* page 7). This breakthrough therapy is giving hope to people with B-cell lymphoma and leukemia. Clinical trials are evaluating its application to other blood cancers, including lymphomas, leukemias and multiple myeloma. The hope is that CAR T-cell therapy will be an alternative to chemotherapy and stem cell transplantation as first-line treatment for many, if not all, blood cancers.

The benefits of CAR T-cell therapy include a high response rate, the possibility of long-term remission, the need for only one infusion in most cases, and the long-term effectiveness of CAR T-cells, which are designed to work for many years in your bloodstream. Drawbacks include the high cost of the treatment and the risk of dangerous side effects, such as cytokine-release syndrome, neurologic toxicities, B-cell aplasia, tumor lysis syndrome or anaphylaxis. Most side effects are reversible, but they should be taken seriously.

CAR T-CELL THERAPY



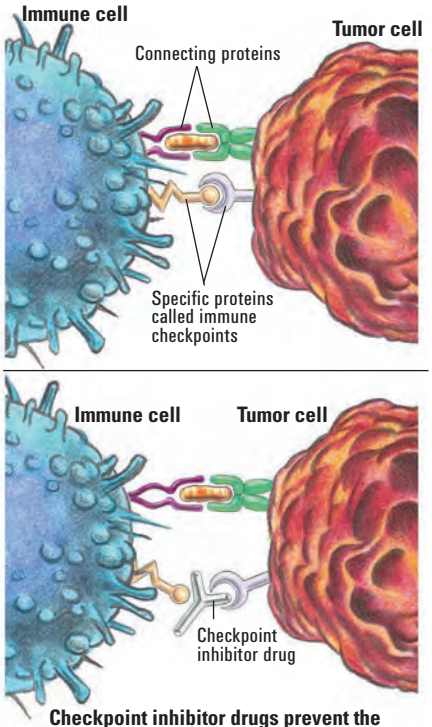
IMMUNE CHECKPOINT INHIBITORS

A primary function of the immune system is to determine which cells or substances are self or non-self. The immune system only makes enough white blood cells to fight non-self antigens present in the body. After an attack, the immune system must slow down. It does this through the use of checkpoints.

Checkpoints keep the immune system "in check," preventing an attack on normal cells by using regulatory T-cells (see *Explaining the Immune System,* page 1). When the correct proteins and cell receptors connect, a series of signals is sent to the immune system to slow down once an immune response is finished. Three checkpoint receptors that slow down the immune system have been identified for their roles in cancer treatment.

1. **CTLA-4** (cytotoxic T-lymphocyte-associated protein 4) is a receptor that binds with certain molecules to tell the immune system to slow down.
2. **PD-1** (programmed cell death protein 1) is a receptor involved with telling T-cells to die and to reduce the death of regulatory T-cells (suppressor T-cells). Both slow down an immune response. PD-1 can tell the immune system to slow down only if it connects with PD-L1.
3. **PD-L1** (programmed death-ligand 1) is a protein that, when combined with PD-1, sends a signal to reduce the production of T-cells and enable more T-cells to die.

CHECKPOINT INHIBITORS



Checkpoint inhibitor drugs prevent the connections between the checkpoints. This prevents the immune response from stopping, which allows the immune cells to continue fighting the cancer.

When PD-1 (the receptor) and PD-L1 (the protein) combine, the reaction signals it's time to slow down. CTLA-4, however, can connect with more than one protein, which is a more complex reaction than with PD-1 and PD-L1. When CTLA-4 combines with any of the various proteins, it also tells the immune system to slow down.

One of the ways cancer cells can outsmart the immune system is by producing PD-L1 and using it as camouflage so that T-cells will see them as normal cells. T-cells expect only normal cells to produce PD-L1, so when a T-cell encounters PD-L1 on a cancer cell, it is tricked into signaling the immune system to slow down. This is how cancer can hide from the immune system.

Checkpoint inhibitor drugs prevent connections between checkpoints. This prevents the immune response from slowing down, which allows the immune cells to continue fighting the cancer. When an immune checkpoint inhibitor is given, it's as if the immune system develops X-ray vision and can see through the cancer cell's camouflage. This keeps the immune response from slowing down and also helps the immune system recognize cancer cells as foreign cells.

The following immune checkpoint inhibitors are currently approved as cancer treatments.

- **Anti-CTLA-4 antibodies** allow T-cells to continue fighting cancer cells instead of shutting down.
- **Anti-PD-1 drugs** allow for the continued or increased production of T-cells and enable them to continue fighting cancer.
- **Anti-PD-L1 molecule**s allow T-cells to see through some tumor cells' disguises, recognize them as the enemy and attack them.

MONOCLONAL ANTIBODIES

Antibodies (a type of protein) are the body's way of tagging a specific antigen (foreign substance). They bind to the antigen, which allows the rest of the immune system to recognize the antigen as foreign and target it for destruction.

Monoclonal antibodies (mAbs) are laboratory-made antibodies that are designed to target specific tumor antigens. They can work in different ways, such as flagging targeted cancer cells for destruction, blocking growth signals and receptors and delivering other therapeutic agents directly to targeted cancer cells. They can also be created to carry cancer drugs, radiation particles or laboratory-made cytokines (proteins that enable cells to send messages to each other) directly to cancer cells. When a mAb is combined with a toxin, such as a chemotherapy drug, it travels through the system until it reaches the targeted cancer cell. Then it attaches to the surface, gets swallowed by the tumor cell and breaks down inside the cell, releasing the toxin and causing cell death. Combining mAbs with radiation particles, a treatment known as radioimmunotherapy, allows for radiation to be delivered in lower doses over a longer period of time. This direct form of radiation delivery typically damages only the targeted cells.

Different types of mAbs are used in cancer treatment, but they should not be confused with monoclonal antibodies that directly attack certain components in or on cancer cells, a type of treatment known as targeted therapy.

- **Naked mAbs** work by themselves. No drugs or radioactive particles are attached.
- **Conjugated mAbs** have a chemotherapy drug or a radioactive particle attached to them. They are used to deliver treatment to the cancer cells. These also are referred to as tagged, labeled or loaded antibodies.
- **Bispecific mAbs** are made up of two different mAbs and can attach to two different proteins at the same time. In some cases, the two proteins may both be on a cancer cell. In other cases, one protein may be on a cancer cell and one on a T-cell, thereby connecting the T-cell to a cancer cell.

NONSPECIFIC IMMUNE STIMULATION

This treatment strategy boosts the whole immune system instead of just specific parts. It can be used alone or in combination with other treatments to produce increased and longer-lasting immune responses. Different types of nonspecific immune stimulation include the following.

Cytokine immunotherapy aids in immune cell communication and plays a big role in the full activation of an immune response. This type of immunotherapy works by introducing large amounts of the following laboratory-made cytokines to the immune system to promote specific immune responses.

- **Interleukins** help regulate the activation of certain immune cells.
- **Interferons** boost the ability of certain immune cells to attack cancer cells.

- **Granulocyte-macrophage colony stimulating factors** (GM-CSFs) stimulate the bone marrow, promoting the growth of immune and blood cells and the development of dendritic cells, which become antigen-presenting cells (cells that show the antigens to T-cells).

Modified bacteria have been changed to ensure they will not cause the disease to spread while stimulating an immune response in certain cancers.

Toll-like receptor agonists recognize patterns in bacteria or viruses and produce a signal that activates the immune cell to attack. The immune system often detects germs through a series of toll-like receptors found on the surface of, or inside, most immune cells.

ONCOLYTIC VIRUS IMMUNOTHERAPY

An oncolytic virus only attacks and kills cancer cells. This type of immunotherapy uses viruses that directly infect tumor cells to cause an immune response against the infected cells. The only oncolytic virus currently approved uses a weakened version of the herpes simplex virus. It has been changed from the original and contains the GM-CSF cytokine. The virus targets specific cancer cells, infects them and duplicates itself continuously within the cell until it ruptures. This rupture kills the cell and releases the GM-CSF cytokine produced by the virus to promote an overall immune boost. This process increases the chance that the attack can also begin killing cancer cells that have not been infected with the virus. Other viruses are being evaluated as potential cancer treatments.

VACCINATIONS

Two types of vaccines are used against cancer: preventive vaccines and treatment vaccines. Preventive vaccines are given before a person develops cancer with the goal of stopping it from forming. Currently, preventive vaccinations are available for human papillomavirus (HPV) and for hepatitis B virus (HBV).

Treatment vaccines treat existing cancers. These vaccines are created from either viruses or tumor cells that have been changed in a laboratory. These vaccines direct immune cells to the cancer cells. Some of these vaccines are custom-made for the patient's specific tumor type while others are "off-the-shelf" vaccines that contain one to more than 100 antigens common to the patient's type of cancer.

Additional types of cancer vaccinations include the following.

Tumor cell vaccines are made from tumor cells similar to a patient's cancer type. (In rare cases, these vaccines are made from a patient's own tumor.) In some cases, the tumor cells are changed in the laboratory to express a new property or are treated with drugs that make the tumor cells or their components easier for the immune system to recognize. The vaccines are treated with radiation to prevent spreading and are then injected back into the body to help the immune system recognize remaining cancer cells.

Antigen vaccines are typically made from one to five of the antigens that are either unique to or overexpressed (more than needed) by tumor cells. They may be specific to a certain type of cancer but are not patient-specific.

Dendritic cell vaccines are made from white blood cells removed from the patient. The cells are sent to a laboratory and changed into dendritic cells. When they're injected back into the patient, they share the antigen information with the T-cells so the cells releasing that specific antigen are targeted and destroyed.

Vector-based vaccines are made from altered viruses, bacteria, yeast or other structures that can be used to get antigens into the body. Often, these germs have been altered so that they no longer cause disease. Some vaccines can be used to deliver more than one cancer antigen at a time. Vector-based vaccines are injected into the body to create an immune response, both specific and overall. Tumor-specific vectors are changed to train the immune system to recognize, target and destroy cancer cells.

The only approved treatment vaccine is a dendritic cell vaccine that contains the prostatic acid phosphatase protein that targets prostate cancer cells. Other treatment vaccines are experimental but may be available through participation in a clinical trial. ■

ADDITIONAL RESOURCES

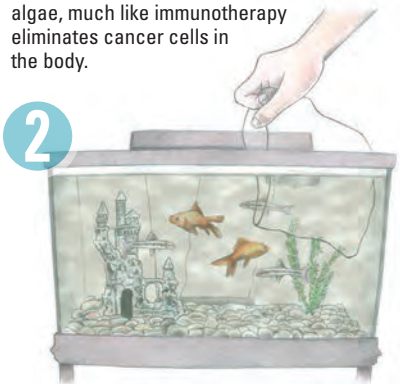
- **Society for Immunotherapy of Cancer:** www.sitcancer.org
- **American Cancer Society:** www.cancer.org
  What's New in Cancer Immunotherapy Research?
- **American Society of Clinical Oncology:** www.cancer.net
  CAR T-Cell Immunotherapy: The 2018 Advance of the Year
- **ClinicalTrials.gov:** www.clinicaltrials.gov
- **National Cancer Institute:** www.cancer.gov
  Cytokines as Therapy
  Using Oncolytic Viruses to Treat Cancer

IMMUNOTHERAPY 101

***Immunotherapy can be a difficult concept to understand.** The science of it essentially changes a body's immune system so that it will recognize an illness that it may not have been able to fight before. Once the body can recognize the illness, it will fight it. Imagine how a fish tank's environment works.*

1 Algae-filled Tank ► The algae in the fish tank represent cancer cells that overwhelm the environment and "crowd out" the healthy cells in the body.

Introducing the Cure ► When algae occur, algae-eating fish can be inserted into the tank to remove the environment's intruder. Their function is to eliminate the harmful algae, much like immunotherapy eliminates cancer cells in the body.



3 Healthy Environment ► After the tank is algae-free, the algae-eating fish remain in the environment, continuing to provide support. Similarly, immunotherapy arms your immune system to provide ongoing protection against a specific cancer type.

DEVELOPMENT MILESTONES

Back to Top

The many recent advances in FDA approvals for immunotherapy are the result of generations of research. Groundbreaking developments are improving and extending the lives of people with cancer, many of whom had exhausted other treatment options. Hundreds of clinical trials continue to evaluate the potential of immunotherapy, alone and in combination with other treatments, to offer patients even greater hope.

Current as of December 4, 2018

1891

- New York City bone surgeon William B. Coley, frustrated by losing cancer patients who couldn't undergo surgery, injects bacteria directly into an inoperable throat tumor to stimulate an immune response to fight the cancer. The man was cured. Today, Coley is considered the "father of immunotherapy."

1953

- Dr. Coley's daughter, Helen, launches the Cancer Research Institute to foster immunotherapy research.

1956

- Tumor-specific cell antigens discovered.

1973

- Dendritic cells are identified as antigen-presenting cells (APCs).

1978

- Bacillus Calmette-Guérin (BCG), a type of bacteria, is first studied as a possible treatment for cancer.
- Interleukin-2 (IL-2) discovered.

1984

- Society for Immunotherapy of Cancer (SITC), formerly iSBTC, founded.

1985

- Adoptive T-cell transfers are studied as a possible cancer treatment.

1986

- Treatments are approved for certain types of follicular lymphoma and hairy cell leukemia.

1988

- First results for tumor-infiltrating lymphocyte (TIL) therapy are reported.

1990

- BCG is approved for bladder cancer.
- First treatment with genetically modified TIL.

1991

- Treatment approved to boost white blood cell counts.

1992

- Treatment approved for metastatic kidney cancer.

1996

- Adjuvant treatment of high-risk melanoma is approved.

1998

- Treatment of metastatic melanoma approved.

1999

- A fusion of IL-2 and diphtheria toxin approved to treat certain lymphomas.

2010

- First therapeutic cancer vaccine to treat advanced prostate cancer approved.

2011

- First T-cell checkpoint inhibitor targeting CTLA-4 approved for the treatment of advanced melanoma.
- Dr. Ralph Steinman wins Nobel prize for discovering dendritic cells and explaining their function.

2012

- Several clinical studies of T-cell checkpoint inhibitors targeting PD-1 and PD-L1 demonstrate therapeutic activity in many types of cancers.

2013

- First Phase III trial of oncolytic virus immunotherapy shows improvement in the long-term response rate in patients with melanoma.
- The combination of agents targeting CTLA-4 and PD-1 checkpoints shows activity against melanoma.

2014

- Treatments for advanced melanoma approved.

2015

- New treatments and/or indications approved for certain types of the following:
  - Advanced renal cell carcinoma
  - Melanoma (a genetically modified oncolytic viral therapy)
  - Multiple myeloma
  - Non-small cell lung cancer and metastatic non-small cell lung cancer

2016

- New treatments and/or indications approved for certain types of the following:
  - Classical Hodgkin lymphoma
  - Non-small cell lung cancer (metastatic)
  - Squamous cell carcinoma of the head and neck (recurrent or metastatic)
  - Urothelial carcinoma (a type of bladder cancer) that is previously treated locally advanced or metastatic

2017

- New treatments and/or indications approved for certain types of the following:
  - Acute lymphoblastic leukemia (ALL) – First CAR T-cell therapy is approved for patients up to 25 years old who have relapsed or refractory ALL, then later approved for the treatment of adult patients with select types of relapsed or refractory large B-cell lymphoma.
  - Bladder cancer (locally advanced and metastatic)
  - Classical Hodgkin lymphoma
  - Colorectal cancer
  - Gastric or gastroesophageal junction adenocarcinoma (recurrent, locally advanced or metastatic)
  - Hepatocellular carcinoma (HCC)
  - Melanoma (metastatic)
  - Merkel cell carcinoma (metastatic)
  - Philadelphia chromosome-negative relapsed or refractory B-cell precursor acute lymphoblastic leukemia (ALL)
  - Unresectable or metastatic microsatellite instability-high (MSI-H) and mismatch repair deficient (dMMR) cancers

2018

- New treatments and/or indications approved for certain types of the following:
  - B-cell precursor acute lymphoblastic leukemia (ALL) (adult and pediatric patients in first or second complete remission)
  - Cervical cancer (recurrent or metastatic)
  - Cutaneous squamous cell carcinoma (locally advanced and metastatic)
  - Hairy cell leukemia
  - Microsatellite instability-high (MSI-H) or mismatch repair deficient (dMMR) metastatic colorectal cancer (for patients 12 years of age and older)
  - Mycosis fungoides (MF) or Sézary syndrome (SS) (relapsed or refractory)
  - Non-squamous non-small cell lung cancer (metastatic)
  - Non-small cell lung cancer (Stage III unresectable)
  - Primary mediastinal large B-cell lymphoma (PMBCL) (adult and pediatric patients, refractory or relapsed)
  - Renal cell carcinoma (advanced, intermediate or poor risk, previously untreated)
  - Small cell lung cancer (metastatic)
  - First biosimilar in the U.S. approved for the treatment of non-Hodgkin lymphoma

October 1, 2018

- James Allison, PhD, and Tasuku Honjo, MD, PhD, are awarded the Nobel Prize for their groundbreaking discoveries and research in immunotherapy. Their work led to the development of immune checkpoint inhibitors.

REALIZING IMMUNOTHERAPY'S POTENTIAL

Immunotherapy is among the fastest-growing and most promising areas of cancer research. The circle of cancer types approved for immunotherapy treatment is quickly widening as scientists and physician researchers continue to gain knowledge and make discoveries. Harnessing the body's natural defense system to fight cancer holds the potential to positively affect people with every type of cancer for years to come.

BLADDER CANCER

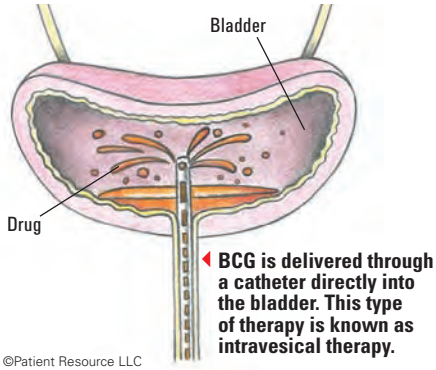
The bladder is the body's container for urine, which flows there from the kidneys. Located in the pelvis behind and slightly above the pubic bone, the bladder, when empty, is similar in size and shape to a pear (see Figure 4, page 10).

Cancer can begin in the bladder's lining when cells with damaged DNA mutate and grow uncontrollably. Unlike healthy cells, cancer cells don't die, but accumulate to form tumors. Urothelial carcinoma (transitional cell carcinoma) is the most common type of bladder cancer. Other types are squamous cell carcinoma, adenocarcinoma and small cell carcinoma.

Treatment options for bladder cancer are surgery, chemotherapy, immunotherapy and radiation therapy.

The first immunotherapy agent approved by the U.S. Food and Drug Administration (FDA) was a treatment for bladder cancer in 1990 (see *Development Milestones,* page 7). Bacillus Calmette-Guérin (BCG) is an option for early-stage disease and also to reduce the risk of recurrence. In a process called intravesical therapy, BCG is delivered through a catheter directly into the bladder, where it attaches to the lining. BCG is a bacterial product that triggers an immune response (see Figure 1). This response irritates the lining, causing inflammation that tricks the body's immune response into attacking the cancer cells. The immune system goes on "high alert" to focus on invading cells growing in the bladder.

FIGURE 1
ANATOMY OF BLADDER AND BCG TREATMENT



BCG is delivered through a catheter directly into the bladder. This type of therapy is known as intravesical therapy.

Other types of immunotherapy approved to treat bladder cancer are immune checkpoint inhibitors and cytokines (learn more about these on page 5).

CERVICAL CANCER

Cervical cancer affects only women. The cervix is a short, narrow channel at the bottom of the uterus that leads into the vagina. During childbirth, the cervix dilates (opens) widely to allow the baby into the birth canal (see Figure 2).

Most cervical cancers are squamous cell cancers that grow slowly. A major risk factor for the disease is the human papillomavirus (HPV), which is now the most common sexually transmitted infection in the United States. Certain strains of HPV are more likely to cause cervical cancer.

Treatments include a number of surgical procedures, internal and external radiation therapy, chemotherapy, targeted therapy and immunotherapy.

The first immunotherapy for cervical cancer, an immune checkpoint inhibitor, was approved in mid-2018 to treat late-stage disease (see *Exploring Immunotherapy,* page 4). It may be an option for women whose cancer has recurred or metastasized during or after chemotherapy.

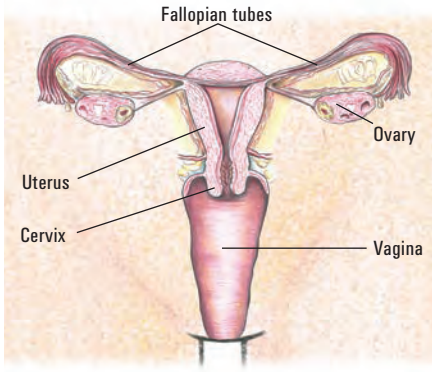
COLORECTAL CANCER

The colon and rectum are parts of the digestive system, which processes everything you eat and drink (see Figure 5, page 10). Colorectal cancer begins when healthy cells in the inner lining of the colon or rectum mutate and grow uncontrollably, forming a mass known as a primary tumor. Most colorectal cancers are thought to start as a polyp, or an abnormal growth in the lining of the colon or rectum. Cancer that begins in the colon is called colon cancer, and cancer that begins in the rectum is called rectal cancer.

Treatment options for colorectal cancer are surgery, radiation therapy, chemotherapy, targeted therapy and immunotherapy, which may be used alone or in combination.

Your doctor may use biomarker or genetic testing to determine the best treatment option for you. Certain molecular and chromosomal abnormalities can now be identified with biomarker testing, and some treatments target these specific biological features in your type of colorectal cancer. Not all tumors will test positive for a biomarker.

FIGURE 2
CERVICAL ANATOMY



The most common biomarkers in colorectal cancer are *RAS, KRAS* and *NRAS* mutations. Your doctor may also test for the *BRAF* mutation, human epidermal growth factor receptor-2 *(HER2)* overexpression and Lynch syndrome, which is an inherited disorder that increases your risk of colorectal cancer. Your doctor will look specifically for DNA errors and mutations caused by defective mismatch repair (dMMR) and microsatellite instability (MSI). When cells copy their DNA to a new cell, sometimes errors can occur. The body normally corrects these errors, but sometimes genetic mutations prevent the cells from correcting their mistakes, allowing altered or mutated cells to replace normal cells.

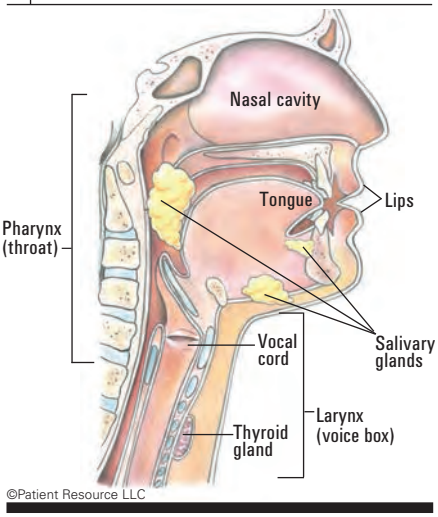
The first two immunotherapies approved for colorectal cancer are immune checkpoint inhibitors (see *Exploring Immunotherapy,* page 4). These medications are indicated for people who have unresectable, metastatic, microsatellite instability-high (MSI-H) or mismatch repair deficient (dMMR) colorectal cancer that has progressed after treatment with chemotherapy. In July 2018, a combination of two checkpoint inhibitors was approved for children and adults who have MSI-H or dMMR metastatic colorectal cancer that has progressed after chemotherapy.

HEAD AND NECK CANCER

Malignant (cancerous) tumors in the oral cavity (mouth), pharynx (throat), larynx (voice box), nose, sinuses, salivary glands and thyroid are collectively known as head and neck cancer (see Figure 3). Most begin in the squamous cells that line the moist tissues in the nose, mouth and throat; others form in the thyroid and salivary glands.

Because the areas affected by head and neck cancer treatment control vital functions,

FIGURE 3
ANATOMY OF THE HEAD AND NECK



including breathing, swallowing, chewing and speaking, treating head and neck cancer involves more than removing a tumor and killing cancer cells. It also includes repairing the body so that patients can still function as normally as possible.

Treatment options for head and neck cancer include surgery, radiation therapy, chemotherapy, targeted therapy and immunotherapy, or a combination.

Your doctor may use biomarker or genetic testing to determine which treatment option is best for you. If you test positive for the epidermal growth factor receptor *(EGFR)*, you may be a candidate for an *EGFR* inhibitor, which can help slow or stop cancer growth. It is typically used, with or without chemotherapy, after surgery for advanced stage head and neck cancers. However, not all tumors will test positive for a biomarker.

Immune checkpoint inhibitors were the first type of immunotherapy approved to treat head and neck cancer in 2016 (see *Exploring Immunotherapy,* page 4). They are approved for recurrent or metastatic head and neck squamous cell carcinoma that progressed during or after chemotherapy that contained a platinum drug.

Immunotherapy offers people with head and neck cancer a potential alternative that is less invasive than some surgeries, bringing new hope to people with cancers in the head and neck region.

KIDNEY CANCER

The kidneys are a pair of bean-shaped organs in the back of the abdomen on each side of the spine. They are protected by the lower rib cage. Each kidney is approximately four to five inches (about 10 to 12 cm) long, which is about the size of a fist (see Figure 4, page 10). They are part of the urinary tract, and their main function is to filter your blood.

The most common type of kidney cancer is renal cell carcinoma (RCC), which affects the lining of the tubules (very small tubes) inside the kidneys. RCC begins when abnormal cells in the kidneys grow out of control and form one or more tumors.

RCC has several subtypes, classified mainly by the appearance of the tumor cells under a microscope. The subtypes include clear cell, papillary, chromophobe, transitional, collecting duct, renal medullary carcinoma and unclassified. The subtype can help doctors determine if the cancer is caused by an inherited genetic syndrome and, in turn, influence treatment recommendations.

Biomarker testing can now identify certain molecular abnormalities that may influence the cancer and affect treatment choices. By testing for these abnormalities, doctors can choose treatments that target these specific biological features. Not all tumors will test positive for a biomarker. Your doctor may test for a *VHL* gene mutation that causes cancer to make too much of a protein known as vascular endothelial growth factor *(VEGF)*, which affects a tumor's ability to form new blood vessels. This is important because there are targeted therapies that can block *VEGF*. Research continues to identify biomarkers that may be helpful in treating kidney cancer.

Surgery, targeted therapy and immunotherapy, used alone or together, are used to treat kidney cancer. Surgery is often the primary treatment for most kidney cancers. Because kidney cancer is usually resistant to chemotherapy and radiation therapy, targeted therapy is typically the first line of treatment for advanced kidney cancer, though radiation

BLADDER CANCER SURVIVOR | FRED ALMEIDA

Never Settle for Less

Since his diagnosis, Fred has had several recurrences. He manages each with hope and courage and encourages others to do the same.

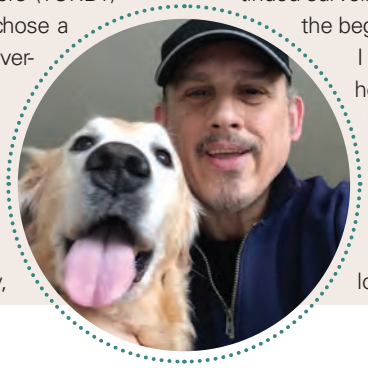
My diagnosis was transitional cell carcinoma, Grade 1 of 3, at 49 — a relatively young age for this diagnosis. It started when I felt a slight abdominal pain during the night with no relief when attempting to urinate. A series of tests followed, along with a sigmoidoscopy, CT and a cystoscopy of my bladder. My diagnosing physician gave me the news in a very scary way with almost no information. The doctor who gave me my second opinion scared me further by suggesting removing my bladder. After investigating through organizations such as the National Cancer Institute and BCG Oncology, I thought that transurethral resection for bladder tumors (TURBT) with chemotherapy into my bladder was an option. I chose a urologist who agreed with the TURBT and, after a conversation, the chemotherapy, too.

I had two TURBTs to remove multiple tumors throughout the lining of my bladder followed by intravesical instillations of chemotherapy. After the second surgery, I had bacillus Calmette-Guérin (BCG) intravesical immunotherapy.

As I reached the five-year mark, almost to the day, I awoke one morning to horror as my first urine was bright red. They found a fairly large tumor in my right kidney, so I had a radical nephrectomy to remove my right kidney and ureter. Life went on as normal with the remaining kidney taking over.

After three and a half years, my urologist saw a recurrence in my bladder near my remaining ureter. We tried BCG treatments to no avail. My urologist performed a resection of the distal end of my ureter to prevent spreading into my bladder and remaining kidney.

Almost three years to the day again, my urologist saw a small patch of redness in my bladder. He did a TURBT to remove a small neoplasm at the neck of my bladder, then I started weekly BCG treatments for six weeks, to be followed by monthly BCG maintenance for a year. That's how it goes with bladder cancer. You treat, get continued surveillance until a recurrence, and then it's back to the beginning until you get good reports again.



I am optimistic about the future. I eat very healthy, drink lots of water and take a multivitamin that may help bladder cancer patients. I think good sleep also helps your body to be at its best to fight the effects of treatment.

Always strive for a complete cure, and never settle for less. You don't lose until you lose hope. ■

therapy and chemotherapy are occasionally used. The development of additional targeted therapies and immunotherapies is extremely important in the fight against this disease.

Immunotherapies available to treat kidney cancer include cytokines and immune checkpoint inhibitors (see *Exploring Immunotherapy,* page 4). In April 2018, two checkpoint inhibitors were approved in combination for intermediate or poor risk, previously untreated advanced renal cell carcinoma. Keep in mind that not all immunotherapies are approved for all types and stages of kidney cancer.

LEUKEMIA

Leukemia is a hematologic (blood) cancer that occurs when white blood cells (leukocytes) mutate (change) and grow uncontrollably. It begins in the blood and bone marrow, which is the spongy center of some bones where blood is created.

Treatment options for leukemia are chemotherapy, targeted therapy, immunotherapy and stem cell transplantation, alone or in combination. Following are some of the most common forms of leukemia treated with immunotherapy, alone or in combination.

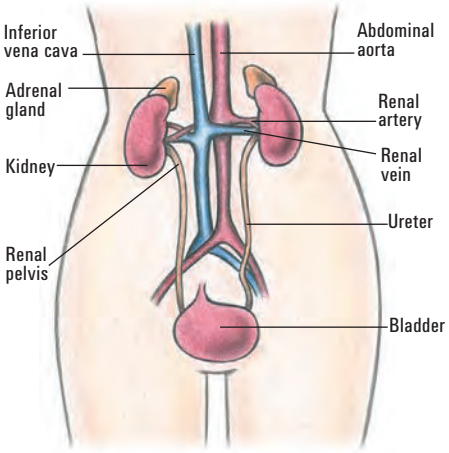
Acute lymphocytic leukemia (ALL), also referred to as acute lymphoblastic leukemia, is a fast-growing cancer. It starts in the cells that become lymphocytes, a type of white blood cell. To treat ALL, different treatments or a combination of treatments may be given in three phases: induction, consolidation and maintenance.

Biomarker testing can now identify molecular abnormalities associated with ALL. Testing for these abnormalities allows your doctor to choose treatments that target specific biological features. Chromosomal abnormalities have been found with ALL, specifically the Philadelphia chromosome. Genes that may be tested include *BCR-ABL, TEL* and *AML1*.

The first immunotherapy strategy to treat ALL was approved in 2014. It was indicated specifically for the treatment of Philadelphia chromosome-negative relapsed (came back after treatment) or refractory (not responding to treatment) B-cell precursor ALL. Since then, the drug's use has been expanded to include Philadelphia chromosome-positive relapsed and refractory B-cell precursor ALL.

In 2017, the first-ever gene therapy for leukemia was approved in the United States. Chimeric antigen receptor (CAR) T-cell therapy is a breakthrough treatment and is approved to treat certain children and young adults with B-cell ALL.

FIGURE 4
BLADDER & KIDNEY ANATOMY



Chronic myeloid leukemia (CML) is a slow-growing cancer that develops when a genetic change mutates or damages immature myeloid cells, which are the cells that become white blood cells (other than lymphocytes), red blood cells or cells that make platelets. Biomarkers used to confirm a diagnosis of CML include tests for the *BCR-ABL1* fusion gene and Philadelphia (Ph+) chromosome.

The type of immunotherapy used to treat CML is an interferon, which is a cytokine. It is typically not used as a first-line treatment, so ask your doctor if it is appropriate for you.

Hairy cell leukemia is a rare type of cancer that gets its name from the "hairy" appearance of its cells under a microscope. In hairy cell leukemia, too many blood stem cells become lymphocytes, which are white blood cells that help fight infections. However, these lymphocytes are abnormal and do not become healthy white blood cells. They become leukemia cells that can build up in the blood and bone marrow, leaving less room for healthy cells and platelets.

One type of immunotherapy approved for hairy cell leukemia is a cytokine. Alpha interferon was approved in 1986, and it represented a new and exciting advance in the treatment of hairy cell leukemia. Until that time, splenectomy (spleen removal) was the only known effective therapy for this disease. Interferon benefited people with active hairy cell leukemia, regardless of whether they had a splenectomy. At this time, interferon has a relatively limited role in treating hairy cell leukemia. Ask your doctor if this is an option for you.

LIVER CANCER

The liver is located behind the rib cage below the right lung (see Figure 5). The largest internal organ in the body, it is pyramid-shaped and has two lobes, which are further subdivided into segments. The liver has many important functions, including processing and storing several nutrients that are later used for energy or to build and repair tissues. It collects and filters blood, makes clotting factors to help stop bleeding, secretes bile into the intestines to assist in nutrient absorption, breaks down and removes toxic waste from the blood, and maintains proper blood sugar levels.

Liver cancer begins when healthy cells mutate and grow uncontrollably. These cells accumulate and form a mass, known as a primary tumor. The most common type of primary liver cancer is hepatocellular carcinoma (HCC).

Tumor analysis has advanced in recent years to identify genes, proteins and biomarkers that may be associated with liver cancer. Your doctor may test for the alpha-fetoprotein (*AFP*) biomarker. Not all tumors will test positive for a biomarker, but more than half of the people diagnosed with HCC have elevated levels of *AFP*.

Treatment options for liver cancer are surgery, a liver transplant, ablation therapy, embolization therapy, chemoembolization and radioembolization, targeted therapy, radiation therapy and immunotherapy.

The first immunotherapy for liver cancer, an immune checkpoint inhibitor, was approved in 2017 (learn more about immune checkpoint inhibitors, page 5). It is indicated to treat HCC in people who were previously treated with a type of targeted therapy.

FIGURE 5
COLORECTAL, LIVER & STOMACH ANATOMY

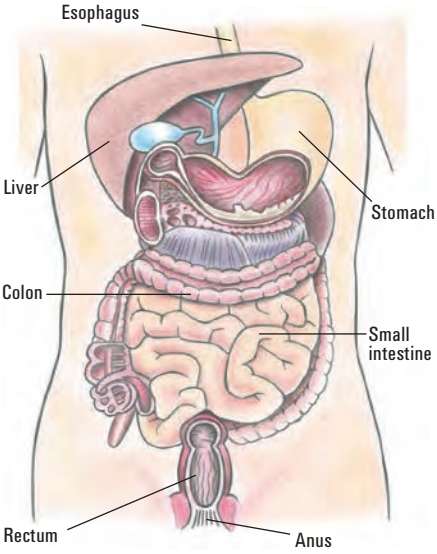
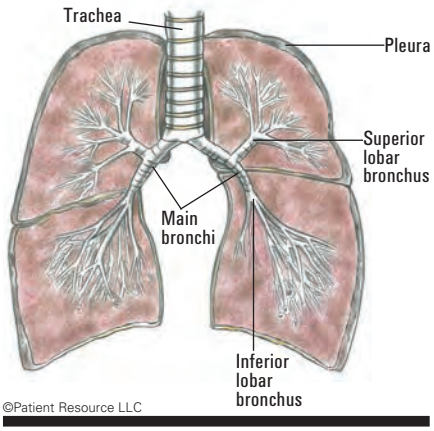


FIGURE 6
LUNG ANATOMY



LUNG CANCER

Lung cancer is the uncontrolled growth of abnormal epithelial cells lining the airways (bronchi) (see Figure 6). These cells mutate, accumulate and form a mass known as a primary tumor. Cancerous cells may accumulate so rapidly that they replace normal, healthy cells, affecting the way your lungs function and making breathing difficult.

The four types of lung cancer are adenocarcinoma, squamous cell lung cancer, large cell lung cancer and small cell lung cancer (SCLC). Adenocarcinoma, squamous cell and large cell lung cancer are sometimes referred to collectively as non-small cell lung cancer (NSCLC). It is important for doctors to distinguish between these types because each has unique characteristics and responds differently to treatment.

Treatment options for lung cancer include surgery, chemotherapy, radiation therapy, targeted therapy, molecular therapy and immunotherapy (see *Exploring Immunotherapy,* page 4). Factors that will guide your treatment include the type and stage of your lung cancer, the location of the tumor, biomarker testing results, your overall lung function and your general health. When possible, surgery is the primary treatment to remove early-stage tumors.

Your doctor may use biomarker or genetic testing to determine which abnormalities to target. Based on the test results, your doctor will choose the best treatment option for you and your tumor's specific biological features.

Researchers have determined that the growth of some forms of NSCLC is driven by certain molecular abnormalities. The most common biomarkers in NSCLC are epidermal growth factor receptor *(EGFR)* mutation, anaplastic lymphoma kinase *(ALK)* rearrangement, *ROS1* fusions and certain *BRAF* mutations. For advanced lung cancer, your doctor may also recommend PD-L1 testing, which may indicate whether you're a candidate for immunotherapy. Not all tumors will test positive for a biomarker.

Immunotherapy is a relatively new and effective strategy for treating advanced and metastatic NSCLC. The type of immunotherapy approved for NSCLC involves immune checkpoint inhibitors as monotherapies and in combination with chemotherapy. Checkpoint inhibitors may also be used after chemoradiation therapy in unresectable NSCLCs.

LYMPHOMA

Lymphoma is a type of hematologic (blood) cancer that starts in the lymphatic system, which is a network of tissues and vessels that carries fluid, called lymph, throughout the body. Lymph contains lymphocytes (a type of white blood cell) which attack infectious agents. Two main types of lymphocytes can develop into lymphomas: B-lymphocytes (B-cells) and T-lymphocytes (T-cells).

This cancer begins when normal lymphocytes transform into abnormal cells that reproduce uncontrollably. As they multiply, they collect in the lymph nodes, bone marrow (spongy center of bones where blood cells are made), spleen, tonsils or other organs, where they can form tumors. These cells eventually begin to outnumber normal cells.

Hodgkin lymphoma (HL), formerly known as Hodgkin disease, is a cancer that starts in the lymph nodes in the chest, neck or underarm and may spread to other lymph nodes or organs, such as the liver or lungs. HL is classified as classical or nodular lymphocyte-predominant. The majority of HL cases are considered classical HL.

Treatment options for HL include chemotherapy, radiation therapy and immunotherapy. Advances in the diagnosis and treatment of this disease have contributed to a cure rate that is generally high. Until recently, if the disease progressed, relapsed or stopped responding to treatment, the primary treatment was high doses of chemotherapy followed by stem cell transplantation and additional drug therapy. Hard-to-treat HL can now be treated with immunotherapy.

One immune checkpoint inhibitor was approved in 2016 for classical HL that has recurred or progressed after a specific type of stem cell transplantation and post-transplantation drug therapy (learn more about immune checkpoint inhibitors, page 5). Another immune checkpoint inhibitor was approved in 2017 for children and adults with classical HL that has stopped responding to treatment or returned after three or more therapies. Immunotherapy brings new hope for people with difficult-to-treat or relapsed HL.

Non-Hodgkin lymphoma (NHL) is the most common cancer of the lymphatic system. NHL occurs when T-cells, B-cells and natural killer (NK) cells grow uncontrollably, sometimes forming a tumor. It may be found in any of the lymphoid tissues, and it spreads in a less orderly way than Hodgkin lymphoma.

NHL is not a single disease but rather a group of several closely-related cancers. Although the various types of NHL share some common features, they differ in their microscopic appearance, molecular features, growth patterns, effect on the body and treatment options. More than 60 subtypes of NHL exist.

Treatment options for NHL include chemotherapy, immunotherapy, targeted therapy, radiation therapy and stem cell transplantation. Factors that guide treatment include the stage of the disease as well as your age, overall health and symptoms.

The first successful immunotherapy introduced for lymphoma is a monoclonal antibody available for all B-cell lymphomas (learn more about monoclonal antibodies, page 5). Two are approved for NHL, and they specifically target the CD20, CD52 and CD30 antigens. NHL is usually treated with an immunotherapy drug combined with chemotherapy. One immune checkpoint inhibitor has been approved for primary mediastinal large B-cell lymphoma (PMBCL).

The first two chimeric antigen receptor (CAR) T-cell therapies were recently approved for certain types of NHL, including relapsed or refractory large B-cell lymphoma, diffuse large B-cell lymphoma (DLBCL), PMBCL, high-grade B-cell lymphoma and DLBCL that develops from follicular lymphoma. CAR T-cell therapy involves taking a patient's T-cells and modifying them to recognize and kill lymphoma cells. It may be used after two other kinds of treatment have failed. This new treatment is bringing hope to people with specific types of NHL because it is one of the first treatment options that can be personalized to each patient and the cancer's particular characteristics.

B-cell lymphoma is the most common type of NHL. T-cell lymphoma is less common, and NK-cell lymphoma is relatively rare. Although it can start nearly anywhere and can spread to almost any organ, it most often begins in the lymph nodes, liver, spleen or bone marrow. It can also involve the stomach, in-

testines, skin, thyroid, brain or anywhere in the body lymphatic tissue is found. Two CAR T-cell therapies were approved in 2017 to treat certain types of large B-cell lymphoma.

Follicular lymphoma is a B-cell lymphoma that is the most common slow-growing form of NHL. It usually begins in the lymph nodes and can spread into the blood and bone marrow (soft, spongy tissue in the center of some bones) or other organs. Common treatment options include chemotherapy, immunotherapy, targeted therapy and radiation therapy.

The main type of immunotherapy used to treat follicular lymphoma involves monoclonal antibodies. Another option is radioimmunotherapy, which combines a radioactive particle with a monoclonal antibody, allowing it to deliver radiation directly to the cancer cells. This approach leaves most of the surrounding healthy cells undamaged. A type of interferon known as a cytokine may also be used. Cytokines are proteins made naturally in the body or in a laboratory, and they primarily help the immune system cells communicate. They can stimulate the immune system or slow it down to help fight cancer. The most common treatment for more advanced Stage II, Stage III and Stage IV disease is immunotherapy combined with chemotherapy.

Follicular lymphoma commonly comes back after treatment. When this occurs, it is called relapsed disease. Relapse can happen weeks, months or even years after initial treatment has ended. Treatment options for relapsed follicular lymphoma include chemotherapy, immunotherapy, targeted therapy or a combination of treatments. Radioimmunotherapy may also be used alone or in combination with chemotherapy.

Mantle cell lymphoma (MCL) develops when abnormal B-lymphocytes (B-cells) on the outer edge of a lymph node grow uncontrollably. These B-cells accumulate in the lymph nodes, which become enlarged. The MCL cells can enter the lymphatic channels and the blood and can spread to other lymph nodes or tissues, such as the bone marrow, liver and gastrointestinal tract.

Treatment options for MCL are chemotherapy, targeted therapy, stem cell transplantation and immunotherapy. Although chemotherapy is the most commonly used treatment for MCL, immunotherapy may be combined with a chemotherapy drug to treat MCL in people who have disease that relapsed or progressed after two prior therapies. For this group, using immunotherapy with chemotherapy has led to better results than the use of immunotherapy alone, offering hope as an additional treatment option.

Immunomodulators and radiotherapy are two new types of immunotherapy being studied to treat MCL. Immunomodulators regulate the function of the immune system and can slow the rate at which cancer cells grow and multiply. Radioimmunotherapy combines radiation therapy with immunotherapy to deliver lethal doses of radiation directly targeted to cancer cells.

MELANOMA

Melanoma is the most dangerous and least common type of skin cancer (see Figure 7). It begins in the lowest layer of skin when cells called melanocytes mutate and grow uncontrollably.

Primarily a skin cancer, melanoma can also affect the eyes, mouth, genital and anal areas and other parts of the body that contain melanocytes.

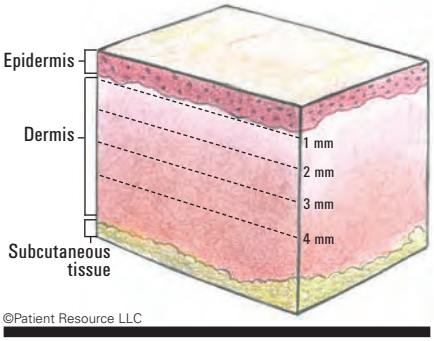
Surgery is the primary treatment for melanoma. Chemotherapy, radiation therapy and immunotherapy may also be used.

Melanoma was among the earliest cancer types approved for immunotherapy. A cytokine became available in 1996 to be used after surgery (adjuvant therapy) for individuals at high risk of cancer recurrence (learn about cytokines, page 5). In 1998, another cytokine was approved for the treatment of more advanced melanoma.

Additional types of immunotherapy, such as immune checkpoint inhibitors, have been developed over the years to treat melanoma, making it one of the few cancer types with several approved types of immunotherapy. It is also sometimes used, alone or combined with other treatments, when melanoma has spread to other areas of the body.

Melanoma has been one of the most responsive cancers to immunotherapy. For many people, immunotherapy successfully shrinks melanoma tumors, reduces the risk of cancer recurrence and extends life.

FIGURE 7
SKIN ANATOMY



MULTIPLE MYELOMA

Multiple myeloma is a blood cancer that begins inside the bone marrow when healthy plasma cells grow uncontrollably. In time, myeloma cells overcrowd the bone marrow, making growth difficult for healthy cells that produce blood.

Treatment differs widely from person to person and is influenced by your age, overall health and symptoms. Options may include watchful waiting, chemotherapy, targeted therapy, immunotherapy and stem cell transplantation. A treatment plan for multiple myeloma often includes a combination of therapies.

A type of immunotherapy involving immunomodulating agents is most often used along with other treatments to improve initial response, stimulate the immune system and/or stop disease progression. Monoclonal antibodies are an additional treatment option (learn about monoclonal antibodies, page 5). These and other types of immunotherapy are currently in clinical trials, so be sure to discuss this potential treatment option with your health care team.

Recent advances in immunotherapy are helping make it possible for some people with multiple myeloma to manage their disease and live longer with a better quality of life.

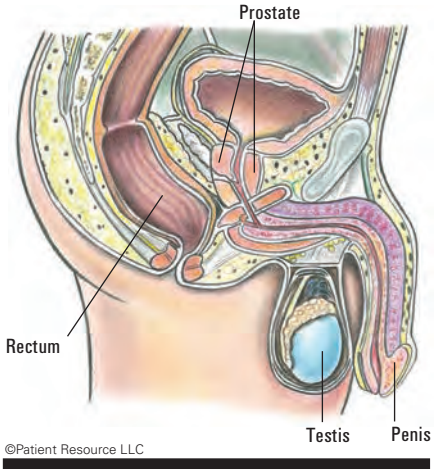
PROSTATE CANCER

Prostate cancer occurs only in men, as the prostate gland is a male reproductive organ. Located in front of the rectum at the base of the penis and bladder, the prostate produces seminal fluid that carries and protects the sperm (see Figure 8).

Prostate cancer begins in the prostate tissue when cells with damaged DNA mutate and become cancerous. It typically grows very slowly, usually causing no or few symptoms in its early stages.

Treatment options are surgery, radiation therapy, hormone therapy, chemotherapy and immunotherapy. The first FDA-approved immunotherapy for prostate cancer is a vaccine specifically for metastatic castration-resistant (hormone refractory) prostate cancer. This personalized vaccine is created using your own healthy blood cells, customized to your specific tumor type and designed to fight cancer cells unique to your disease. As a result, this treatment is much more involved than getting vaccinated in a doctor's office. Instead, it's a multistep process that requires commitment from you, particularly in complying

FIGURE 8
PROSTATE ANATOMY



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with the appointment schedule.

This immunotherapy strategy involves collecting some of your immune cells (white blood cells) through a process called leukapheresis. Once collected, the blood goes to a specialized laboratory. The blood cells are modified to be able to stimulate T-cells in your immune system, which can then eliminate the prostate cancer cells.

Three or four days after initial collection of the immune cells, you receive the vaccine by intravenous infusion. Now "trained" to stimulate T-cells to fight your prostate cancer, these modified white blood cells circulate throughout your body to activate healthy cancer-fighting T-cells.

The entire process is repeated twice more at certain intervals for six outpatient procedures over about a month. The immune system may remain armed against the same type of cancer cells, similar to the way a traditional vaccine remains effective for years.

SKIN CANCER

Skin is your body's largest and fastest-growing organ (see Figure 7). It's also your first line of defense against bacteria, other germs and viruses that can cause infection and disease.

Skin cancer is the most commonly diagnosed cancer in the United States. The majority of cases are nonmelanoma skin cancer (NMSC), and most of these are basal cell carcinoma and squamous cell carcinoma. NMSC typically grows slowly.

Surgery is the primary treatment for most people with NMSC. Other options are radiation therapy, photodynamic therapy, drug therapies and immunotherapy.

Currently, two checkpoint inhibitors may be used in certain instances for people with NMSC (see *Exploring Immunotherapy*, page 4). One treats Merkel cell carcinoma, which is a rare, aggressive skin cancer that forms within the top layer of skin near the nerve endings. The other is for cutaneous squamous cell carcinoma (CSCC), a slow-growing disease that forms on the skin's surface in areas that have been regularly exposed to sunlight or other ultraviolet light sources. This treatment is currently approved for locally advanced or CSCC that has metastasized (spread to other parts of the body).

STOMACH (GASTRIC) CANCER

Your stomach is a muscular, hollow organ that serves as the body's natural food processor (see Figure 5, page 10). Located on the left side of your upper abdomen, it is highly elastic, stretching to accommodate the food and fluid you consume. Stomach enzymes help break down and digest food so it can move on through the digestive system.

Stomach cancer can start in any part of the stomach. Your doctor will consider the size and location of the tumor, along with other factors, before recommending one, or a combination of, the following treatments.

Surgery, chemotherapy, targeted therapy, radiation therapy and immunotherapy may be used to treat stomach cancer. An immune checkpoint inhibitor is approved as a treatment in certain instances for people whose stomach cancer has metastasized (spread elsewhere in the body) or recurred (returned) (learn more about immune checkpoint inhibitors, page 5). ■

FDA-APPROVED CANCER IMMUNOTHERAPIES* *(As of 12/12/18)*

ACUTE LYMPHOCYTIC LEUKEMIA
- blinatumomab (Blincyto)
- tisagenlecleucel (Kymriah)

ACUTE MYELOID LEUKEMIA
- venetoclax (Venclexta)

ACUTE PRECURSOR B-CELL (PRE-B-CELL) LYMPHOBLASTIC LEUKEMIA
- blinatumomab (Blincyto)
- tisagenlecleucel (Kymriah)

ACUTE T-CELL (LYMPHOBLASTIC) LEUKEMIA
- interferon alfa

ADULT T-CELL LYMPHOMA
- interferon alfa

ANAPLASTIC LARGE CELL LYMPHOMA
- brentuximab vedotin (Adcetris)

B-CELL CHRONIC LYMPHOCYTIC LEUKEMIA
- alemtuzumab (Campath)
- rituximab (Rituxan)

BLADDER CANCER
- atezolizumab (Tecentriq)
- avelumab (Bavencio)
- bacillus Calmette-Guérin (BCG)
- durvalumab (Imfinzi)
- nivolumab (Opdivo)
- pembrolizumab (Keytruda)

CERVICAL CANCER
- pembrolizumab (Keytruda)

CHRONIC LYMPHOCYTIC LEUKEMIA
- rituximab and hyaluronidase human (Rituxan Hycela)
- venetoclax (Venclexta)

CHRONIC MYELOID LEUKEMIA
- interferon alfa

COLORECTAL CANCER
- ipilimumab (Yervoy)
- nivolumab (Opdivo)
- nivolumab (Opdivo) plus ipilimumab (Yervoy)
- pembrolizumab (Keytruda)

DIFFUSE LARGE B-CELL LYMPHOMA
- axicabtagene ciloleucel (Yescarta)
- rituximab (Rituxan)
- rituximab-abbs (Truxima)
- rituximab and hyaluronidase human (Rituxan Hycela)
- tisagenlecleucel (Kymriah)

FOLLICULAR LYMPHOMA
- ibritumomab tiuxetan (Zevalin)
- interferon alfa-2b (Intron A)
- obinutuzumab (Gazyva)
- rituximab (Rituxan)
- rituximab-abbs (Truxima)
- rituximab and hyaluronidase human (Rituxan Hycela)

HAIRY CELL LEUKEMIA
- interferon alfa-2b (Intron-A)
- moxetumomab pasudotox-tdfk (Lumoxiti)
- rituximab (Rituxan)

HEAD AND NECK CANCER
- nivolumab (Opdivo)
- pembrolizumab (Keytruda)

HODGKIN LYMPHOMA
- brentuximab vedotin (Adcetris)
- nivolumab (Opdivo)
- pembrolizumab (Keytruda)
- rituximab (Rituxan)

INTRAVASCULAR LARGE B-CELL LYMPHOMA
- rituximab (Rituxan)

KIDNEY (RENAL) CANCER
- interferon alfa
- interleukin-2 [aldesleukin (Proleukin)]
- nivolumab (Opdivo)
- nivolumab (Opdivo) plus ipilimumab (Yervoy)

LARGE B-CELL LYMPHOMA
- axicabtagene ciloleucel (Yescarta)
- tisagenlecleucel (Kymriah)

LIVER CANCER
- nivolumab (Opdivo)
- pembrolizumab (Keytruda)

LUNG CANCER
- atezolizumab (Tecentriq)
- durvalumab (Imfinzi)
- nivolumab (Opdivo)
- pembrolizumab (Keytruda)

LYMPHOPLASMACYTIC LYMPHOMA
- rituximab (Rituxan)

MANTLE CELL LYMPHOMA
- lenalidomide (Revlimid)
- rituximab (Rituxan)

MARGINAL ZONE B-CELL LYMPHOMA
- rituximab (Rituxan)

MELANOMA
- high-dose interleukin-2 (IL-2)
- interferon alfa-2b (Intron A)
- interleukin-2 [aldesleukin (Proleukin)]
- ipilimumab (Yervoy)
- nivolumab (Opdivo)
- pegylated interferon alfa-2b (PEG-Intron, Sylatron)
- pembrolizumab (Keytruda)
- talimogene laherparepvec (Imlygic)

MULTIPLE MYELOMA
- daratumumab (Darzalex)
- elotuzumab (Empliciti)
- lenalidomide (Revlimid)
- pomalidomide (Pomalyst)
- thalidomide (Thalomid)

MYCOSIS FUNGOIDES/SEZARY SYNDROME
- brentuximab vedotin (Adcetris)
- mogamulizumab-kpkc (Poteligeo)

NON-HODGKIN LYMPHOMA
- axicabtagene ciloleucel (Yescarta)
- brentuximab vedotin (Adcetris)
- rituximab (Rituxan)
- rituximab-abbs (Truxima)
- venetoclax (Venclexta)

PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA
- rituximab (Rituxan)

PRIMARY MEDIASTINAL B-CELL LYMPHOMA
- axicabtagene ciloleucel (Yescarta)
- pembrolizumab (Keytruda)
- rituximab (Rituxan)

PROSTATE CANCER
- sipuleucel-T (Provenge)

SKIN CANCER
- avelumab (Bavencio)
- cemiplimab-rwlc (Libtayo)

STOMACH (GASTRIC) CANCER
- pembrolizumab (Keytruda)

*Each therapy is prescribed based on specific criteria. Discuss with your doctor.

UNDERSTANDING CLINICAL TRIALS

The number of clinical trials evaluating cancer immunotherapy agents has skyrocketed in the past decade, and knowledge gained from this research is fueling dramatic treatment advances. New types of immunotherapy, including CAR T-cell therapies and immune checkpoint inhibitors, continue to earn FDA approval for more types of cancer. Such progress is one of many reasons to ask your health care team if you're an eligible candidate for a trial.

As you consider participating in a clinical trial, you'll receive instructions and an Informed Consent form. This form explains the purpose of the study, how the trial will work, potential risks and benefits, possible side effects, safety measures and other information, including what will be expected of you.

Before you sign the form, contact your insurance provider to find out the procedures that are covered and those you may be required to pay out-of-pocket. Although most clinical trials cover research-related costs, other expenses may be your responsibility. This information is best to know before the trial begins.

Three important things to remember:

1. Additional monitoring and care, including increased testing, visits and reporting, will occur throughout and may continue after the trial.
2. By participating in a clinical trial, you will not jeopardize your care.
3. Participating in a clinical trial is voluntary. You may leave the trial at any point before or during the trial and return to standard of care treatment. ■

ADDITIONAL RESOURCES

- **American Cancer Society:** www.cancer.org *The Basics of Clinical Trials*
- **American Society of Clinical Oncology:** www.cancer.net *Finding a Clinical Trial*
- **ClinicalTrials.gov:** www.clinicaltrials.gov

HOW TO SEARCH FOR A CLINICAL TRIAL

Part of advocating for your care includes researching clinical trials on your own in addition to asking your health care team. However, navigating online search tools can often be frustrating. To help you know what to expect, screenshots of a mock search site for clinical trials are shown below with step-by-step instructions.

Before you begin, have your exact diagnosis, pathology report and details of previous treatments handy. If you don't find a clinical trial that's a good fit, know that new ones are continually added. You may choose to keep searching while moving ahead with your current treatment plan.

If you're interested in a clinical trial that no longer accepts participants, your doctor may be able to appeal to the U.S. Food and Drug Administration (FDA) for expanded access, also known as "compassionate use."

Start your search with the trial listings that begin on page 17, and learn more about clinical trials in *Assistance & Support Resources* on page 37.

[STEP 1] FILL IN YOUR INFORMATION

Enter Your Diagnosis
For example, enter "stomach cancer." To create more options, you can also conduct a search for "gastric cancer," then compare results.

Desired Location
If you prefer a clinical trial close to home, enter your home address. Enter additional locations if you're willing and able to travel for treatment.

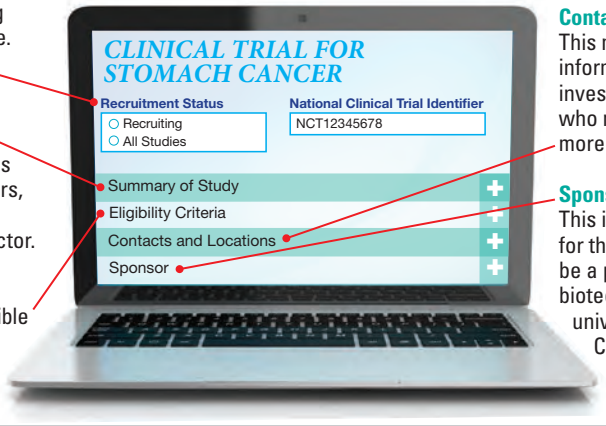
Other Terms
You can refine your search by adding a treatment type such as immunotherapy or a specific drug. You can also add a National Clinical Trial identifier, which is a unique eight-digit code preceded by "NCT" that is assigned to each trial.

[STEP 2] READ YOUR SEARCH RESULTS

Recruitment Status
This indicates whether the trial is actively seeking patients, not yet recruiting or is otherwise inactive. The status will change, so check for updates.

Summary of Study
Here you'll find details about the purpose of the clinical trial and the treatment being studied. This section is usually written for health care providers, so it may be difficult to interpret. In that case, print out the information to discuss with your doctor.

Eligibility Criteria
This outlines the criteria you must meet to be eligible for the trial, such as the stage of disease, sites of metastasis, overall health requirements and previous treatments.



Contacts and Locations
This may contain contact information for the clinical trial investigators, staff or sponsors, who may be able to provide more details about the study.

Sponsor
This is the entity responsible for the clinical trial. It may be a pharmaceutical or biotechnology company, a university or the National Cancer Institute.

SIDE EFFECTS

Like all cancer treatments, immunotherapy has side effects, but some people may experience fewer and milder side effects with immunotherapy than with other cancer treatments.

Before you begin immunotherapy, discuss potential side effects with your doctor. Learn what to watch for and how to respond. Each type of immunotherapy may cause different side effects, so request a list of symptoms specific to the type you'll receive. Your health care team will rely on you to notice and report them as soon as they happen so they can be addressed early. Their goal is to successfully treat your cancer while minimizing the discomfort and disruption to your normal activities as much as possible.

Severe side effects are not common, but they can occur. The most serious are immune-related adverse events (IRAEs), which can develop rapidly and become potentially life-threatening without medical attention. Always seek immediate treatment for medical emergencies such as shortness of breath, high fever, inflammation, swelling or severe abdominal pain.

Side effects may develop weeks, even months, after immunotherapy treatments end. Remain alert to symptoms and report them for at least three months after you complete treatment.

If a side effect is very severe, you may need to stop your treatment for a period of time or permanently. However, prompt recognition of a side effect and early management can often result in rapid resolution and allow you to stay on treatment longer. Thus, it is important to report any side effects to your doctor or nurse as soon as possible.

IMMUNE-RELATED ADVERSE EVENTS (IRAEs)

IRAEs are rare but serious side effects that may occur when the immunotherapy treatment overstimulates the immune system. This can cause the immune system to attack healthy tissues in the body.

The following lists each system that may be affected, the IRAE and its symptoms.

- **Cardiovascular** (cardiomyositis): chest pain, shortness of breath, leg swelling, rapid heartbeat, changes in EKG reading
- **Endocrine** (endocrinopathies): hyperthyroidism, hypothyroidism, extreme fatigue, persistent or unusual headaches
- **Gastrointestinal** (colitis): diarrhea with or without bleeding, abdominal pain, bowel perforation
- **Liver** (hepatitis): yellow skin or eyes (jaundice), nausea, abdominal pain, fatigue, fever
- **Nervous system** (neuropathies): tingling, numbness, a burning sensation or a loss of feeling in the hands or feet, pain, sensory overload, sensory deprivation
- **Neurologic** (encephalitis): confusion, hallucinations, seizures, mood or behavior changes, neck stiffness, extreme light sensitivity
- **Pulmonary/lung** (pneumonitis): chest pain, shortness of breath
- **Renal/kidneys** (nephritis): decreased urine output, blood in urine, swollen ankles, loss of appetite
- **Skin** (dermatitis): rash, skin changes (itching, blisters, painful sores)

Cytokine release syndrome is an IRAE associated with adoptive T-cell therapies and monoclonal antibodies. Reactions are usually mild but can be severe and even life-threatening. Symptoms include headache, fever, nausea, rash, low blood pressure, rapid heartbeat and difficulty breathing.

COMMON SIDE EFFECTS

Constipation can become very uncomfortable and even lead to serious medical issues. It's important to discuss this condition with your doctor to get help for managing it.

Coughing or difficulty breathing should be reported to your doctor immediately. Coughing may signal pneumonitis (inflammation of the lungs).

Diarrhea is common with checkpoint inhibitors and cytokines. When severe, it can lead to dehydration and electrolyte imbalance. It may also signal the immune system is nearing overload. Contact your health care team immediately if you have three or more bowel movements than usual in a day, severe abdominal cramping or diarrhea episodes that keep you housebound.

Fatigue is the most common side effect for many types of immunotherapy. Cancer-related fatigue can leave you physically, emotionally and/or mentally exhausted. Balance activity with rest each day, focusing only on activities that are most important to you.

Flu-like symptoms may occur with cytokines and oncolytic virus therapy. These include fever, chills, aches, headaches, drowsiness, nausea, vomiting, runny nose, loss of appetite and blood pressure changes.

Heart palpitations may occur with certain types of immunotherapy. Contact your doctor immediately about abnormal heart rhythm, dizziness or light-headedness.

Infusion-related reactions usually, but not always, occur soon after exposure to drug therapy. You may experience itching, skin rash, fever or chills. More serious symptoms are shaking, chills, low blood pressure, dizziness, trouble breathing and irregular heartbeat. Treatment may include slowing the drug's delivery or stopping it altogether, or using analgesics, antihistamines or corticosteroids.

Injection site reactions can be painful. Discuss this with your health care team, as they may consider modifying your treatment.

Mouth sores may begin as mild pain or burning in the lips, gums, tongue or roof of the mouth, followed by white patches that can become large red lesions. Mouth sores are more easily managed when caught early, so report symptoms right away.

Muscle and joint pain can occur with checkpoint inhibitors. Pain ranges from mild to severe, affecting your entire body or certain areas. Pain typically resolves when treatment ends. If it persists or worsens, discuss pain management options with your doctor.

Nausea and vomiting may occur particularly if immunotherapy is combined with chemotherapy, targeted therapy or other drug therapies. Your health care team may recommend antiemetics.

Skin reactions, such as bumpy or itchy red rashes, are common with checkpoint inhibitors. Watch for changes in skin color, inflammation, blistering, hives, pale patches, dryness, cracking around fingertips, sun sensitivity and flushing or redness. Your doctor may recommend a corticosteroid, numbing medicine, antihistamine, medicated creams or antibiotics.

Swelling in legs (edema) results from fluid buildup in the tissues. The effects may be reversed, so contact your doctor about swelling, stiffness or a heavy feeling in your legs or recent weight gain. ■

ADDITIONAL RESOURCES

- **Society for Immunotherapy of Cancer:** www.sitcancer.org
- **American Cancer Society:** www.cancer.org
  Cancer Immunotherapy
- **American Society of Clinical Oncology:** www.cancer.net
  Side Effects of Immunotherapy
- **National Cancer Institute:** www.cancer.gov
  Immunotherapy for Cancer

GLOSSARY

Antibody – A protein some immune cells make in response to antigens (foreign substances such as bacteria, viruses and toxins).
Antigen – Any substance that triggers an immune response. Bacteria, viruses, abnormal proteins in cancer cells, toxins and chemicals are all antigens.
Antigen-presenting cells (APCs) – Special cells that digest antigens in a way that "presents" them to T-cells and B-cells to instruct B- and T-cells to destroy cells with the "presented" antigen.
B-cells – A type of immune cell (lymphocyte) that makes proteins to mark specific foreign substances for other immune cells to destroy.
Cytokines – Proteins secreted by certain immune cells so they can communicate with each other. Cytokines can also be made in a laboratory for cancer-fighting immunotherapies.
Dendritic cell (DC) – A type of immune cell that increases the immune response. DCs can activate and stimulate other immune cells.
Immune cells – White blood cells in the immune system that help defend against cancer, infectious disease and other invaders.
Immune checkpoint inhibitors – An immunotherapy that blocks certain proteins or receptors some immune cells make. In effect, this "releases the brakes" on the immune system so T-cells can destroy cancer cells unchecked.
Immune-related adverse events (IRAEs) – The immune system's overreaction to immunotherapy. In rare cases, IRAEs can rapidly become life-threatening without medical attention.
Immunomodulating agents – Various natural and laboratory-made substances that help boost or suppress the immune response. They are used in some types of cancer immunotherapy.
Interferon – A substance that interferes with cancer cell division and slows tumor growth, boosting the body's immune response. A laboratory version is used as a type of cancer immunotherapy.
Interleukin – Part of a group of proteins (cytokines) that some immune cells make. Interleukin helps regulate certain functions in the immune system. A laboratory version is used in a type of cancer immunotherapy.
Lymphatic system – A network of organs and tissues that create, store and circulate lymph. Lymph (clear fluid) carries lymphocytes through the spleen, thymus, tonsils, adenoids and lymph nodes.
Lymphocyte – A type of immune cell (white blood cell) in lymph tissue and blood. The main types are B-lymphocytes (B-cells) and T-lymphocytes (T-cells), which both help the immune system fight cancer.
Monoclonal antibodies (mAbs) – Laboratory-made proteins created to target and bind with specific proteins or molecules on the surface of cancer cells. In cancer immunotherapy, mAbs are meant to stimulate an immune response in the same way naturally produced antibodies do.
Oncolytic virus – A naturally occurring virus also manufactured as a cancer immunotherapy. It targets certain cancer or tumor cells, infects them and multiplies to cause cell death. The virus can also induce an immune response.
PD-1 (programmed cell death-1) – A receptor that binds with another protein (PD-L1) to help keep the body's immune response in check. A type of checkpoint inhibitor blocks PD-1 receptors, in effect "releasing the brakes" on the immune system.
Radioimmunotherapy – A combination of radiation therapy and immunotherapy that links a radioactive substance to a monoclonal antibody and injects it into the body. Radiation from the substance may kill cancer cells.
Receptors (immune receptors) – Surface molecules on immune cells that bind to the surface of other immune cells. This typically causes the cell to produce signals that regulate specific functions in the immune system.
T-cells – White blood cells (immune cells) that play a significant role in the immune system's fight against infection and disease.
Tumor-infiltrating lymphocyte (TIL) – A type of immune cell that invades a tumor mass or microenvironment. A type of immunotherapy removes TIL cells from a patient's tumor and re-engineers them in a laboratory to seek and destroy tumor-specific cancer cells.
Tumor microenvironment – The area that surrounds and sustains a tumor. It is made up of normal cells, molecules and blood vessels.

Some definitions courtesy of the website of the National Cancer Institute (www.cancer.gov).

SITC Guidelines: The Society for Immunotherapy of Cancer (SITC) offers guidelines for medical professionals regarding the recommended use of immunotherapy treatments. Guidelines for several cancers are currently available at → **www.sitcancer.org/guidelines**

CANCER IMMUNOTHERAPY

CLINICAL TRIALS BY DISEASE

Includes all tumor-specific studies categorized as "cancer immunotherapy" (as of 11/6/18) by the U.S. National Institutes of Health at www.clinicaltrials.gov.

ADRENAL

Title	Cancer Type	Treatment	Location	NCT Number
Single Agent Pembrolizumab in Subjects With Advanced Adrenocortical Carcinoma	Adrenocortical Carcinoma	Drug: Pembrolizumab	NY	NCT02673333

ANAL

Title	Cancer Type	Treatment	Location	NCT Number
VGX-3100 and Electroporation in Treating Patients With HIV-Positive High-Grade Anal Lesions	Anal Intraepithelial Neoplasia; High Grade Squamous Intraepithelial Neoplasia; HIV Positivity; Human Papillomavirus-16 Positive; Human Papillomavirus-18 Positive	Device: Electroporation; Biological: HPV DNA Plasmids Therapeutic Vaccine VGX-3100; Other: Laboratory Biomarker Analysis	CA	NCT03603808

BLADDER

Title	Cancer Type	Treatment	Location	NCT Number
T Cell Receptor Immunotherapy Targeting MAGE-A3 for Patients With Metastatic Cancer Who Are HLA-DP0401 Positive	Cervical Cancer; Renal Cancer; Urothelial Cancer; Melanoma; Breast Cancer	Biological: Anti-MAGE-A3-DP4 TCR; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT02111850
Paclitaxel and Pembrolizumab in Treating Patients With Refractory Metastatic Urothelial Cancer	Transitional Cell Carcinoma	Other: Laboratory Biomarker Analysis; Drug: Paclitaxel; Biological: Pembrolizumab	NC	NCT02581982
Phase I/Ib Study of Pembrolizumab With Vorinostat for Patients With Advanced Renal or Urothelial Cell Carcinoma	Renal Cell Carcinoma; Urinary Bladder Neoplasms	Drug: Pembrolizumab; Drug: Vorinostat	IN; MD	NCT02619253
Pembrolizumab (MK3475), Gemcitabine, and Concurrent Hypofractionated Radiation Therapy for Muscle-Invasive Urothelial Cancer of the Bladder	Muscle-invasive Urothelial Cancer of the Bladder	Biological: Pembrolizumab; Procedure: Transurethral Resection of Bladder Tumor; Drug: Gemcitabine; Radiation: External Beam Radiation Therapy	NY	NCT02621151
An Investigational Immuno-therapy Study of Nivolumab, Compared to Placebo, in Patients With Bladder or Upper Urinary Tract Cancer, Following Surgery to Remove the Cancer	Various Advanced Cancer	Biological: Nivolumab; Other: Placebo	AK; AZ; CA; CO; FL; IL; IN; LA; MI; MN; NC; NE; NV; NY; OR; PA; SC; TN	NCT02632409
A Dose Escalation Phase I Study to Assess the Safety and Clinical Activity of Multiple Cancer Indications	Colorectal Cancer (CRC); Ovarian Cancer (Epithelial and Fallopian Tube); Urothelial Carcinoma; Triple-negative Breast Cancer (TNBC); Pancreatic Cancer; Acute Myeloid Leukemia/Myelodysplastic Syndrome; Multiple Myeloma (MM)	Biological: NKR-2 cells	FL; NY; PA	NCT03018405
QUILT-3.032: A Multicenter Clinical Trial of Intravesical Bacillus Calmette-Guerin (BCG) in Combination With ALT-803 in Patients With BCG Unresponsive High Grade Non-Muscle Invasive Bladder Cancer	Bladder Cancer	Drug: ALT-803; Drug: BCG	AK; CA; CT; FL; HI; NY	NCT03022825
A Phase II Randomized Trial of Immunotherapy Plus Radiotherapy in Metastatic Genitourinary Cancers	Metastatic Renal Cell Carcinoma; Metastatic Urothelial Carcinoma	Drug: Nivolumab; Drug: Atezolizumab; Radiation: Radiation & immunotherapy	NY	NCT03115801
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
BLASST-1 (Bladder Cancer Signal Seeking Trial): Nivolumab, Gemcitabine, and Cisplatin in Treatment of Muscle Invasive Bladder Cancer (MIBC) Undergoing Cystectomy	Muscle Invasive Bladder Cancer	Drug: Nivolumab; Drug: Cisplatin; Drug: Gemcitabine	MA; MN; UT	NCT03294304
ADAPT-BLADDER: Modern Immunotherapy in BCG-Relapsing Urothelial Carcinoma of the Bladder	Urothelial Carcinoma; Bladder Cancer	Drug: Durvalumab; Radiation: External Beam Radiotherapy (EBRT); Biological: Bacillus Calmette-Guérin (BCG)	MD	NCT03317158
Safety And Efficacy Study Of Avelumab Plus Chemotherapy With Or Without Other Anti-Cancer Immunotherapy Agents In Patients With Advanced Malignancies	Non-small Cell Lung Cancer; Urothelial Cancer	Drug: Avelumab in combination with pemetrexed / carboplatin; Drug: Avelumab in combination with gemcitabine / cisplatin.	AZ; CA; CT; NC; NY; PA	NCT03317496
Evaluating Immune Therapy, Durvalumab (MEDI4736) With Tremelimumab for Metastatic, Non-transitional Cell Carcinoma of the Urinary Tract	Non-Transitional Cell Carcinoma of the Urothelial Tract; Small Cell of the Bladder; Adenocarcinoma of the Bladder; Squamous Cell Carcinoma of the Bladder; Metastatic Bladder Cancer	Drug: durvalumab and tremelimumab	NJ; NY	NCT03430895
Messenger RNA (mRNA)-Based, Personalized Cancer Vaccine Against Neoantigens Expressed by the Autologous Cancer	Melanoma; Colon Cancer; Gastrointestinal Cancer; Genitourinary Cancer; Hepatocellular Cancer	Biological: NCI-4650, a mRNA-based, Personalized Cancer Vaccine	MD	NCT03480152
Safety and Efficacy of IMCnyeso in Advanced NY-ESO-1 and/or LAGE-1A Positive Cancers	Melanoma; Advanced NSCLC; Urothelial Carcinoma; Synovial Sarcoma	Drug: IMCnyeso	PA	NCT03515551
A Study to Test the Safety of Immunotherapy With Nivolumab Alone or With Ipilimumab Before Surgery for Bladder Cancer Patients Who Are Not Suitable for Chemotherapy	Bladder Cancer	Drug: Nivolumab; Drug: Ipilimumab; Procedure: Radical cystectomy	NJ; NY	NCT03520491
Safety, Tolerability, Immunogenicity, and Antitumor Activity of GEN-009 Adjuvanted Vaccine	Cutaneous Melanoma; Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck; Urothelial Carcinoma; Renal Cell Carcinoma	Biological: GEN-009 Adjuvanted Vaccine; Drug: Nivolumab	AZ; CA; CO; NY; PA; TN	NCT03633110
A Study of Several Radiation Doses for Patients With Progression on Immunotherapy/Checkpoint Inhibitors	Metastatic Cancer; Melanoma Cancer; Lung Cancer; Bladder Cancer; Renal Cancer; Head/Neck Cancers	Radiation: Stereotactic Body Radiotherapy; Biological: Ipilimumab, Nivolumab, Pembrolizumab or Atezolizumab	NJ; NY	NCT03693014

BRAIN

Title	Cancer Type	Treatment	Location	NCT Number
Vaccine Immunotherapy for Recurrent Medulloblastoma and Primitive Neuroectodermal Tumor	Medulloblastoma; Neuroectodermal Tumor	Biological: TTRNA-xALT; Biological: TTRNA-DCs	CA; DC; FL; NC	NCT01326104
CAR T Cell Receptor Immunotherapy Targeting EGFRvIII for Patients With Malignant Gliomas Expressing EGFRvIII	Malignant Glioma; Glioblastoma; Brain Cancer	Biological: Anti-EGFRvIII CAR transduced PBL; Drug: Aldesleukin; Drug: Fludarabine; Drug: Cyclophosphamide	MD	NCT01454596
Immunotherapy for Recurrent Ependymomas in Children Treatment for Recurrent Ependymomas Using HLA-A2 Restricted Tumor Antigen Peptides in Combination With Imiquimod	Ependymoma	Biological: HLA-A2 restricted synthetic tumor antigen; Drug: Imiquimod; Other: enzyme-linked immunosorbent assay; Other: flow cytometry; Other: immunohistochemistry staining method; Other: laboratory biomarker analysis	PA	NCT01795313
T Cell Receptor Immunotherapy Targeting NY-ESO-1 for Patients With NY-ESO-1 Expressing Cancer	Melanoma; Meningioma; Breast Cancer; Non-Small Cell Lung Cancer; Hepatocellular Cancer	Biological: Anti-NY ESO-1 mTCR PBL; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT01967823
Genetically Engineered HSV-1 Phase 1 Study for the Treatment of Recurrent Malignant Glioma	Recurrent Glioblastoma Multiforme; Progressive Glioblastoma Multiforme; Anaplastic Astrocytoma or Gliosarcoma	Biological: M032 (NSC 733972)	AL	NCT02062827
IDH1 Peptide Vaccine for Recurrent Grade II Glioma	Brain Cancer; Brain Neoplasm, Primary; Brain Neoplasms, Recurrent; Brain Tumor; Cancer of the Brain	Biological: PEPIDH1M vaccine; Biological: Tetanus-Diphtheria Toxoid (Td); Drug: Temozolomide	NC	NCT02193347
Genetically Modified T-cells in Treating Patients With Recurrent or Refractory Malignant Glioma	Malignant Glioma; Refractory Brain Neoplasm; Recurrent Brain Neoplasm; Glioblastoma	Biological: IL13Rα2-specific, hinge-optimized, 41BB-costimulatory CAR/truncated CD19-expressing Autologous T lymphocytes; Other: laboratory biomarker analysis; Other: quality-of-life assessment; Procedure: Magnetic Resonance Imaging; Procedure: Magnetic Resonance Spectroscopic Imaging	CA	NCT02208362
A Pilot Study to Evaluate PBR PET in Brain Tumor Patients Treated With Chemoradiation or Immunotherapy	Intracranial Tumors; Glioblastoma; Melanoma	Other: PBR PET; Biological: Cancer Immunotherapy; Radiation: Radiation and chemotherapy	MA	NCT02431572
HSV G207 Alone or With a Single Radiation Dose in Children With Progressive or Recurrent Supratentorial Brain Tumors	Supratentorial Neoplasms, Malignant	Biological: G207	AL	NCT02457845
Neo-adjuvant Evaluation of Glioma Lysate Vaccines in WHO Grade II Glioma	Oligodendroglioma; Astrocytoma, Grade II; Glioma, Astrocytic; Glioma; Malignant Glioma; Oligoastrocytoma, Mixed	Biological: GBM6-AD and poly-ICLC before and after surgery; Biological: GBM6-AD and poly-ICLC after surgery only	CA	NCT02549833
An Investigational Immuno-therapy Study of Nivolumab Compared to Temozolomide, Each Given With Radiation Therapy, for Newly-diagnosed Patients With Glioblastoma (GBM, a Malignant Brain Cancer)	Brain Cancer	Drug: Nivolumab; Drug: Temozolomide; Radiation: Radiotherapy	AL; AZ; CA; CT; DC; FL; GA; IL; KS; KY; MA; MD; MI; MO; NC; NJ; NY; OH; OK; PA; SC; TN; TX; UT; WA	NCT02617589
An Investigational Immuno-therapy Study of Temozolomide Plus Radiation Therapy With Nivolumab or Placebo, for Newly Diagnosed Patients With Glioblastoma (GBM, a Malignant Brain Cancer)	Brain Neoplasms	Drug: Nivolumab; Drug: Temozolomide; Radiation: Radiotherapy; Other: Nivolumab Placebo	AL; AZ; CA; CT; DC; FL; IL; KS; KY; MA; MD; MI; MO; NC; NJ; NY; OH; PA; SC; TN; TX; UT; WA	NCT02667587
A Study to Evaluate the Safety, Tolerability and Immunogenicity of EGFR(V)-EDV-Dox in Subjects With Recurrent Glioblastoma Multiforme (GBM)	Glioblastoma; Astrocytoma, Grade IV	Drug: EGFR(V)-EDV-Dox	MD; NY	NCT02766699
Combination Adenovirus + Pembrolizumab to Trigger Immune Virus Effects	Brain Cancer; Brain Neoplasm; Glioma; Glioblastoma; Gliosarcoma; Malignant Brain Tumor; Neoplasm, Neuroepithelial; Neuroectodermal Tumors; Neoplasm by Histologic Type; Neoplasm, Nerve Tissue; Nervous System Diseases	Biological: DNX-2401; Biological: pembrolizumab	AR; CA; IL; MN; NC; NJ; NY; OH; PA; TX; UT	NCT02798406
Convection-Enhanced Delivery (CED) of MDNA55 in Adults With Recurrent or Progressive Glioblastoma	Glioblastoma; Grade IV Astrocytoma; Glioblastoma Multiforme; Grade IV Glioma	Drug: MDNA55	CA; FL; NC; OH; OR; PA; TX	NCT02858895
A Study of Varlilumab and IMA950 Vaccine Plus Poly-ICLC in Patients With WHO Grade II Low-Grade Glioma (LGG)	Glioma; Malignant Glioma; Astrocytoma, Grade II; Oligodendroglioma; Glioma, Astrocytic; Oligoastrocytoma, Mixed	Biological: IMA950; Biological: poly-ICLC; Biological: Varlilumab	CA	NCT02924038
H3.3K27M Peptide Vaccine for Children With Newly Diagnosed DIPG and Other Gliomas	Diffuse Intrinsic Pontine Glioma; Glioma	Biological: K27M peptide	CA; DC; IL; MA; MN; MO; OH; OR; PA; TN; TX; UT; WA	NCT02960230
Avelumab With Hypofractionated Radiation Therapy in Adults With Isocitrate Dehydrogenase (IDH) Mutant Glioblastoma	Glioblastoma	Biological: Avelumab; Radiation: Hypofractionated radiation therapy (HFRT)	CA; MA; NY	NCT02968940
Radiation Therapy Plus Temozolomide and Pembrolizumab With and Without HSPPC-96 in Newly Diagnosed Glioblastoma (GBM)	Glioblastoma	Drug: Pembrolizumab; Biological: HSPPC-96; Drug: Temozolomide; Other: Placebo	AZ; FL; IL; MD; MI; NC; SC; TX; UT; WA; WI	NCT03018288
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
Neoadjuvant Avelumab and Hypofractionated Proton Radiation Therapy Followed by Surgery for Recurrent Radiation-refractory Meningioma	Meningioma; Meningioma, Adult	Drug: Avelumab; Radiation: Proton Therapy; Procedure: Surgery	MO	NCT03267836
Phase II Trial of Pembrolizumab in Recurrent or Residual High Grade Meningioma	High Grade Meningioma	Drug: Pembrolizumab	MA	NCT03279692
Avelumab With Laser Interstitial Therapy for Recurrent Glioblastoma	Glioblastoma; GBM	Drug: Avelumab; Combination Product: MRI-guided LITT therapy	NY	NCT03341806
Phase I EGFR BATs in Newly Diagnosed Glioblastoma	Glioblastoma; Glioblastoma Multiforme	Drug: EGFR BATs with SOC RT and TMZ	VA	NCT03344250
Study to Evaluate Safety, Tolerability, and Optimal Dose of Candidate GBM Vaccine VBI-1901 in Recurrent GBM Subjects	Glioblastoma Multiforme	Biological: VBI-1901	MA; NY	NCT03382977
Memory-Enriched T Cells in Treating Patients With Recurrent or Refractory Grade III-IV Glioma	Glioblastoma; HER2/Neu Positive; Malignant Glioma; Recurrent Glioma; WHO Grade III/IV Glioma	Procedure: Leukapheresis; Biological: HER2(EQ) BBζ/CD19t+ Tcm; Other: Laboratory Biomarker Analysis	CA	NCT03389230

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BRAIN (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
Administration of Autologous T-Cells Genetically Engineered to Express T-Cell Receptors Reactive Against Mutated Neoantigens in People With Metastatic Cancer	Glioblastoma; Non-Small Cell Lung Cancer; Ovarian Cancer; Breast Cancer; Gastrointestinal/Genitourinary Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin; Biological: Individual Patient TCR-Transduced PBL	MD	NCT03412877
A Longitudinal Assessment of Tumor Evolution in Patients With Brain Cancer	Newly Diagnosed Glioblastoma	Drug: Temozolomide; Radiation: conformal brain radiation therapy; Drug: Nivolumab; Drug: Ipilimumab	CA	NCT03425292
Pembrolizumab and Vorinostat Combined With Temozolomide for Newly Diagnosed Glioblastoma	Glioblastoma; Brain Tumor; GBM	Drug: Pembrolizumab; Drug: Vorinostat; Drug: Temozolomide; Radiation: Radiotherapy	FL	NCT03426891
INO-5401 and INO-9012 Delivered by Electroporation (EP) in Combination With Cemiplimab (REGN2810) in Newly-Diagnosed Glioblastoma (GBM)	Glioblastoma	Biological: INO-5401; Biological: INO-9012; Biological: Cemiplimab; Radiation: Radiation Therapy; Drug: Temozolomide	CA; FL; MI; NJ; NY; OK; PA; UT	NCT03491683
HER2-specific CAR T Cell Locoregional Immunotherapy for HER2-positive Recurrent/Refractory Pediatric CNS Tumors	Central Nervous System Tumor, Pediatric; Glioma; Ependymoma; Medulloblastoma; Germ Cell Tumor; Atypical Teratoid/Rhabdoid Tumor; Primitive Neuroectodermal Tumor; Choroid Plexus Carcinoma; Pineoblastoma	Biological: HER2-specific chimeric antigen receptor (CAR) T cell	WA	NCT03500991
HER2-CAR T Cells in Treating Participants With Brain or Leptomeningeal Metastases	HER2/Neu Positive; Malignant Neoplasm; Metastatic Malignant Neoplasm in the Brain; Metastatic Malignant Neoplasm in the Leptomeninges	Biological: Chimeric Antigen Receptor T-Cell Therapy	CA	NCT03696030

BREAST

Title	Cancer Type	Treatment	Location	NCT Number
A Study of LGK974 in Patients With Malignancies Dependent on Wnt Ligands	Pancreatic Cancer; BRAF Mutant Colorectal Cancer; Melanoma; Triple Negative Breast Cancer; Head and Neck Squamous Cell Cancer; Cervical Squamous Cell Cancer; Esophageal Squamous Cell Cancer; Lung Squamous Cell Cancer	Drug: LGK974; Biological: PDR001	MA; MD; MI; TX	NCT01351103
Vaccine Therapy in Treating Patients With Metastatic Solid Tumors	Malignant Solid Tumour; Breast Cancer; Malignant Tumor of Colon; GIST; Ovarian Cancer	Biological: HER-2 vaccine; Biological: Extension HER-2 vaccine trial at OBD	OH	NCT01376505
T Cell Receptor Immunotherapy Targeting NY-ESO-1 for Patients With NY-ESO-1 Expressing Cancer	Melanoma; Meningioma; Breast Cancer; Non-Small Cell Lung Cancer; Hepatocellular Cancer	Biological: Anti-NY ESO-1 mTCR PBL; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT01967823
T Cell Receptor Immunotherapy Targeting MAGE-A3 for Patients With Metastatic Cancer Who Are HLA-DP0401 Positive	Cervical Cancer; Renal Cancer; Urothelial Cancer; Melanoma; Breast Cancer	Biological: Anti-MAGE-A3-DP4 TCR; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT02111850
Phase II Trial of Combination Immunotherapy With NeuVax and Trastuzumab in High-risk HER2+ Breast Cancer Patients	Breast Cancer	Biological: NeuVax vaccine; Drug: Trastuzumab; Drug: GM-CSF	CA; CO; DC; FL; IL; IN; KS; MD; NJ; NM; NY; TX; VA; WA; WI	NCT02297698
Trial of Active Immunotherapy With OBI-833 (Globo H-CRM197) in Advanced/Metastatic Gastric, Lung, Colorectal or Breast Cancer Subjects	Metastatic Gastric Cancer; Metastatic Breast Cancer; Metastatic Colorectal Cancer; Metastatic Lung Cancer	Drug: OBI-833/OBI-821	OH; TX	NCT02310464
Standard of Care Chemotherapy Plus Pembrolizumab for Breast Cancer	Triple Negative Breast Cancer	Drug: Pembrolizumab; Drug: Paclitaxel; Drug: Capecitabine	OR	NCT02734290
T-Cell Therapy for Advanced Breast Cancer	Breast Cancer; Metastatic HER2-negative Breast	Drug: Cyclophosphamide; Biological: Mesothelin-targeted T cells; Drug: AP1903	NJ; NY	NCT02792114
Adjuvant PVX-410 Vaccine and Durvalumab in Stage II/III Triple Negative Breast Cancer	Breast Cancer	Biological: PVX-410; Biological: Durvalumab; Drug: Hiltonol	MA	NCT02826434
Trial of Intratumoral Injections of TTI-621 in Subjects With Relapsed and Refractory Solid Tumors and Mycosis Fungoides	Solid Tumors; Mycosis Fungoides; Melanoma; Merkel-cell Carcinoma; Squamous Cell Carcinoma; Breast Carcinoma; Human Papillomavirus-Related Malignant Neoplasm; Soft Tissue Sarcoma	Drug: TTI-621	CA; OR; PA; WA	NCT02890368
A Study of PDR001 in Combination With CJM112, EGF816, Ilaris® (Canakinumab) or Mekinist® (Trametinib)	Colorectal Cancer, Triple Negative Breast Cancer, NSCLC - Adenocarcinoma	Biological: PDR001; Biological: ACZ885; Biological: CJM112; Drug: TMT212; Drug: EGF816	MA; MD; TN; TX	NCT02900664
Neoadjuvant Pembrolizumab + Decitabine Followed by Std Neoadj Chemo for Locally Advanced HER2- Breast Ca	Breast Adenocarcinoma; Estrogen Receptor- Negative Breast Cancer; Estrogen Receptor-positive Breast Cancer; HER2/Neu Negative; Invasive Breast Carcinoma; Progesterone Receptor Negative; Progesterone Receptor Positive Tumor; Stage II Breast Cancer; Stage IIA Breast Cancer; Stage IIB Breast Cancer; Stage IIIA Breast Cancer; Stage IIIB Breast Cancer; Triple-negative Breast Carcinoma	Drug: Doxorubicin; Drug: Cyclophosphamide; Drug: Paclitaxel; Drug: Carboplatin; Drug: Decitabine; Drug: Pembrolizumab	VA	NCT02957968
A Study Of Changes In PD-L1 Expression During Preoperative Treatment With Nab-Paclitaxel And Pembrolizumab In Hormone Receptor-Positive Breast Cancer	Breast Cancer	Drug: Pembrolizumab; Drug: Nab-Paclitaxel; Procedure: Biopsy	MA	NCT02999477
A Dose Escalation Phase I Study to Assess the Safety and Clinical Activity of Multiple Cancer Indications	Colorectal Cancer (CRC); Ovarian Cancer (Epithelial and Fallopian Tube); Urothelial Carcinoma; Triple-negative Breast Cancer (TNBC); Pancreatic Cancer; Acute Myeloid Leukemia/Myelodysplastic Syndrome; Multiple Myeloma (MM)	Biological: NKR-2 cells	FL; NY; PA	NCT03018405
Pembrolizumab in Advanced BRCA-mutated Breast Cancer	Breast Cancer	Drug: Pembrolizumab	CA	NCT03025035
A Randomized Phase II Study Of Eribulin Mesylate With or Without Pembrolizumab For Metastatic Hormone Receptor Positive Breast Cancer	Breast Cancer	Drug: Eribulin Mesylate; Drug: Pembrolizumab	MA	NCT03051659
Phase II PEMBROLIZUMAB + PALLIATIVE RADIOTHERAPY IN BC	Metastatic Breast Cancer	Drug: Pembrolizumab; Radiation: Palliative radiotherapy	MA	NCT03051672
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289

BREAST (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
Focused Ultrasound and Pembrolizumab in Metastatic Breast Cancer	Breast Cancer	Drug: Pembrolizumab; Device: High-intensity focused ultrasound (HIFU)	VA	NCT03237572
A Safety Study of Talimogene Laherparepvec Combined With Atezolizumab for Triple Negative Breast Cancer and Colorectal Cancer With Liver Metastases	Metastatic Triple Negative Breast Cancer; Metastatic Colorectal Cancer	Biological: Talimogene Laherparepvec; Biological: Atezolizumab	CA; NY	NCT03256344
Her2-BATS and Pembrolizumab in Metastatic Breast Cancer	Metastatic Breast Cancer	Drug: HER2 BATs with Pembrolizumab	VA	NCT03272334
A Study of Multiple Immunotherapy-Based Treatment Combinations in Hormone Receptor (HR)-Positive Human Epidermal Growth Factor Receptor 2 (HER2)-Negative Breast Cancer	Breast Neoplasms	Drug: Atezolizumab (MPDL3280A), an engineered anti-programmed death-ligand 1 (PD-L1) antibody; Drug: Bevacizumab; Drug: Cobimetinib; Drug: Exemestane; Drug: Fulvestrant; Drug: Ipatasertib; Drug: Tamoxifen	AL; CA; CT; GA; MD; MI; NC; NY; OR; PA; TN; WA	NCT03280563
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
Ability of a Dendritic Cell Vaccine to Immunize Melanoma or Epithelial Cancer Patients Against Defined Mutated Neoantigens Expressed by the Autologous Cancer	Melanoma; Gastrointestinal Cancer; Breast Cancer; Ovarian Cancer; Pancreatic Cancer	Biological: Peptide loaded dendritic cell vaccine	MD	NCT03300843
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459
EPR Tumor Oximetry With CE India Ink	Neoplasms, Malignant; Breast Neoplasm; Carcinoma, Basal Cell; Carcinoma, Squamous Cell; Melanoma; Skin Neoplasm; Head and Neck Neoplasms	Device: Carlo Erba Ink Injection; Other: EPR Oximetry Measurement	NH	NCT03321903
PVX-410 Vaccine Plus Pembrolizumab in HLA-A2+ Metastatic Triple Negative Breast Cancer	Triple Negative Breast Cancer; Metastatic Breast Cancer	Drug: Pembrolizumab; Biological: PVX-410	MA	NCT03362060
Breast Cancer Study of Preoperative Pembrolizumab + Radiation	Breast Cancer	Drug: Pembrolizumab; Radiation: RT Boost	CA	NCT03366844
QUILT-3.067: NANT Triple Negative Breast Cancer (TNBC) Vaccine: Molecularly Informed Integrated Immunotherapy in Subjects With TNBC Who Have Progressed on or After Standard-of-care Therapy.	Triple Negative Breast Cancer	Drug: Aldoxorubicin HCl; Biological: ALT-803; Biological: ETBX-011; Biological: ETBX-051; Biological: ETBX-061; Biological: GI-4000; Biological: GI-6207; Biological: GI-6301; Biological: haNK for Infusion; Biological: avelumab; Biological: bevacizumab; Drug: Capecitabine; Drug: Cisplatin; Drug: Cyclophosphamide; Drug: Fluorouracil; Drug: Leucovorin; Drug: nab-Paclitaxel; Procedure: SBRT	CA	NCT03387085
HER2 Directed Dendritic Cell Vaccine During Neoadjuvant Therapy of HER2+Breast Cancer	Breast Cancer; Breast Cancer Female; Breast Cancer, Male; Invasive Breast Cancer; HER2-positive Breast Cancer; HER2 Positive Breast Carcinoma; Stage II Breast Cancer; Stage III Breast Cancer	Biological: Dendritic Cell Vaccine (DC1); Drug: Neoadjuvant Chemotherapy; Procedure: Curative Surgery	FL	NCT03387553
Administration of Autologous T-Cells Genetically Engineered to Express T-Cell Receptors Reactive Against Mutated Neoantigens in People With Metastatic Cancer	Glioblastoma; Non-Small Cell Lung Cancer; Ovarian Cancer; Breast Cancer; Gastrointestinal/Genitourinary Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin; Biological: Individual Patient TCR-Transduced PBL	MD	NCT03412877
A Study Evaluating the Efficacy and Safety of Multiple Immunotherapy-Based Treatment Combinations in Patients With Metastatic Triple-Negative Breast Cancer (Morpheus-TNBC)	Triple Negative Breast Cancer	Drug: Capecitabine; Drug: Atezolizumab; Drug: Ipatasertib; Drug: SGN-LIV1A; Drug: Bevacizumab; Drug: Cobimetinib; Drug: Chemotherapy (Gemcitabine + Carboplatin or Eribulin)	CA; FL; NJ; NY; PA; TN	NCT03424005
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
Neoadjuvant Phase II Study of Pembrolizumab And Carboplatin Plus Docetaxel in Triple Negative Breast Cancer	Triple-negative Breast Cancer	Drug: Carboplatin; Drug: Docetaxel; Drug: Pembrolizumab; Drug: Pegfilgrastim	KS	NCT03639948
CAR-T Intraperitoneal Infusions for CEA-Expressing Adenocarcinoma Peritoneal Metastases or Malignant Ascites (IPC)	Peritoneal Carcinomatosis; Peritoneal Metastases; Colorectal Cancer; Gastric Cancer; Breast Cancer; Pancreas Cancer; Carcinoembryonic Antigen	Biological: anti-CEA CAR-T cells	NJ; RI	NCT03682744
A Study to Evaluate Safety/Tolerability of Immunotherapy Combinations in Participants With Triple-Negative Breast Cancer and Gynecologic Malignancies	TNBC - Triple-Negative Breast Cancer; Ovarian Cancer	Drug: AB928; Drug: Pegylated liposomal doxorubicin	NC	NCT03719326
Malignant Pleural Disease Treated With Autologous T Cells Genetically Engineered to Target the Cancer-Cell Surface Antigen Mesothelin	Malignant Pleural Disease; Mesothelioma; Metastases; Lung Cancer; Breast Cancer	Genetic: iCasp9M28z T cell infusions; Drug: cyclophosphamide	NJ; NY	NCT02414269

CERVICAL

Title	Cancer Type	Treatment	Location	NCT Number
A Study of LGK974 in Patients With Malignancies Dependent on Wnt Ligands	Pancreatic Cancer; BRAF Mutant Colorectal Cancer; Melanoma; Triple Negative Breast Cancer; Head and Neck Squamous Cell Cancer; Cervical Squamous Cell Cancer; Esophageal Squamous Cell Cancer; Lung Squamous Cell Cancer	Drug: LGK974; Biological: PDR001	MA; MD; MI; TX	NCT01351103
CAR T Cell Receptor Immunotherapy Targeting Mesothelin for Patients With Metastatic Cancer	Cervical Cancer; Pancreatic Cancer; Ovarian Cancer; Mesothelioma; Lung Cancer	Drug: Fludarabine; Biological: Anti-mesothelin CAR; Drug: Cycolphosphamide; Drug: Aldesleukin	MD	NCT01583686

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CERVICAL (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
T Cell Receptor Immunotherapy Targeting MAGE-A3 for Patients With Metastatic Cancer Who Are HLA-DP0401 Positive	Cervical Cancer; Renal Cancer; Urothelial Cancer; Melanoma; Breast Cancer	Biological: Anti-MAGE-A3-DP4 TCR; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT02111850
Pembrolizumab and Chemoradiation Treatment for Advanced Cervical Cancer	Cervical Cancer	Drug: Pembrolizumab; Radiation: Brachytherapy; Drug: Cisplatin	AL; MO; NC; SC; VA	NCT02635360
E7 TCR T Cells With or Without PD-1 Blockade for Human Papillomavirus-Associated Cancers	Cervical Cancer; Vaginal Cancer; Anal Cancer; Penile Cancer; Oropharyngeal Cancer	Biological: E7 TCR Transduced PBL cells; Drug: pembrolizumab; Drug: aldesleukin; Drug: fludarabine; Drug: cyclophosphamide	MD	NCT02858310
Trial of Atezolizumab and Vigil for Advanced Gynecological Cancers (A Companion Study to CL-PTL-119)	Advanced Gynecological Cancers; Ovarian Cancer; Cervical Cancer; Uterine Cancer	Biological: Vigil; Drug: Atezolizumab	AL; GA; MI; MT; NH; SC	NCT03073525
Study of LN-145, Autologous Tumor Infiltrating Lymphocytes in the Treatment of Patients With Cervical Carcinoma	Cervical Carcinoma	Biological: LN-145	AZ; CA; FL; GA; IL; KY; LA; MD; MI; NY; OH; PA; TX; WI	NCT03108495

COLORECTAL

Title	Cancer Type	Treatment	Location	NCT Number
Immunotherapy Using Tumor Infiltrating Lymphocytes for Patients With Metastatic Cancer	Metastatic Colorectal Cancer; Metastatic Gastric Cancer; Metastatic Pancreatic Cancer; Metastatic Hepatocellular Carcinoma; Metastatic Cholangiocarcinoma	Biological: Young TIL; Drug: Aldesleukin; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Pembrolizumab	MD	NCT01174121
Vaccine Therapy in Treating Patients With Metastatic Solid Tumors	Malignant Solid Tumour; Breast Cancer; Malignant Tumor of Colon; GIST; Ovarian Cancer	Biological: HER-2 vaccine; Biological: Extension HER-2 vaccine trial at OBD	OH	NCT01376505
Trial of Active Immunotherapy With OBI-833 (Globo H-CRM197) in Advanced/Metastatic Gastric, Lung, Colorectal or Breast Cancer Subjects	Metastatic Gastric Cancer; Metastatic Breast Cancer; Metastatic Colorectal Cancer; Metastatic Lung Cancer	Drug: OBI-833/OBI-821	OH; TX	NCT02310464
A Multicenter Study of Active Specific Immunotherapy With OncoVAX in Patients With Stage II Colon Cancer	Stage II Colon Cancer	Biological: OncoVAX and Surgery; Procedure: Surgery	FL	NCT02448173
PARP-inhibition and CTLA-4 Blockade in BRCA-deficient Ovarian Cancer	Ovarian Cancer; Fallopian Tube Cancer; Peritoneal Neoplasms	Drug: Olaparib; Drug: Tremelimumab	NM	NCT02571725
First-in-human Study of Oral TP-0903 (a Novel Inhibitor of AXL Kinase) in Patients With Advanced Solid Tumors	Advanced Solid Tumors; EGFR Positive Non-small Cell Lung Cancer; Colorectal Carcinoma; Recurrent Ovarian Carcinoma; BRAF-Mutated Melanoma	Drug: TP-0903	AZ; FL; MN; TX	NCT02729298
Study of DPX-Survivac Vaccine Therapy and Epacadostat in Patients With Recurrent Ovarian Cancer	Recurrent Epithelial Ovarian Cancer; Recurrent Fallopian Tube Cancer; Recurrent Peritoneal Cancer	Biological: DPX-Survivac; Drug: Cyclophosphamide; Drug: Epacadostat (INCB024360)	CA; NY; OR; PA; TX	NCT02785250
Pembrolizumab + Poly-ICLC in MRP Colon Cancer	Metastatic Colon Cancer; Solid Tumor	Drug: pembrolizumab; Drug: Poly-ICLC	GA	NCT02834052
E7 TCR T Cells With or Without PD-1 Blockade for Human Papillomavirus-Associated Cancers	Cervical Cancer; Vaginal Cancer; Anal Cancer; Penile Cancer; Oropharyngeal Cancer	Biological: E7 TCR Transduced PBL cells; Drug: pembrolizumab; Drug: aldesleukin; Drug: fludarabine; Drug: cyclophosphamide	MD	NCT02858310
A Study of PDR001 in Combination With CJM112, EGF816, Ilaris® (Canakinumab) or Mekinist® (Trametinib)	Colorectal Cancer, Triple Negative Breast Cancer, NSCLC - Adenocarcinoma	Biological: PDR001; Biological: ACZ885; Biological: CJM112; Drug: TMT212; Drug: EGF816	MA; MD; TN; TX	NCT02900664
Intraperitoneal Infusion of Autologous Monocytes With Sylatron (Peginterferon Alfa-2b) and Actimmune (Interferon Gamma-1b) in Women With Recurrent or Refractory Ovarian Cancer, Fallopian Tube Cancer or Primary Peritoneal Cancer	Fallopian Tube Cancer; Ovarian Cancer; Primary Peritoneal Cancer	Biological: Autologous Monocytes + ACTIMMUNE + SYLATRON	MD	NCT02948426
Gut Microbiome in Fecal Samples From Patients With Metastatic Cancer Undergoing Chemotherapy or Immunotherapy	Metastatic Carcinoma; Stage IV Colorectal Cancer; Stage IVA Colorectal Cancer; Stage IVB Colorectal Cancer	Procedure: Biospecimen Collection; Other: Laboratory Biomarker Analysis	CA	NCT02960282
Combination Chemotherapy, Bevacizumab, and/or Atezolizumab in Treating Patients With Microsatellite Instability-High Metastatic Colorectal Cancer	Colorectal Adenocarcinoma; High-Frequency Microsatellite Instability; Stage IV Colorectal Cancer AJCC v7; Stage IVA Colorectal Cancer AJCC v7; Stage IVB Colorectal Cancer AJCC v7	Drug: Atezolizumab; Biological: Bevacizumab; Drug: Fluorouracil; Other: Laboratory Biomarker Analysis; Drug: Leucovorin Calcium; Drug: Oxaliplatin; Other: Quality-of-Life Assessment	PA	NCT02997228
A Dose Escalation Phase I Study to Assess the Safety and Clinical Activity of Multiple Cancer Indications	Colorectal Cancer (CRC); Ovarian Cancer (Epithelial and Fallopian Tube); Urothelial Carcinoma; Triple-negative Breast Cancer (TNBC); Pancreatic Cancer; Acute Myeloid Leukemia/Myelodysplastic Syndrome; Multiple Myeloma (MM)	Biological: NKR-2 cells	FL; NY; PA	NCT03018405
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
Administering Peripheral Blood Lymphocytes Transduced With a Murine T-Cell Receptor Recognizing the G12V Variant of Mutated RAS in HLA-A*1101 Patients	Pancreatic Cancer; Gastric Cancer; Gastrointestinal Cancer; Colon Cancer; Rectal Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Biological: anti-KRAS G12V mTCR; Drug: Aldesleukin	MD	NCT03190941
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
A Safety Study of Talimogene Laherparepvec Combined With Atezolizumab for Triple Negative Breast Cancer and Colorectal Cancer With Liver Metastases	Metastatic Triple Negative Breast Cancer; Metastatic Colorectal Cancer	Biological: Talimogene Laherparepvec; Biological: Atezolizumab	CA; NY	NCT03256344
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459

COLORECTAL (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
VX15/2503 and Immunotherapy in Resectable Pancreatic and Colorectal Cancer	Colon Carcinoma Metastatic in the Liver; Colorectal Adenocarcinoma; Pancreatic Adenocarcinoma; Resectable Pancreatic Carcinoma; Stage I Pancreatic Cancer; Stage IA Pancreatic Cancer; Stage IB Pancreatic Cancer; Stage II Pancreatic Cancer; Stage IIA Pancreatic Cancer; Stage IIB Pancreatic Cancer; Stage III Pancreatic Cancer; Stage IV Colorectal Cancer; Stage IVA Colorectal Cancer; Stage IVB Colorectal Cancer	Biological: Anti-SEMA4D Monoclonal Antibody VX15/2503; Biological: Ipilimumab; Biological: Nivolumab; Procedure: Surgery	GA	NCT03373188
An Investigational Immuno-therapy Study Of Nivolumab In Combination With Trametinib With Or Without Ipilimumab In Patients With Previously Treated Cancer of the Colon or Rectum That Has Spread	Colorectal Cancer; Colorectal Tumors; Colorectal Carcinoma; Colorectal Neoplasm	Biological: Nivolumab; Drug: Trametinib; Biological: Ipilimumab	AL; AZ; CA; CO; CT; IN; MA; MD; MN; NC; NY; PA; TX; WI	NCT03377361
PolyPEPI1018 Vaccine and CDx for the Treatment of Metastatic Colorectal Cancer (OBERTO)	Colorectal Cancer	Biological: PolyPEPI1018 CRC Vaccine	MN	NCT03391232
An Investigational Immunotherapy Study of Nivolumab With Standard of Care Therapy vs Standard of Care Therapy for First-Line Treatment of Colorectal Cancer That Has Spread	Colorectal Cancer	Biological: Nivolumab; Drug: Oxaliplatin; Drug: Leucovorin; Drug: Fluorouracil; Drug: Bevacizumab	AL; CA; CO; CT; FL; IL; IN; MA; MD; MN; NC; NE; NV; NY; OR; PA; SD; TN; TX; VA; WI	NCT03414983
Messenger RNA (mRNA)-Based, Personalized Cancer Vaccine Against Neoantigens Expressed by the Autologous Cancer	Melanoma; Colon Cancer; Gastrointestinal Cancer; Genitourinary Cancer; Hepatocellular Cancer	Biological: NCI-4650, a mRNA-based, Personalized Cancer Vaccine	MD	NCT03480152
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
A Study Evaluating the Efficacy and Safety of Multiple Immunotherapy-Based Treatment Combinations in Patients With Metastatic Colorectal Cancer (Morpheus-CRC)	Colorectal Cancer	Drug: Regorafenib; Drug: Atezolizumab; Drug: Imprime PGG; Drug: Bevacizumab; Drug: Isatuximab	CA; CT; MA; MO; NY	NCT03555149
CAR-T Intraperitoneal Infusions for CEA-Expressing Adenocarcinoma Peritoneal Metastases or Malignant Ascites (IPC)	Peritoneal Carcinomatosis; Peritoneal Metastases; Colorectal Cancer; Gastric Cancer; Breast Cancer; Pancreas Cancer; Carcinoembryonic Antigen	Biological: anti-CEA CAR-T cells	NJ; RI	NCT03682744
A Study to Evaluate the Safety and Tolerability of Immunotherapy Combinations in Participants With Gastrointestinal (GI) Malignancies	GastroEsophageal Cancer; Colorectal Cancer	Drug: AB928; Drug: mFOLFOX	NC	NCT03720678

FALLOPIAN TUBE

Title	Cancer Type	Treatment	Location	NCT Number
PARP-inhibition and CTLA-4 Blockade in BRCA-deficient Ovarian Cancer	Ovarian Cancer; Fallopian Tube Cancer; Peritoneal Neoplasms	Drug: Olaparib; Drug: Tremelimumab	NM	NCT02571725
GL-ONC1 Oncolytic Immunotherapy in Patients With Recurrent Ovarian Cancer	Ovarian Cancer; Peritoneal Carcinomatosis; Fallopian Tube Cancer	Biological: GL-ONC1	FL	NCT02759588
Study of DPX-Survivac Vaccine Therapy and Epacadostat in Patients With Recurrent Ovarian Cancer	Recurrent Epithelial Ovarian Cancer; Recurrent Fallopian Tube Cancer; Recurrent Peritoneal Cancer	Biological: DPX-Survivac; Drug: Cyclophosphamide; Drug: Epacadostat (INCB024360)	CA; NY; OR; PA; TX	NCT02785250
Intraperitoneal Infusion of Autologous Monocytes With Sylatron (Peginterferon Alfa-2b) and Actimmune (Interferon Gamma-1b) in Women With Recurrent or Refractory Ovarian Cancer, Fallopian Tube Cancer or Primary Peritoneal Cancer	Fallopian Tube Cancer; Ovarian Cancer; Primary Peritoneal Cancer	Biological: Autologous Monocytes + ACTIMMUNE + SYLATRON	MD	NCT02948426

GASTROINTESTINAL

Title	Cancer Type	Treatment	Location	NCT Number
Immunotherapy Using Tumor Infiltrating Lymphocytes for Patients With Metastatic Cancer	Metastatic Colorectal Cancer; Metastatic Gastric Cancer; Metastatic Pancreatic Cancer; Metastatic Hepatocellular Carcinoma; Metastatic Cholangiocarcinoma	Biological: Young TIL; Drug: Aldesleukin; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Pembrolizumab	MD	NCT01174121
An Investigational Immuno-therapy Study of Nivolumab or Placebo in Patients With Resected Esophageal or Gastroesophageal Junction Cancer	Advanced Cancer	Drug: Nivolumab; Other: Placebo	CA; CO; DC; FL; IL; MA; MD; MO; NC; NJ; NY; OH; OK; OR; PA; TN; TX; WA; WI	NCT02743494
Administering Peripheral Blood Lymphocytes Transduced With a Murine T-Cell Receptor Recognizing the G12V Variant of Mutated RAS in HLA-A*1101 Patients	Pancreatic Cancer; Gastric Cancer; Gastrointestinal Cancer; Colon Cancer; Rectal Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Biological: anti-KRAS G12V mTCR; Drug: Aldesleukin	MD	NCT03190941
Ability of a Dendritic Cell Vaccine to Immunize Melanoma or Epithelial Cancer Patients Against Defined Mutated Neoantigens Expressed by the Autologous Cancer	Melanoma; Gastrointestinal Cancer; Breast Cancer; Ovarian Cancer; Pancreatic Cancer	Biological: Peptide loaded dendritic cell vaccine	MD	NCT03300843
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459
Administration of Autologous T-Cells Genetically Engineered to Express T-Cell Receptors Reactive Against Mutated Neoantigens in People With Metastatic Cancer	Glioblastoma; Non-Small Cell Lung Cancer; Ovarian Cancer; Breast Cancer; Gastrointestinal/Genitourinary Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin; Biological: Individual Patient TCR-Transduced PBL	MD	NCT03412877
Messenger RNA (mRNA)-Based, Personalized Cancer Vaccine Against Neoantigens Expressed by the Autologous Cancer	Melanoma; Colon Cancer; Gastrointestinal Cancer; Genitourinary Cancer; Hepatocellular Cancer	Biological: NCI-4650, a mRNA-based, Personalized Cancer Vaccine	MD	NCT03480152
An Investigational Study of Immunotherapy Combinations With Chemotherapy in Patients With Gastric or Gastroesophageal Junction (GEJ) Cancers	Gastric Cancer; Cancer of the Stomach; Esophagogastric Junction	Biological: BMS-986213; Biological: Nivolumab; Drug: XELOX; Drug: FOLFOX; Drug: SOX	CA; CO; CT; ND; NJ; NY; SD; TX; WA	NCT03662659
CAR-T Intraperitoneal Infusions for CEA-Expressing Adenocarcinoma Peritoneal Metastases or Malignant Ascites (IPC)	Peritoneal Carcinomatosis; Peritoneal Metastases; Colorectal Cancer; Gastric Cancer; Breast Cancer; Pancreas Cancer; Carcinoembryonic Antigen	Biological: anti-CEA CAR-T cells	NJ; RI	NCT03682744

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HEAD & NECK

Title	Cancer Type	Treatment	Location	NCT Number
A Study of LGK974 in Patients With Malignancies Dependent on Wnt Ligands	Pancreatic Cancer; BRAF Mutant Colorectal Cancer; Melanoma; Triple Negative Breast Cancer; Head and Neck Squamous Cell Cancer; Cervical Squamous Cell Cancer; Esophageal Squamous Cell Cancer; Lung Squamous Cell Cancer	Drug: LGK974; Biological: PDR001	MA; MD; MI; TX	NCT01351103
Immunotherapy With MK-3475 in Surgically Resectable Head and Neck Squamous Cell Carcinoma	Cancer of Head and Neck; Head and Neck Cancer; Neoplasms, Head and Neck; Carcinoma, Squamous Cell of Head and Neck; Squamous Cell Carcinoma of the Head and Neck; Squamous Cell Carcinoma, Head and Neck	Biological: MK-3475; Procedure: Surgery; Radiation: Intensity modulated radiation therapy; Radiation: Image-guided radiation therapy; Drug: Cisplatin	MA; MO	NCT02296684
Safety Study of SEA-CD40 in Cancer Patients	Cancer; Carcinoma; Carcinoma, Non-Small-Cell Lung; Carcinoma, Squamous Cell; Hematologic Malignancies; Hodgkin Disease; Lymphoma; Lymphoma, B-Cell; Lymphoma, Follicular; Lymphoma, Large B-Cell, Diffuse; Melanoma; Neoplasms; Neoplasm Metastasis; Neoplasms, Head and Neck; Neoplasms, Squamous Cell; Non-Small Cell Lung Cancer; Non-Small Cell Lung Cancer Metastatic; Non-small Cell Carcinoma; Squamous Cell Cancer; Squamous Cell Carcinoma; Squamous Cell Carcinoma of the Head and Neck; Squamous Cell Neoplasm; Lymphoma, Non-Hodgkin	Drug: IV SEA-CD40 monotherapy regimen; Drug: Pembrolizumab; Drug: SC SEA-CD40 monotherapy regimen	AL; CA; IL; MI; MN; NC; NM; NV; NY; OH; OR; TX; UT; WA	NCT02376699
In Situ, Autologous Therapeutic Vaccination Against Solid Cancers With Intratumoral Hiltonol®	Melanoma; Head and Neck Cancer; Sarcoma; Non-Melanoma Skin Cancers	Biological: Hiltonol	GA; MD; MO; NY; PA; SC	NCT02423863
A Trial of Intratumoral Injections of SD-101 in Combination With Pembrolizumab in Patients With Metastatic Melanoma or Recurrent or Metastatic Head and Neck Squamous Cell Carcinoma	Metastatic Melanoma; Head Neck Cancer	Drug: SD-101; Biological: Pembrolizumab	AL; AZ; CA; CO; FL; GA; IA; IL; IN; MI; MN; NC; NE; NJ; NY; OH; OK; OR; PA; SC; TX; UT; VA; WV	NCT02521870
GR-MD-02 Plus Pembrolizumab in Melanoma, Non-small Cell Lung Cancer, and Squamous Cell Head and Neck Cancer Patients	Melanoma; Non-Small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck	Drug: GR-MD-02; Drug: Pembrolizumab	OR	NCT02575404
Multicentre, Randomized, Open-Label, Phase III Clinical Trial for Advanced Nasopharyngeal Carcinoma Patients	Nasopharyngeal Cancer	Biological: autologous EBV specific Cytotoxic T Lymphocytes; Drug: combination IV gemcitabine and IV carboplatin (AUC2)	CA; MA; TX	NCT02578641
Combination Margetuximab and Pembrolizumab for Advanced, Metastatic HER2(+) Gastric or Gastroesophageal Junction Cancer	Gastric Cancer; Stomach Cancer; Esophageal Cancer	Drug: margetuximab in combination with pembrolizumab	CT; DC; IL; MA; MD; MI; MO; NC; PA; TN; WA	NCT02689284
An Investigational Immuno-therapy Study of Nivolumab or Placebo in Patients With Resected Esophageal or Gastroesophageal Junction Cancer	Advanced Cancer	Drug: Nivolumab; Other: Placebo	CA; CO; DC; FL; IL; MA; MD; MO; NC; NJ; NY; OH; OK; OR; PA; TN; TX; WA; WI	NCT02743494
Ipilimumab for Head and Neck Cancer Patients	Squamous Cell Carcinoma of the Head and Neck	Drug: Intratumoral Ipilimumab	OR	NCT02812524
E7 TCR T Cells With or Without PD-1 Blockade for Human Papillomavirus-Associated Cancers	Cervical Cancer; Vaginal Cancer; Anal Cancer; Penile Cancer; Oropharyngeal Cancer	Biological: E7 TCR Transduced PBL cells; Drug: pembrolizumab; Drug: aldesleukin; Drug: fludarabine; Drug: cyclophosphamide	MD	NCT02858310
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
Study of LN-145 Autologous Tumor Infiltrating Lymphocytes in the Treatment of Squamous Cell Carcinoma of the Head & Neck	Squamous Cell Carcinoma of the Head and Neck	Biological: LN-145	AL; CA; CO; FL; IL; KY; LA; MI; NJ; OR; PA; WA; WI	NCT03083873
Targeting PD-1 Therapy Resistance With Focused High or High and Low Dose Radiation in SCCHN	Head and Neck Cancer	Drug: Pembrolizumab; Radiation: Radiation	MA	NCT03085719
Immunotherapy Study of Evofosfamide in Combination With Ipilimumab	Pancreatic Cancer; Melanoma; Squamous Cell Carcinoma of the Head and Neck; Prostate Cancer	Drug: Evofosfamide; Drug: Ipilimumab	TX	NCT03098160
Immunotherapy and Stereotactic Body Radiotherapy (SBRT) for Metastatic Anaplastic Thyroid Cancer	Metastatic Anaplastic Thyroid Cancer	Drug: durvalumab; Drug: tremelimumab; Radiation: Stereotactic Body Radiotherapy (SBRT)	NJ; NY	NCT03122496
Safety and Efficacy of MEDI0457 and Durvalumab in Patients With HPV Associated Recurrent/Metastatic Head and Neck Cancer	Head and Neck Cancer; Human Papilloma Virus	Drug: MEDI0457; Device: CELLECTRA®5P device (CELLECTRA 2000); Drug: Durvalumab	NY; PA	NCT03162224
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
RAI Plus Immunotherapy for Recurrent/Metastatic Thyroid Cancers	Thyroid Cancer	Drug: Durvalumab (Medi4736); Radiation: Radioiodine (RAI)	NY	NCT03215095
TCR-engineered T Cells in Solid Tumors With Emphasis on NSCLC and HNSCC (ACTengine)	Solid Tumor; Cancer; Head and Neck Squamous Cell Carcinoma; Non-small Cell Lung Cancer	Biological: IMA201 Product; Diagnostic Test: IMA_Detect; Diagnostic Test: ACT-HLA	TX	NCT03247309
Neoadjuvant Immunoradiotherapy in Head & Neck Cancer	Head and Neck Cancer; Head and Neck Squamous Cell Carcinoma	Drug: Nivolumab; Procedure: Surgical Resection; Radiation: Radiation (Cohort 1); Radiation: Radiation (Cohort 2)	OR	NCT03247712
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
Priming Immunotherapy in Advanced Disease With Radiation	Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck	Drug: Immune checkpoint inhibitor; Radiation: Radiation Therapy	KY	NCT03313804
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459

HEAD & NECK (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
EPR Tumor Oximetry With CE India Ink	Neoplasms, Malignant; Breast Neoplasm; Carcinoma, Basal Cell; Carcinoma, Squamous Cell; Melanoma; Skin Neoplasm; Head and Neck Neoplasms	Device: Carlo Erba Ink Injection; Other: EPR Oximetry Measurement	NH	NCT03321903
Study of MEDI0562 Prior to Surgical Resection in Head and Neck Squamous Cell Carcinoma (HNSCC) or Melanoma	Head and Neck Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Cell Cancer, Squamous; Carcinoma, Squamous Cell	Drug: MEDI0562	OR	NCT03336606
Pembrolizumab With Chemotherapy for Poorly Chemo-responsive Thyroid and Salivary Gland Tumors	Thyroid Cancer; Salivary Gland Cancer	Drug: Pembrolizumab; Drug: Docetaxel	IL	NCT03360890
Epacadostat and Pembrolizumab in Patients With Head and Neck Cancer That Have Failed Prior Immunotherapy	Head and Neck Squamous Cell Carcinoma; Head and Neck Cancer	Drug: Pembrolizumab; Drug: Epacadostat	IL	NCT03463161
Immunotherapy in Combination With Chemoradiation in Patients With Advanced Solid Tumors	Carcinoma, Squamous Cell of Head and Neck; Carcinoma, Non-Small-Cell Lung; Small Cell Lung Carcinoma	Drug: Durvalumab; Drug: Tremelimumab; Drug: Cisplatin (dose level 4); Drug: Cisplatin (dose level 3); Drug: Carboplatin (dose level 1); Drug: Carboplatin (dose level 2); Drug: Etoposide (dose level 1); Drug: Etoposide (dose level 2); Drug: Paclitaxel; Drug: Pemetrexed; Radiation: External beam radiation (dose level 1); Radiation: External beam radiation (dose level 2); Radiation: External beam radiation (hyperfractionated); Drug: Cisplatin (dose level 1); Drug: Cisplatin (dose level 2); Radiation: External beam radiation (standard)	AZ; CO; MO; NJ	NCT03509012
Study of Proton SBRT and Immunotherapy for Recurrent/Progressive Locoregional or Metastatic Head and Neck Cancer	Head and Neck Cancer	Radiation: Proton Stereotactic Body Radiation Therapy (SBRT) (5 fractions; 3500-4500 cGy); Radiation: Proton Stereotactic Body Radiation Therapy (SBRT) (3-5 fractions; various dose and fractionation regimens depending on treatment site).; Drug: Nivolumab 3 mg/kg IV q2 weeks; Radiation: Proton or Photon SBRT (3-5 fractions; various dose and fractionation regimens depending on treatment site).	AZ; MN	NCT03539198
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
Safety, Tolerability, Immunogenicity, and Antitumor Activity of GEN-009 Adjuvanted Vaccine	Cutaneous Melanoma; Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck; Urothelial Carcinoma; Renal Cell Carcinoma	Biological: GEN-009 Adjuvanted Vaccine; Drug: Nivolumab	AZ; CA; CO; NY; PA; TN	NCT03633110
Study of Autologous Tumor Infiltrating Lymphocytes in Patients With Solid Tumors	Metastatic Melanoma; Squamous Cell Carcinoma of the Head and Neck; Non-small Cell Lung Cancer	Biological: Lifileucel; Biological: LN-145; Drug: Pembrolizumab	FL; KY	NCT03645928
A Safety and Tolerability Study of NC318 in Subjects With Advanced or Metastatic Solid Tumors	Advanced or Metastatic Solid Tumors; Head and Neck Squamous Cell Carcinoma; Non-Small Cell Lung Cancer; Ovarian Cancer	Drug: NC318	CA; CT; NJ; NY; TX	NCT03665285
A Study of Several Radiation Doses for Patients With Progression on Immunotherapy/Checkpoint Inhibitors	Metastatic Cancer; Melanoma Cancer; Lung Cancer; Bladder Cancer; Renal Cancer; Head/Neck Cancers	Radiation: Stereotactic Body Radiotherapy; Biological: Ipilimumab, Nivolumab, Pembrolizumab or Atezolizumab	NJ; NY	NCT03693014
A Study to Evaluate the Safety and Tolerability of Immunotherapy Combinations in Participants With Gastrointestinal (GI) Malignancies	GastroEsophageal Cancer; Colorectal Cancer	Drug: AB928; Drug: mFOLFOX	NC	NCT03720678

KIDNEY

Title	Cancer Type	Treatment	Location	NCT Number
T Cell Receptor Immunotherapy Targeting MAGE-A3 for Patients With Metastatic Cancer Who Are HLA-DP0401 Positive	Cervical Cancer; Renal Cancer; Urothelial Cancer; Melanoma; Breast Cancer	Biological: Anti-MAGE-A3-DP4 TCR; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT02111850
Phase I/Ib Study of Pembrolizumab With Vorinostat for Patients With Advanced Renal or Urothelial Cell Carcinoma	Renal Cell Carcinoma; Urinary Bladder Neoplasms	Drug: Pembrolizumab; Drug: Vorinostat	IN; MD	NCT02619253
Image Guided Hypofractionated Radiation Therapy, Nelfinavir Mesylate, Pembrolizumab, Nivolumab and Atezolizumab in Treating Patients With Advanced Melanoma, Lung, or Kidney Cancer	Metastatic Renal Cell Cancer; Recurrent Melanoma; Recurrent Non-Small Cell Lung Carcinoma; Recurrent Renal Cell Carcinoma; Stage IV Cutaneous Melanoma AJCC v6 and v7; Stage IV Non-Small Cell Lung Cancer AJCC v7; Stage IV Renal Cell Cancer AJCC v7	Drug: Atezolizumab; Radiation: Hypofractionated Radiation Therapy; Other: Laboratory Biomarker Analysis; Drug: Nelfinavir Mesylate; Biological: Nivolumab; Biological: Pembrolizumab	WA	NCT03050060
A Phase II Randomized Trial of Immunotherapy Plus Radiotherapy in Metastatic Genitourinary Cancers	Metastatic Renal Cell Carcinoma; Metastatic Urothelial Carcinoma	Drug: Nivolumab; Drug: Atezolizumab; Radiation: Radiation & immunotherapy	NY	NCT03115801
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459
HERV-E TCR Transduced Autologous T Cells in People With Metastatic Clear Cell Renal Cell Carcinoma	Kidney Cancer	Biological: cell infusion	MD	NCT03354390

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KIDNEY (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
Safety, Tolerability, Immunogenicity, and Antitumor Activity of GEN-009 Adjuvanted Vaccine	Cutaneous Melanoma; Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck; Urothelial Carcinoma; Renal Cell Carcinoma	Biological: GEN-009 Adjuvanted Vaccine; Drug: Nivolumab	AZ; CA; CO; NY; PA; TN	NCT03633110
A Study of Several Radiation Doses for Patients With Progression on Immunotherapy/Checkpoint Inhibitors	Metastatic Cancer; Melanoma Cancer; Lung Cancer; Bladder Cancer; Renal Cancer; Head/Neck Cancers	Radiation: Stereotactic Body Radiotherapy; Biological: Ipilimumab, Nivolumab, Pembrolizumab or Atezolizumab	NJ; NY	NCT03693014

LEUKEMIA/LYMPHOMA/MULTIPLE MYELOMA

Title	Cancer Type	Treatment	Location	NCT Number
An Investigational Immuno-Therapy Study to Determine the Safety and Effectiveness of Nivolumab and Daratumumab in Patients With Multiple Myeloma	Non-Hodgkin's Lymphoma; Hodgkin Lymphoma; Multiple Myeloma	Biological: Nivolumab; Biological: Ipilimumab; Biological: Lirilumab; Biological: Daratumumab; Drug: Pomalidomide; Drug: Dexamethasone	AR; CA; CO; CT; FL; GA; IL; IN; KS; MA; MD; MI; MN; MO; NE; NJ; NY; OH; OK; OR; PA; TN; UT; WI	NCT01592370
Laboratory-Treated T Cells in Treating Patients With High-Risk Relapsed Acute Myeloid Leukemia, Myelodysplastic Syndrome, or Chronic Myelogenous Leukemia Previously Treated With Donor Stem Cell Transplant	Recurrent Adult Acute Myeloid Leukemia; Recurrent Childhood Acute Myeloid Leukemia; Secondary Acute Myeloid Leukemia; Therapy-Related Acute Myeloid Leukemia	Biological: Aldesleukin; Drug: Cyclophosphamide; Drug: Fludarabine Phosphate; Other: Laboratory Biomarker Analysis; Biological: WT1-Sensitized Allogeneic T-Lymphocytes	WA	NCT01640301
Laboratory Treated T Cells in Treating Patients With Relapsed or Refractory Chronic Lymphocytic Leukemia, Non-Hodgkin Lymphoma, or Acute Lymphoblastic Leukemia	CD19-Positive Neoplastic Cells Present; Recurrent Adult Acute Lymphoblastic Leukemia; Recurrent Chronic Lymphocytic Leukemia; Recurrent Diffuse Large B-Cell Lymphoma; Recurrent Mantle Cell Lymphoma; Recurrent Non-Hodgkin Lymphoma; Recurrent Small Lymphocytic Lymphoma; Refractory Acute Lymphoblastic Leukemia; Refractory Chronic Lymphocytic Leukemia; Refractory Diffuse Large B-Cell Lymphoma; Refractory Mantle Cell Lymphoma; Refractory Non-Hodgkin Lymphoma; Refractory Small Lymphocytic Lymphoma	Biological: Autologous Anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing T Lymphocytes; Other: Laboratory Biomarker Analysis	WA	NCT01865617
Cellular Immunotherapy Treatment Antigen-Directed for EBV Lymphoma	Lymphoma, Extranodal NK-T-Cell; EBV	Biological: CMD-003	CA; DC; MA; MN; NJ; NY; OH; TX	NCT01948180
A Pediatric and Young Adult Trial of Genetically Modified T Cells Directed Against CD19 for Relapsed/Refractory CD19+ Leukemia	CD19+ Acute Leukemia	Biological: Patient Derived CD19 specific CAR T cells also expressing an EGFRt	CA; WA	NCT02028455
Immunotherapy Following Reduced Intensity Conditioning and Allogeneic Stem Cell Transplant for Poor Risk CD30+ Hodgkin Lymphoma Patients	Hodgkin Lymphoma	Drug: Brentuximab Vedotin; Procedure: Allogeneic Stem Cell Transplantation; Drug: Reduced Intensity Conditioning	NY	NCT02098512
Cellular Immunotherapy in Treating Patients With High-Risk Acute Lymphoblastic Leukemia	B-cell Adult Acute Lymphoblastic Leukemia; Recurrent Adult Acute Lymphoblastic Leukemia; Minimal Residual Disease	Biological: Chimeric Antigen Receptor T-Cell Therapy; Other: laboratory biomarker analysis	CA	NCT02146924
Cellular Immunotherapy Following Chemotherapy in Treating Patients With Recurrent Non-Hodgkin Lymphomas, Chronic Lymphocytic Leukemia or B-Cell Prolymphocytic Leukemia	Post-transplant Lymphoproliferative Disorder; B-Cell Prolymphocytic Leukemia; Recurrent Adult Burkitt Lymphoma; Recurrent Adult Diffuse Large Cell Lymphoma; Recurrent Grade 1 Follicular Lymphoma; Recurrent Grade 2 Follicular Lymphoma; Recurrent Grade 3 Follicular Lymphoma; Recurrent Mantle Cell Lymphoma; Recurrent Marginal Zone Lymphoma; Recurrent Small Lymphocytic Lymphoma; Refractory Chronic Lymphocytic Leukemia; Refractory Hairy Cell Leukemia; B-Cell Lymphoma, Unclassifiable, With Features Intermediate Between Diffuse Large B-Cell Lymphoma and Burkitt Lymphoma; B-Cell Lymphoma, Unclassifiable, With Features Intermediate Between Diffuse Large B-Cell Lymphoma and Classical Hodgkin Lymphoma; Recurrent Lymphoplasmacytic Lymphoma	Drug: cyclophosphamide; Other: laboratory biomarker analysis; Drug: Bendamustine Hydrochloride; Drug: Etoposide; Drug: Fludarabine Phosphate; Biological: Autologous CD19CAR-CD28-CD3zeta-EGFRt-expressing Tn/mem-enriched T-lymphocytes	CA	NCT02153580
Genetically Modified T-cell Immunotherapy in Treating Patients With Relapsed/Refractory Acute Myeloid Leukemia and Persistent/Recurrent Blastic Plasmacytoid Dendritic Cell Neoplasm	Adult Acute Myeloid Leukemia in Remission; Donor; Early Relapse of Acute Myeloid Leukemia; Late Relapse of Acute Myeloid Leukemia; Recurrent Adult Acute Myeloid Leukemia; Secondary Acute Myeloid Leukemia; Blastic Plasmacytoid Dendritic Cell Neoplasm	Drug: cyclophosphamide; Biological: Autologous CD123CAR-CD28-CD3zeta-EGFRt-expressing T Lymphocytes; Other: laboratory biomarker analysis; Biological: Allogeneic CD123CAR-CD28-CD3zeta-EGFRt-expressing T-lymphocytes; Drug: Fludarabine Phosphate	CA	NCT02159495
Immunochemotherapy and AlloSCT in Patients With High Risk CD33+ AML/MDS	Acute Myelogenous Leukemia; Myelodysplastic Syndrome	Drug: Gemtuzumab Ozogamicin	NY; WI	NCT02221310
Anti-CD22 Chimeric Receptor T Cells in Pediatric and Young Adults With Recurrent or Refractory CD22-expressing B Cell Malignancies	Follicular Lymphoma; ALL; NHL; Large Cell Lymphoma	Biological: CD22-CAR	MD	NCT02315612
Rituximab With or Without Yttrium Y-90 Ibritumomab Tiuxetan in Treating Patients With Untreated Follicular Lymphoma	Stage I Grade 1 Follicular Lymphoma; Stage I Grade 2 Follicular Lymphoma; Stage II Grade 1 Contiguous Follicular Lymphoma; Stage II Grade 1 Non-Contiguous Follicular Lymphoma; Stage II Grade 2 Contiguous Follicular Lymphoma; Stage II Grade 2 Non-Contiguous Follicular Lymphoma; Stage III Grade 1 Follicular Lymphoma; Stage III Grade 2 Follicular Lymphoma; Stage IV Grade 1 Follicular Lymphoma; Stage IV Grade 2 Follicular Lymphoma	Other: Laboratory Biomarker Analysis; Other: Quality-of-Life Assessment; Biological: Rituximab; Radiation: Yttrium Y-90 Ibritumomab Tiuxetan	IA; MN	NCT02320292
PK, PD, Safety, Tolerability of Multiple Dose Regimens of MT-3724 for the Treatment of Patients With Relapsed Non-Hodgkin's B-Cell Lymphoma and B-Cell Chronic Lymphocytic Leukemia	Non-Hodgkin's B-cell Lymphoma; Leukemia, Lymphocytic, Chronic, B-Cell; Small Lymphocytic Leukemia	Drug: MT-3724	AZ; NC; NY; TX	NCT02361346
Safety Study of SEA-CD40 in Cancer Patients	Cancer; Carcinoma; Carcinoma, Non-Small-Cell Lung; Carcinoma, Squamous Cell; Hematologic Malignancies; Hodgkin Disease; Lymphoma; Lymphoma, B-Cell; Lymphoma, Follicular; Lymphoma, Large B-Cell, Diffuse; Melanoma; Neoplasms; Neoplasm Metastasis; Neoplasms, Head and Neck; Neoplasms, Squamous Cell; Non-Small Cell Lung Cancer; Non-Small Cell Lung Cancer Metastatic; Non-small Cell Carcinoma; Squamous Cell Cancer; Squamous Cell Carcinoma; Squamous Cell Carcinoma of the Head and Neck; Squamous Cell Neoplasm; Lymphoma, Non-Hodgkin	Drug: IV SEA-CD40 monotherapy regimen; Drug: Pembrolizumab; Drug: SC SEA-CD40 monotherapy regimen	AL; CA; IL; MI; MN; NC; NM; NV; NY; OH; OR; TX; UT; WA	NCT02376699

LEUKEMIA/LYMPHOMA/MULTIPLE MYELOMA (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
QUILT-3.002: ALT-803 in Patients With Relapse/Refractory iNHL in Conjunction With Rituximab	Relapsed/Refractory Indolent B Cell Non-Hodgkin Lymphoma	Biological: Rituximab; Biological: ALT-803	MN; MO; OH; PA; SC	NCT02384954
Pilot Project for Creation of the Diffuse Large B-cell Lymphoma (DLBCL) Response Prediction Model	Lymphoma	Drug: 18F-fluorodeoxyglucose; Procedure: FDG PET/CT Imaging; Procedure: Blood Draws	TX	NCT02405078
IPA Targeted Adoptive Immunotherapy vs Adult Haplo-identical Cell Infusion During Induction of High Risk Leukemia	Acute Myeloid Leukemia; Myelodysplastic Syndrome	Biological: haplo-identical cells (donor); Biological: umbilical cord blood unit (CBU)	NY	NCT02508324
A Phase 1 Study of AMG 330 in Subjects With Relapsed/Refractory Acute Myeloid Leukemia	Relapsed/Refractory AML	Drug: AMG 330	CA; TX; WA	NCT02520427
MEDI4736 Alone and in Combination With Tremelimumab or AZD9150 in Adult Subjects With Relapsed/Refractory DLBCL (D4190C00023)	Diffuse Large B-Cell Lymphoma	Drug: MEDI4736; Drug: tremelimumab; Drug: AZD9150	CA; IL; MD; NC; NM; SC; TX; WI	NCT02549651
An Investigational Immuno-therapy Safety and Effectiveness Study of Nivolumab in Combination With Brentuximab Vedotin to Treat Non-Hodgkin Lymphomas	Non-Hodgkin's Disease	Biological: Nivolumab; Drug: Brentuximab Vedotin	AL; FL; GA; IL; MN; MO; NC; NJ; NY; OH; OK; OR; SC; WA	NCT02581631
Allogeneic Stem Cell Transplantation Relapsed Hematological Malignancy: Early GVHD Prophylaxis	Hodgkin's Lymphoma; Lymphoid Leukemia; Lymphoma; Leukemia; Myeloma; Acute Lymphocytic Leukemia; Non Hodgkin Lymphoma; Chronic Lymphocytic Leukemia; Multiple Myeloma; Chronic Myelogenous Leukemia; Myelodysplastic Syndromes; Recurrent Acute Myeloid Leukemia, Adult; Recurrent Hodgkin Lymphoma; Recurrent Non-Hodgkin Lymphoma; Recurrent Plasma Cell Myeloma; Recurrent Chronic Lymphocytic Leukemia; Recurrent Chronic Myelogenous Leukemia; Acute Myelogenous Leukemia	Drug: mycophenolate mofetil; Biological: Sargramostim; Biological: Filgrastim	VA	NCT02593123
Study of Copanlisib in Combination With Standard Immunochemotherapy in Relapsed Indolent Non-Hodgkin's Lymphoma (iNHL)	Lymphoma, Non-Hodgkin	Drug: Copanlisib (BAY 80-6946); Drug: Placebo; Drug: Rituximab; Drug: Cyclophosphamide; Drug: Doxorubicin; Drug: Vincristine; Drug: Bendamustine; Drug: Prednisone	AK; CA; CO; CT; IL; IN; MA; MI; MN; MS; NE; NJ; NY; OH; PA; SD; WA	NCT02626455
Genetically Modified T-Cell Therapy in Treating Patients With Advanced ROR1+ Malignancies	Estrogen Receptor Negative; HER2/Neu Negative; Progesterone Receptor Negative; Recurrent Adult Acute Lymphoblastic Leukemia; Recurrent Mantle Cell Lymphoma; Refractory Chronic Lymphocytic Leukemia; Stage IV Breast Cancer; Stage IV Non-Small Cell Lung Cancer AJCC v7; Triple-Negative Breast Carcinoma	Other: Laboratory Biomarker Analysis; Biological: ROR1 CAR-specific Autologous T-Lymphocytes	WA	NCT02706392
JCAR014 and Durvalumab in Treating Patients With Relapsed or Refractory B-cell Non-Hodgkin Lymphoma	BCL2 Gene Rearrangement; BCL6 Gene Rearrangement; CD19 Positive; Diffuse Large B-Cell Lymphoma, Not Otherwise Specified; High-Grade B-Cell Lymphoma With MYC, BCL2, and BCL6 Rearrangements; MYC Gene Rearrangement; Recurrent Diffuse Large B-Cell Lymphoma; Recurrent Mediastinal (Thymic) Large B-Cell Cell Lymphoma; Refractory Diffuse Large B-Cell Lymphoma; Refractory Mediastinal (Thymic) Large B-Cell Cell Lymphoma	Biological: Autologous Anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing CD4+/CD8+ Central Memory T-lymphocytes JCAR014; Drug: Cyclophosphamide; Biological: Durvalumab; Drug: Fludarabine Phosphate; Other: Laboratory Biomarker Analysis; Other: Pharmacological Study	WA	NCT02706405
Cellular Immunotherapy for Viral Induced Cancer - EBV Positive Lymphomas	Hodgkin Lymphoma; Lymphoma, Large B-Cell, Diffuse; Post-transplant Lymphoproliferative Disorder	Biological: CMD-003	CA; DC; MA; MD; MN; NY; PA; TX	NCT02763254
Durvalumab in Pediatric and Adolescent Patients	Solid Tumor; Lymphoma; Central Nervous System Tumors	Drug: Durvalumab; MEDI4736	CA	NCT02793466
A Randomized, Double-blind, Multi-center, Multi-national Trial to Evaluate the Efficacy, Safety, and Immunogenicity of SAIT101 Versus Rituximab as a First-line Immunotherapy Treatment in Patients With Low Tumor Burden Follicular Lymphoma	Lymphoma, Follicular	Biological: SAIT101; Biological: MabThera®	CA	NCT02809053
CD30 CAR T Cells, Relapsed CD30 Expressing Lymphoma (RELY-30)	Hodgkin's Lymphoma; Non-Hodgkin Lymphoma	Genetic: CAR T Cells; Drug: Cyclophosphamide; Drug: Fludarabine	TX	NCT02917083
A Dose Escalation Phase I Study to Assess the Safety and Clinical Activity of Multiple Cancer Indications	Colorectal Cancer (CRC); Ovarian Cancer (Epithelial and Fallopian Tube); Urothelial Carcinoma; Triple-negative Breast Cancer (TNBC); Pancreatic Cancer; Acute Myeloid Leukemia/Myelodysplastic Syndrome; Multiple Myeloma (MM)	Biological: NKR-2 cells	FL; NY; PA	NCT03018405
Umbilical Cord Blood NK Cells, Rituximab, High-Dose Chemotherapy, and Stem Cell Transplant in Treating Participants With Recurrent or Refractory B-Cell Non-Hodgkin's Lymphoma	Mantle Cell Lymphoma; Recurrent Diffuse Large B-Cell Lymphoma; Recurrent Follicular Lymphoma; Recurrent Indolent Adult Non-Hodgkin Lymphoma; Refractory Diffuse Large B-Cell Lymphoma; Refractory Follicular Lymphoma; Refractory Indolent Adult Non-Hodgkin Lymphoma	Procedure: Autologous Hematopoietic Stem Cell Transplantation; Drug: Carmustine; Biological: Cord Blood-derived Expanded Allogeneic Natural Killer Cells; Drug: Cytarabine; Drug: Etoposide; Biological: Filgrastim; Drug: Lenalidomide; Drug: Melphalan; Biological: Rituximab	TX	NCT03019640
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
Pilot Study of T-APCs Following CAR T Cell Immunotherapy for CD19+ Leukemia	CD 19+ Acute Leukemia	Biological: T-cell Antigen Presenting Cells expressing truncated CD19 (T-APC)	WA	NCT03186118
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
A Phase 1 Study of CD22-CAR TCell Immunotherapy for CD22+ Leukemia and Lymphoma	Leukemia	Biological: Patient-derived CD22-specific CAR T-cells also expressing an EGFRt	WA	NCT03244306

LEUKEMIA/LYMPHOMA/MULTIPLE MYELOMA (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
A Phase I/II Study to Evaluate the Safety of Cellular Immunotherapy Using Autologous T Cells Engineered to Express a CD20-Specific Chimeric Antigen Receptor for Patients With Relapsed or Refractory B Cell Non-Hodgkin Lymphomas	CD20 Positive; Recurrent B-Cell Non-Hodgkin Lymphoma; Recurrent Chronic Lymphocytic Leukemia; Recurrent Diffuse Large B-Cell Lymphoma; Recurrent Follicular Lymphoma; Recurrent Lymphoplasmacytic Lymphoma; Recurrent Mantle Cell Lymphoma; Recurrent Marginal Zone Lymphoma; Refractory B-Cell Non-Hodgkin Lymphoma; Refractory Diffuse Large B-Cell Lymphoma; Refractory Follicular Lymphoma; Refractory Lymphoplasmacytic Lymphoma; Refractory Mantle Cell Lymphoma; Refractory Transformed Indolent Non-Hodgkin Lymphoma	Biological: Chimeric Antigen Receptor T-Cell Therapy; Drug: Cyclophosphamide; Drug: Fludarabine; Other: Laboratory Biomarker Analysis; Procedure: Leukapheresis	WA	NCT03277729
A Phase 1 Study of AMG 701 in Subjects With Multiple Myeloma	Relapsed/Refractory Multiple Myeloma	Drug: AMG 701	AR; AZ; FL; GA; IL; MN; MO; NY; TX	NCT03287908
HA-1 T TCR T Cell Immunotherapy for the Treating of Patients With Relapsed or Refractory Acute Leukemia After Donor Stem Cell Transplant	HLA-A*0201 HA-1 Positive Cells Present; Minimal Residual Disease; Recurrent Acute Biphenotypic Leukemia; Recurrent Acute Undifferentiated Leukemia; Recurrent Adult Acute Lymphoblastic Leukemia; Recurrent Adult Acute Myeloid Leukemia; Recurrent Childhood Acute Lymphoblastic Leukemia; Recurrent Childhood Acute Myeloid Leukemia; Refractory Acute Myeloid Leukemia; Refractory Adult Acute Lymphoblastic Leukemia; Refractory Childhood Acute Lymphoblastic Leukemia	Biological: CD8+ and CD4+ Donor Memory T-cells-expressing HA1-Specific TCR; Drug: Fludarabine Phosphate; Other: Laboratory Biomarker Analysis	WA	NCT03326921
A Feasibility and Safety Study of Dual Specificity CD19 and CD22 CAR-T Cell Immunotherapy for CD19+CD22+ Leukemia and Lymphoma	Leukemia; Lymphoma	Biological: Patient-derived CD19- and CD22 specific CAR	WA	NCT03330691
Study Evaluating Safety and Efficacy of JCAR017 in Subjects With Relapsed or Refractory Chronic Lymphocytic Leukemia (CLL) or Small Lymphocytic Lymphoma (SLL)	Leukemia, Lymphocytic, Chronic, B-Cell; Lymphoma, Small Lymphocytic	Biological: JCAR017 (lisocabtagene maraleucel); Biological: JCAR017 (lisocabtagene maraleucel) + ibrutinib; Drug: Standard of care	CA; IL; MA; PA; TX; UT	NCT03331198
Immunotherapy With BCMA CAR-T Cells in Treating Patients With BCMA Positive Relapsed or Refractory Multiple Myeloma	Recurrent Plasma Cell Myeloma; Refractory Plasma Cell Myeloma; TNFRSF17 Positive	Biological: Autologous Anti-BCMA-CAR-expressing CD4+/CD8+ T-lymphocytes FCARH143; Drug: Cyclophosphamide; Drug: Fludarabine; Other: Laboratory Biomarker Analysis; Procedure: Leukapheresis	WA	NCT03338972
Rituximab, Bendamustine and Melphalan Chemo-immunotherapy Followed by Reinfusion of One's Own Stem Cell for Treatment of B-cell Lymphoma in Elderly Patients	Lymphoma	Drug: rituximab; Drug: bendamustine; Drug: melphalan; Procedure: Autologous Stem Cell Transplantation (ASCT)	NY	NCT03352765
Pfizer Immunotherapy Combinations for Acute Myeloid Leukemia (AML) Multi-Arm Study 1	Acute Myeloid Leukemia	Drug: PF-04518600; Drug: Avelumab; Drug: Azacitidine; Drug: Utomilumab; Drug: Gemtuzumab Ozogamicin; Drug: Glasdegib	TX	NCT03390296
Study Evaluating the Safety and Efficacy of JCARH125 in Subjects With Relapsed and/or Refractory Multiple Myeloma	Multiple Myeloma	Biological: JCARH125	AL; CA; GA; IL; NJ; NY; WA	NCT03430011
Study Evaluating AMG 424 in Subjects With Multiple Myeloma	Relapsed/ Refractory Multiple Myeloma	Drug: AMG 424	NC	NCT03445663
CD19/CD22 Chimeric Antigen Receptor (CAR) T Cells in Children and Young Adults With Recurrent or Refractory CD19/CD22-expressing B Cell Malignancies	Acute Lymphoid Leukemia; B-Cell Leukemia; Leukemia, Lymphocytic, B Cell; B-Cell Lymphoma; Lymphoma, Non-Hodgkin	Biological: CD19/CD22 CAR T-Cells; Drug: Fludarabine; Drug: Cyclophosphamide	MD	NCT03448393
Lisocabtagene Maraleucel (JCAR017) as Second-Line Therapy (TRANSCEND-NHL-006)	Lymphoma, Non-Hodgkin; Lymphoma, Nonhodgkin; Lymphoma, B-Cell; Lymphoma, Large B-Cell, Diffuse	Biological: lisocabtagene maraleucel	OR; PA	NCT03483103
A Study of Carfilzomib, Lenalidomide, Dexamethasone and Daratumumab for Patients With Relapsed/Refractory Myeloma With Salvage Autologous Hematopoietic Cell Transplantation	Multiple Myeloma	Drug: Carfilzomib; Drug: Lenalidomide; Drug: Dexamethasone; Drug: Daratumumab; Procedure: autologous hematopoietic cell transplantation	NJ; NY	NCT03556332
A Safety Study of SEA-BCMA in Patients With Multiple Myeloma	Multiple Myeloma	Drug: SEA-BCMA	FL; MO	NCT03582033
T Cells Expressing a Novel Fully-Human Anti-BCMA CAR for Treating Multiple Myeloma	Myeloma-Multiple; Myeloma, Plasma-Cell	Drug: Cyclophosphamide; Drug: Fludarabine; Biological: Anti-BCMA CAR T cells	MD	NCT03602612
Rituximab + Immunotherapy in Follicular Lymphoma	Follicular Lymphoma	Drug: Rituximab; Drug: Utomilumab; Drug: Avelumab; Drug: PF04518600	MA	NCT03636503

LIVER

Title	Cancer Type	Treatment	Location	NCT Number
Immunotherapy Using Tumor Infiltrating Lymphocytes for Patients With Metastatic Cancer	Metastatic Colorectal Cancer; Metastatic Gastric Cancer; Metastatic Pancreatic Cancer; Metastatic Hepatocellular Carcinoma; Metastatic Cholangiocarcinoma	Biological: Young TIL; Drug: Aldesleukin; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Pembrolizumab	MD	NCT01174121
T Cell Receptor Immunotherapy Targeting NY-ESO-1 for Patients With NY-ESO-1 Expressing Cancer	Melanoma; Meningioma; Breast Cancer; Non-Small Cell Lung Cancer; Hepatocellular Cancer	Biological: Anti-NY ESO-1 mTCR PBL; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT01967823
A Study of MEDI4736 With Tremelimumab, MEDI4736 or Tremelimumab Monotherapy in Unresectable Hepatocellular Carcinoma	Hepatocellular Carcinoma	Biological: MEDI4736 + tremelimumab; Biological: MEDI4736; Biological: Tremelimumab	AZ; CA; CT; FL; IN; MA; NC; NY; OR; PA; TN; TX; WA	NCT02519348
Hepatocellular Carcinoma Study Comparing Vaccinia Virus Based Immunotherapy Plus Sorafenib vs Sorafenib Alone	Hepatocellular Carcinoma (HCC)	Biological: Pexastimogene Devacirepvec (Pexa Vec); Drug: Sorafenib	AL; AZ; CA; FL; IL; KS; KY; LA; MD; MN; MO; MT; NJ; OH; PA; RI; SC; TN; TX; WA	NCT02562755
Study of Nivolumab in Patients With Advanced Refractory Biliary Tract Cancers	Biliary Tract Cancer; Biliary Tract Neoplasms	Drug: Nivolumab	CA; FL; GA	NCT02829918
Study of Safety and Tolerability of PDR001 in Combination With Sorafenib and to Identify the Maximum Tolerated Dose and/or Phase 2 Dose for This Combination in Advanced Hepatocellular Patients	Hepatocellular Carcinoma	Drug: PDR001; Drug: Sorafenib	MI	NCT02988440
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289

LIVER (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
Stereotactic Body Radiotherapy (SBRT) Followed by Immunotherapy in Liver Cancer	Hepatocellular Carcinoma	Drug: Nivolumab; Drug: Ipilimumab	IL; NY; WI	NCT03203304
Imaging Response to Immunotherapy and Radiation Therapy in Patients With Liver Metastases	Liver Metastases	Other: Magnetic Resonance Elastography	MN	NCT03401814
Feasibility and Efficacy of Neoadjuvant Cabozantinib Plus Nivolumab (CaboNivo) Followed by Definitive Resection for Patients With Locally Advanced Hepatocellular Carcinoma (HCC)	Locally Advanced Hepatocellular Carcinoma	Drug: Cabozantinib; Drug: Nivolumab	MD	NCT03299946
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459
TCR-engineered T Cells in Solid Tumors Including NSCLC and HCC Patients	Solid Tumor, Adult; Cancer; Hepatocellular Carcinoma; Hepatocellular Cancer; Nonsmall Cell Lung Cancer; Liver Cancer; Lung Cancer	Drug: IMA202 Product; Device: IMA_Detect	TX	NCT03441100
Messenger RNA (mRNA)-Based, Personalized Cancer Vaccine Against Neoantigens Expressed by the Autologous Cancer	Melanoma; Colon Cancer; Gastrointestinal Cancer; Genitourinary Cancer; Hepatocellular Cancer	Biological: NCI-4650, a mRNA-based, Personalized Cancer Vaccine	MD	NCT03480152
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
QUILT-3.072: NANT Hepatocellular Carcinoma (HCC) Vaccine	Hepatocellular Carcinoma Non-resectable; Hepatocellular Carcinoma Recurrent	Biological: ETBX-011; Biological: GI-4000; Biological: haNK for infusion; Biological: avelumab; Drug: Capecitabine; Drug: Cyclophosphamide; Drug: 5-Fluorouracil; Drug: Leucovorin; Drug: nab-Paclitaxel; Drug: Sorafenib; Procedure: SBRT; Biological: Aldoxorubicin hydrochloride; Biological: ETBX-051; Biological: ETBX-061; Biological: GI-6207; Biological: GI-6301; Drug: Cetuximab; Biological: N-803	CA	NCT03563170

LUNG

Title	Cancer Type	Treatment	Location	NCT Number
A Study of LGK974 in Patients With Malignancies Dependent on Wnt Ligands	Pancreatic Cancer; BRAF Mutant Colorectal Cancer; Melanoma; Triple Negative Breast Cancer; Head and Neck Squamous Cell Cancer; Cervical Squamous Cell Cancer; Esophageal Squamous Cell Cancer; Lung Squamous Cell Cancer	Drug: LGK974; Biological: PDR001	MA; MD; MI; TX	NCT01351103
CAR T Cell Receptor Immunotherapy Targeting Mesothelin for Patients With Metastatic Cancer	Cervical Cancer; Pancreatic Cancer; Ovarian Cancer; Mesothelioma; Lung Cancer	Drug: Fludarabine; Biological: Anti-mesothelin CAR; Drug: Cycolphosphamide; Drug: Aldesleukin	MD	NCT01583686
T Cell Receptor Immunotherapy Targeting NY-ESO-1 for Patients With NY-ESO-1 Expressing Cancer	Melanoma; Meningioma; Breast Cancer; Non-Small Cell Lung Cancer; Hepatocellular Cancer	Biological: Anti-NY ESO-1 mTCR PBL; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT01967823
T Cell Receptor Immunotherapy for Patients With Metastatic Non-Small Cell Lung Cancer	Metastatic Non-Small Cell Lung Cancer; Squamous Cell Carcinoma; Advanced NSCLC; Adenosquamous Carcinoma; Adenocarcinomas	Drug: Aldesleukin; Drug: Fludarabine; Drug: Cyclophosphamide; Biological: Young TIL	MD	NCT02133196
Trial of Active Immunotherapy With OBI-833 (Globo H-CRM197) in Advanced/Metastatic Gastric, Lung, Colorectal or Breast Cancer Subjects	Metastatic Gastric Cancer; Metastatic Breast Cancer; Metastatic Colorectal Cancer; Metastatic Lung Cancer	Drug: OBI-833/OBI-821	OH; TX	NCT02310464
Safety Study of SEA-CD40 in Cancer Patients	Cancer; Carcinoma; Carcinoma, Non-Small-Cell Lung; Carcinoma, Squamous Cell; Hematologic Malignancies; Hodgkin Disease; Lymphoma; Lymphoma, B-Cell; Lymphoma, Follicular; Lymphoma, Large B-Cell, Diffuse; Melanoma; Neoplasms; Neoplasm Metastasis; Neoplasms, Head and Neck; Neoplasms, Squamous Cell; Non-Small Cell Lung Cancer; Non-Small Cell Lung Cancer Metastatic; Non-small Cell Carcinoma; Squamous Cell Cancer; Squamous Cell Carcinoma; Squamous Cell Carcinoma of the Head and Neck; Squamous Cell Neoplasm; Lymphoma, Non-Hodgkin	Drug: IV SEA-CD40 monotherapy regimen; Drug: Pembrolizumab; Drug: SC SEA-CD40 monotherapy regimen	AL; CA; IL; MI; MN; NC; NM; NV; NY; OH; OR; TX; UT; WA	NCT02376699
Trial of PBF-509 and PDR001 in Patients With Advanced Non-small Cell Lung Cancer (NSCLC)	Non-small Cell Lung Cancer (NSCLC)	Drug: PBF-509_80 mg; Drug: PBF-509_160 mg; Drug: PBF-509_320 mg; Drug: PBF-509_640 mg; Drug: Combo PBF-509 (160 mg) + PDR001; Drug: Combo PBF-509 (320 mg) + PDR001; Drug: Combo PBF-509 (640 mg) + PDR001; Drug: RP2D (PBF-509+PDR001)_immuno naïve; Drug: Experimental: RP2D (PBF-509+PDR001)_immuno treated	FL	NCT02403193
Malignant Pleural Disease Treated With Autologous T Cells Genetically Engineered to Target the Cancer-Cell Surface Antigen Mesothelin	Malignant Pleural Disease; Mesothelioma; Metastases; Lung Cancer; Breast Cancer	Genetic: iCasp9M28z T cell infusions; Drug: cyclophosphamide	NJ; NY	NCT02414269
A Study of Combination Therapies With Viagenpumatucel-L (HS-110) in Patients With Non-Small Cell Lung Cancer	Non-small Cell Lung Cancer	Biological: Viagenpumatucel-L; Drug: Nivolumab	AL; IN; KY; MO; OH; OR; PA	NCT02439450
An Investigational Immuno-therapy Trial of Nivolumab, or Nivolumab Plus Ipilimumab, or Nivolumab Plus Platinum-doublet Chemotherapy, Compared to Platinum Doublet Chemotherapy in Patients With Stage IV Non-Small Cell Lung Cancer (NSCLC)	Non-Small Cell Lung Cancer	Drug: Nivolumab; Drug: Ipilimumab; Drug: Carboplatin; Drug: Cisplatin; Drug: Gemcitabine; Drug: Pemetrexed; Drug: Paclitaxel	AL; CA; CT; GA; KY; MA; MD; MI; MN; MO; NC; NY; OH; PA; SC; TN; TX; UT; WA	NCT02477826
GR-MD-02 Plus Pembrolizumab in Melanoma, Non-small Cell Lung Cancer, and Squamous Cell Head and Neck Cancer Patients	Melanoma; Non-Small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck	Drug: GR-MD-02; Drug: Pembrolizumab	OR	NCT02575404

LUNG (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
Study of OSE2101 Versus Standard Treatment as 2nd or 3rd Line in HLA-A2 Positive Patients With Advanced NSCLC After Failure of Immune Checkpoint Inhibitor	Non Small Cell Lung Cancer	Drug: OSE2101; Drug: Docetaxel; Drug: Pemetrexed	AR; CA; DC; LA; MS; NJ; OH; OK; OR; PA; TX	NCT02654587
An Investigational Immuno-therapy Study of BMS-986205 Given in Combination With Nivolumab and in Combination With Both Nivolumab and Ipilimumab in Cancers That Are Advanced or Have Spread.	Advanced Cancer; Melanoma; Non-Small Cell Lung Cancer	Drug: BMS-986205; Drug: Nivolumab; Drug: Ipilimumab	AZ; CA; FL; GA; IL; MD; MI; MN; MO; NJ; NY; OH; PA; TN	NCT02658890
Pharmacologically Rational EpigenetiC Immunotherapy for Second Line Therapy in Patients With Non-Small Cell Lung Cancer	Lung Cancer; Non-small Cell Lung Cancer	Drug: Nivolumab; Drug: oral decitabine; Drug: Tetrahydrouridine	FL; MD; OH	NCT02664181
Phase II Trial of Sequential Consolidation With Pembrolizumab Followed by Nab-paclitaxel	Non Small Cell Lung Cancer	Drug: Pembrolizumab	FL; NC; TX; VA	NCT02684461
First-in-human Study of Oral TP-0903 (a Novel Inhibitor of AXL Kinase) in Patients With Advanced Solid Tumors	Advanced Solid Tumors; EGFR Positive Non-small Cell Lung Cancer; Colorectal Carcinoma; Recurrent Ovarian Carcinoma; BRAF-Mutated Melanoma	Drug: TP-0903	AZ; FL; MN; TX	NCT02729298
An Investigational Immuno-therapy Study to Test Combination Treatments in Patients With Advanced Non-Small Cell Lung Cancer	Advanced Cancer	Biological: Nivolumab; Drug: Dasatinib; Biological: BMS-986016; Biological: Ipilimumab	CA; CO; CT; DC; GA; KS; MA; MD; MI; MO; NC; NV; NY; OH; OR; PA; TN; TX; UT; VA; WA	NCT02750514
Neoadjuvant Pembrolizumab	Non-small Cell Lung Carcinoma	Drug: Pembrolizumab	MN; NC; NH	NCT02818920
Trial of Radiation and Gene Therapy Before Nivolumab for Metastatic Non-Small Cell Lung Carcinoma and Uveal Melanoma	Lung Squamous Cell Carcinoma Stage IV; Nonsquamous Nonsmall Cell Neoplasm of Lung; Metastatic Uveal Melanoma	Biological: ADV/HSV-tk; Drug: Valacyclovir; Radiation: SBRT; Drug: nivolumab	TX	NCT02831933
FLT3 Ligand Immunotherapy and Stereotactic Radiotherapy for Advanced Non-small Cell Lung Cancer	Non-small Cell Lung Cancer (NSCLC)	Drug: FLT3 Ligand Therapy (CDX-301); Radiation: Stereotactic Body Radiotherapy (SBRT)	NY	NCT02839265
An Investigational Immuno-therapy Study for Safety of Nivolumab in Combination With Ipilimumab to Treat Advanced Cancers	Lung Cancer	Drug: Nivolumab in combination with Ipilimumab	AL; AR; AZ; CA; CO; FL; GA; IL; KS; KY; MD; MS; MS; NC; NE; NJ; NV; OH; OR; PA; SC; TN; TX; VA; WA	NCT02869789
Hypofractionated Radiation Therapy to Improve Immunotherapy Response in Non-Small Cell Lung Cancer	Non Small Cell Lung Cancer Metastatic	Radiation: Radiation; Drug: Immuno-Therapeutic Agent	WV	NCT03035890
A Pilot Study to Develop Predictive Biomarkers for the Response to Immunotherapy in Lung Cancer	Lung Cancer	Other: Blood and Urine Collection	PA	NCT03047616
Image Guided Hypofractionated Radiation Therapy, Nelfinavir Mesylate, Pembrolizumab, Nivolumab and Atezolizumab in Treating Patients With Advanced Melanoma, Lung, or Kidney Cancer	Metastatic Renal Cell Cancer; Recurrent Melanoma; Recurrent Non-Small Cell Lung Carcinoma; Recurrent Renal Cell Carcinoma; Stage IV Cutaneous Melanoma AJCC v6 and v7; Stage IV Non-Small Cell Lung Cancer AJCC v7; Stage IV Renal Cell Cancer AJCC v7	Drug: Atezolizumab; Radiation: Hypofractionated Radiation Therapy; Other: Laboratory Biomarker Analysis; Drug: Nelfinavir Mesylate; Biological: Nivolumab; Biological: Pembrolizumab	WA	NCT03050060
Stereotactic Body Radiation Therapy (SBRT) Combined With Avelumab (Anti-PD-L1) for Management of Early Stage Non-Small Cell Lung Cancer (NSCLC)	Early Stage Non-Small Cell Lung Cancer	Drug: Avelumab; Radiation: SBRT	CA	NCT03050554
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
PDR001 in Combination With Platinum-doublet Chemotherapy and Other Immunology Agents in PD-L1 Unselected, Metastatic NSCLC Patients	Non-small Cell Lung Cancer	Drug: PDR001; Drug: Cisplatin; Drug: Gemcitabine; Drug: Pemetrexed; Drug: Carboplatin; Drug: Paclitaxel; Drug: Canakinumab	AR; CA; MI; MO; PA	NCT03064854
Phase II Trial of Continuation Therapy in Advanced NSCLC	Non-Small-Cell Lung Cancer	Drug: Pembrolizumab	IA; IL; IN; WI	NCT03083808
Atezolizumab Immunotherapy in Patients With Advanced NSCLC	Carcinoma, Non-Small-Cell Lung	Drug: Atezolizumab	IL; NY; OH	NCT03102242
Clinical Trials Comparing Immunotherapy Plus Stereotactic Ablative Radiotherapy (I-SABR) Versus SABR Alone for Stage I, Selected Stage IIa or Isolated Lung Parenchymal Recurrent Non-Small Cell Lung Cancer: I-SABR	Malignant Neoplasms of Respiratory and Intrathoracic Organs; Non-small Cell Lung Cancer	Radiation: Stereotactic Ablative Radiotherapy; Drug: Nivolumab	TX	NCT03110978
CD40 Agonistic Antibody APX005M in Combination With Nivolumab	Cancer; Non Small Cell Lung Cancer Metastatic; Metastatic Melanoma; Neoplasm of Lung; Melanoma	Drug: APX005M; Drug: Nivolumab	AZ; CA; MI; PA; TN	NCT03123783
Intratumoral Gene Mediated Cytotoxic Immunotherapy in Patients With Resectable Non-Small Cell Lung Cancer	Lung Cancer	Biological: AdV-tk (aglatimagene besadenovec) + valacyclovir	PA	NCT03131037
Phase 1/2 Study of Combination Immunotherapy and mRNA Vaccine in Subjects With NSCLC	Metastatic Non-small Cell Lung Cancer; NSCLC	Drug: Durvalumab; Drug: Tremelimumab; Biological: BI 1361849	FL; MA; MN; NY; TX	NCT03164772
Radical-Dose Image Guided Radiation Therapy in Treating Patients With Metastatic Non-small Cell Lung Cancer Undergoing Immunotherapy	Stage IV Non-Small Cell Lung Cancer	Biological: Immunotherapy (standard of care); Radiation: Image Guided Radiation Therapy; Other: Laboratory Biomarker Analysis	CA	NCT03176173
A Study to Evaluate Efficacy and Safety of Multiple Targeted Therapies as Treatments for Participants With Non-Small Cell Lung Cancer (NSCLC)	Non-Small Cell Lung Cancer	Drug: Alectinib; Drug: Atezolizumab; Drug: Pemetrexed; Drug: Cisplatin; Drug: Carboplatin; Drug: Gemcitabine	CA; CO; CT; FL; GA; IL; KY; MI; NH; NJ; NV; NY; OH; OR; PA; TN; TX; VA; WA	NCT03178552
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
Nivolumab and Tumor Infiltrating Lymphocytes (TIL) in Advanced Non-Small Cell Lung Cancer	Non-Small Cell Lung Cancer; Metastatic Non-small Cell Lung Cancer; Squamous Cell Carcinoma; Advanced NSCLC; Adenosquamous Carcinoma; Adenocarcinomas	Procedure: Tumor-infiltrating Lymphocytes (TIL); Drug: Nivolumab; Drug: Cyclophosphamide; Drug: Fludarabine; Other: Tumor-infiltrating Lymphocyte Therapy; Drug: Interleukin-2 (IL2)	FL	NCT03215810
Pembrolizumab (Immunotherapy Drug) in Combination With Guadecitabine and Mocetinostat (Epigenetic Drugs) for Patients With Advanced Lung Cancer.	Lung Cancer	Drug: Pembrolizumab; Drug: Guadecitabine; Drug: Mocetinostat	MD; NY; PA	NCT03220477
Evaluate Concurrent Or Sequential Ipilimumab, Nivolumab, and Stereotactic Body Radiotherapy in Patients With Stage IV Non-Small Cell Lung Cancer	Stage IV Small Cell Lung Cancer	Drug: Nivolumab; Drug: Ipilimumab; Radiation: Stereotactic body radiation therapy	IL	NCT03223155

LUNG (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
BATTLE-2 Program - A Biomarker-Integrated Targeted Therapy in Non-Small Cell Lung Cancer (NSCLC)	Lung Diseases Due to External Agents; Non-Small Cell Lung Cancer	Drug: Trametinib; Drug: Pembrolizumab	TX	NCT03225664
QUILT-3.055: A Study of ALT-803 in Combination With Pembrolizumab or Nivolumab in Patients With Advanced or Metastatic Non-Small Cell Lung Cancer	Non-Small Cell Lung Cancer	Drug: ALT-803 + Pembrolizumab; Drug: ALT-803 + Nivolumab	SC	NCT03228667
TCR-engineered T Cells in Solid Tumors With Emphasis on NSCLC and HNSCC (ACTengine)	Solid Tumor; Cancer; Head and Neck Squamous Cell Carcinoma; Non-small Cell Lung Cancer	Biological: IMA201 Product; Diagnostic Test: IMA_Detect; Diagnostic Test: ACT-HLA	TX	NCT03247309
Pembrolizumab + Idelalisib for Lung Cancer Study	Non Small Cell Lung Cancer; Metastasis; Recurrence	Drug: Pembrolizumab; Drug: Idelalisib	GA	NCT03257722
Ipilimumab and Nivolumab in Patients With Anti-PD-1-axis Therapy-resistant Advanced Non-small Cell Lung Cancer.	Carcinoma, Non-Small-Cell Lung	Biological: combination nivolumab and ipilimumab	CT	NCT03262779
VX15/2503 in Combination With Avelumab in Advanced Non-small Cell Lung Cancer	Carcinoma, Non-Small-Cell Lung	Drug: VX15/2503 + avelumab	AR; AZ; CA; FL; MN; MO; NY; OH; OR; VA	NCT03268057
Unresectable Stage IIIA/IIIB Non-small Cell Lung Cancer (NSCLC)	Non-small Cell Lung Cancer	Drug: Nivolumab; Drug: Ipilimumab	IN	NCT03285321
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
Priming Immunotherapy in Advanced Disease With Radiation	Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck	Drug: Immune checkpoint inhibitor; Radiation: Radiation Therapy	KY	NCT03313804
Safety And Efficacy Study Of Avelumab Plus Chemotherapy With Or Without Other Anti-Cancer Immunotherapy Agents In Patients With Advanced Malignancies	Non-small Cell Lung Cancer; Urothelial Cancer	Drug: Avelumab in combination with pemetrexed / carboplatin; Drug: Avelumab in combination with gemcitabine / cisplatin.	AZ; CA; CT; NC; NY; PA	NCT03317496
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459
A Study Of Multiple Immunotherapy-Based Treatment Combinations In Participants With Metastatic Non-Small Cell Lung Cancer (Morpheus- Non-Small Cell Lung Cancer)	Carcinoma, Non-Small-Cell Lung	Drug: Atezolizumab; Drug: Cobimetinib; Drug: RO6958688; Drug: Docetaxel; Drug: BL-8040; Drug: Tazemetostat; Drug: CPI-444; Drug: Pemetrexed; Drug: Carboplatin; Drug: Gemcitabine	CT; MA; NY; TN	NCT03337698
Phase I/II Study of Nivolumab and Ipilimumab Combined With Nintedanib in Non Small Cell Lung Cancer	Non Small Cell Lung Cancer; Lung Cancer, Nonsmall Cell; Non Small Cell Lung Cancer Metastatic	Drug: Nivolumab; Drug: Ipilimumab; Drug: Nintedanib	FL	NCT03377023
A Personal Cancer Vaccine (NEO-PV-01) With Pembrolizumab and Chemotherapy for Patients With Lung Cancer	Carcinoma, Non-Small-Cell Lung; Lung Cancer; Nonsquamous Nonsmall Cell Neoplasm of Lung	Biological: NEO-PV-01; Biological: Pembrolizumab; Other: Adjuvant; Drug: Carboplatin; Drug: Pemetrexed	CA; MA; MO; TN	NCT03380871
Oleclumab (MEDI9447) EGFRm NSCLC Novel Combination Study	Carcinoma, Non-Small-Cell Lung	Biological: MEDI9447; Drug: Osimertinib; Drug: AZD4635	CA; CO; CT; FL; GA; IL; MD; NY; TX	NCT03381274
Trial of Local Consolidation Therapy (LCT) After Nivolumab and Ipilimumab (LONESTAR)	Malignant Neoplasms of Respiratory and Intrathoracic Organs; Non-small Cell Lung Cancer	Drug: Ipilimumab; Drug: Nivolumab; Procedure: Local Consolidative Therapy (LCT)	TX	NCT03391869
A Phase 1 Study Evaluating the Safety, Tolerability and Efficacy of AMG 119 in Subjects With RR SCLC	Small Cell Lung Cancer	Biological: AMG 119	TX	NCT03392064
Combination Immunotherapy-Ipilimumab-Nivolumab-Dendritic Cell p53 Vac - Patients With Small Cell Lung Cancer (SCLC)	Small Cell Lung Cancer; Lung Cancer; Relapsed Small Cell Lung Cancer	Drug: Nivolumab; Drug: Ipilimumab; Biological: Dendritic Cell based p53 Vaccine	FL	NCT03406715
Administration of Autologous T-Cells Genetically Engineered to Express T-Cell Receptors Reactive Against Mutated Neoantigens in People With Metastatic Cancer	Glioblastoma; Non-Small Cell Lung Cancer; Ovarian Cancer; Breast Cancer; Gastrointestinal/Genitourinary Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin; Biological: Individual Patient TCR-Transduced PBL	MD	NCT03412877
Study of Autologous Tumor Infiltrating Lymphocytes (LN-145) In Combo With Durvalumab in Non-Small Cell Lung Cancer	Non Small Cell Lung Cancer	Biological: LN-145; Drug: Durvalumab	CA; KY; MI; NJ; OR; PA; TN; WA	NCT03419559
TCR-engineered T Cells in Solid Tumors Including NSCLC and HCC Patients	Solid Tumor, Adult; Cancer; Hepatocellular Carcinoma; Hepatocellular Cancer; Nonsmall Cell Lung Cancer; Liver Cancer; Lung Cancer	Drug: IMA202 Product; Device: IMA_Detect	TX	NCT03441100
Immunotherapy in Combination With Chemoradiation in Patients With Advanced Solid Tumors	Carcinoma, Squamous Cell of Head and Neck; Carcinoma, Non-Small-Cell Lung; Small Cell Lung Carcinoma	Drug: Durvalumab; Drug: Tremelimumab; Drug: Cisplatin (dose level 4); Drug: Cisplatin (dose level 3); Drug: Carboplatin (dose level 1); Drug: Carboplatin (dose level 2); Drug: Etoposide (dose level 1); Drug: Etoposide (dose level 2); Drug: Paclitaxel; Drug: Pemetrexed; Radiation: External beam radiation (dose level 1); Radiation: External beam radiation (dose level 2); Radiation: External beam radiation (hyperfractionated); Drug: Cisplatin (dose level 1); Drug: Cisplatin (dose level 2); Radiation: External beam radiation (standard)	AZ; CO; MO; NJ	NCT03509012
QUILT-2.023: A Study of ALT-803, a Fusion Protein Activator of Natural Killer and T-Cells, in Combination With Pembrolizumab vs Pembrolizumab Alone as First-Line Treatment for Patients With Metastatic NSCLC.	Non Small Cell Lung Cancer	Drug: ALT-803 + Pembrolizumab; Drug: Pembrolizumab	CA	NCT03520686
The Selective Personalized Radio-Immunotherapy for Locally Advanced NSCLC Trial.	Non-small Cell Lung Cancer, NSCLC	Drug: PembroRT; Drug: ChemoRT	NY	NCT03523702
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
Study of REGN4659 in Combination With Cemiplimab in Patients With Advanced or Metastatic Non-Small Cell Lung Cancer (NSCLC)	Carcinoma, Non-Small-Cell Lung	Drug: REGN4659; Drug: Cemiplimab	MI; OK; TN; TX	NCT03580694

LUNG (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
Safety, Tolerability, Immunogenicity, and Antitumor Activity of GEN-009 Adjuvanted Vaccine	Cutaneous Melanoma; Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck; Urothelial Carcinoma; Renal Cell Carcinoma	Biological: GEN-009 Adjuvanted Vaccine; Drug: Nivolumab	AZ; CA; CO; NY; PA; TN	NCT03633110
Study of Autologous Tumor Infiltrating Lymphocytes in Patients With Solid Tumors	Metastatic Melanoma; Squamous Cell Carcinoma of the Head and Neck; Non-small Cell Lung Cancer	Biological: Lifileucel; Biological: LN-145; Drug: Pembrolizumab	FL; KY	NCT03645928
A Safety and Tolerability Study of NC318 in Subjects With Advanced or Metastatic Solid Tumors	Advanced or Metastatic Solid Tumors; Head and Neck Squamous Cell Carcinoma; Non-Small Cell Lung Cancer; Ovarian Cancer	Drug: NC318	CA; CT; NJ; NY; TX	NCT03665285
A Study of Several Radiation Doses for Patients With Progression on Immunotherapy/Checkpoint Inhibitors	Metastatic Cancer; Melanoma Cancer; Lung Cancer; Bladder Cancer; Renal Cancer; Head/Neck Cancers	Radiation: Stereotactic Body Radiotherapy; Biological: Ipilimumab, Nivolumab, Pembrolizumab or Atezolizumab	NJ; NY	NCT03693014

MELANOMA

Title	Cancer Type	Treatment	Location	NCT Number
A Study of LGK974 in Patients With Malignancies Dependent on Wnt Ligands	Pancreatic Cancer; BRAF Mutant Colorectal Cancer; Melanoma; Triple Negative Breast Cancer; Head and Neck Squamous Cell Cancer; Cervical Squamous Cell Cancer; Esophageal Squamous Cell Cancer; Lung Squamous Cell Cancer	Drug: LGK974; Biological: PDR001	MA; MD; MI; TX	NCT01351103
T Cell Receptor Immunotherapy Targeting NY-ESO-1 for Patients With NY-ESO-1 Expressing Cancer	Melanoma; Meningioma; Breast Cancer; Non-Small Cell Lung Cancer; Hepatocellular Cancer	Biological: Anti-NY ESO-1 mTCR PBL; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT01967823
Immunotherapy Using Tumor Infiltrating Lymphocytes for Patients With Metastatic Melanoma	Metastatic Melanoma	Drug: Aldesleukin; Drug: Fludarabine; Drug: Cyclophosphamide; Biological: Young Tumor Infiltrating Lymphocytes (Young TIL); Drug: Keytruda (pembrolizumab) - ONLY FOR RETREATMENT	MD	NCT01993719
T Cell Receptor Immunotherapy Targeting MAGE-A3 for Patients With Metastatic Cancer Who Are HLA-DP0401 Positive	Cervical Cancer; Renal Cancer; Urothelial Cancer; Melanoma; Breast Cancer	Biological: Anti-MAGE-A3-DP4 TCR; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin	MD	NCT02111850
Neoadjuvant Pembrolizumab for Unresectable Stage III and Unresectable Stage IV Melanoma	Unresectable Malignant Neoplasm; Melanoma; Metastatic Melanoma; Stage IV Melanoma; Stage III Melanoma	Drug: Pembrolizumab	MO	NCT02306850
A Comparison of Matured Dendritic Cells and Montanide® in Study Subjects With High Risk of Melanoma Recurrence	Melanoma	Biological: DC Vaccine; Biological: Montanide Vaccine; Biological: Poly-ICLC	NY	NCT02334735
Safety Study of SEA-CD40 in Cancer Patients	Cancer; Carcinoma; Carcinoma, Non-Small-Cell Lung; Carcinoma, Squamous Cell; Hematologic Malignancies; Hodgkin Disease; Lymphoma; Lymphoma, B-Cell; Lymphoma, Follicular; Lymphoma, Large B-Cell, Diffuse; Melanoma; Neoplasms; Neoplasm Metastasis; Neoplasms, Head and Neck; Neoplasms, Squamous Cell; Non-Small Cell Lung Cancer; Non-Small Cell Lung Cancer Metastatic; Non-small Cell Carcinoma; Squamous Cell Cancer; Squamous Cell Carcinoma; Squamous Cell Carcinoma of the Head and Neck; Squamous Cell Neoplasm; Lymphoma, Non-Hodgkin	Drug: IV SEA-CD40 monotherapy regimen; Drug: Pembrolizumab; Drug: SC SEA-CD40 monotherapy regimen	AL; CA; IL; MI; MN; NC; NM; NV; NY; OH; OR; TX; UT; WA	NCT02376699
In Situ, Autologous Therapeutic Vaccination Against Solid Cancers With Intratumoral Hiltonol®	Melanoma; Head and Neck Cancer; Sarcoma; Non-Melanoma Skin Cancers	Biological: Hiltonol	GA; MD; MO; NY; PA; SC	NCT02423863
A Pilot Study to Evaluate PBR PET in Brain Tumor Patients Treated With Chemoradiation or Immunotherapy	Intracranial Tumors; Glioblastoma; Melanoma	Other: PBR PET; Biological: Cancer Immunotherapy; Radiation: Radiation and chemotherapy	MA	NCT02431572
A Trial of Intratumoral Injections of SD-101 in Combination With Pembrolizumab in Patients With Metastatic Melanoma or Recurrent or Metastatic Head and Neck Squamous Cell Carcinoma	Metastatic Melanoma; Head Neck Cancer	Drug: SD-101; Biological: Pembrolizumab	AL; AZ; CA; CO; FL; GA; IA; IL; IN; MI; MN; NC; NE; NJ; NY; OH; OK; OR; PA; SC; TX; UT; VA; WV	NCT02521870
GR-MD-02 Plus Pembrolizumab in Melanoma, Non-small Cell Lung Cancer, and Squamous Cell Head and Neck Cancer Patients	Melanoma; Non-Small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck	Drug: GR-MD-02; Drug: Pembrolizumab	OR	NCT02575404
A Prospective Randomized and Phase 2 Trial for Metastatic Melanoma Using Adoptive Cell Therapy With Tumor Infiltrating Lymphocytes Plus IL-2 Either Alone or Following the Administration of Pembrolizumab	Melanoma	Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldeslaukin; Drug: Pembrolizumab; Biological: young TIL	MD	NCT02621021
An Investigational Immuno-therapy Study of BMS-986205 Given in Combination With Nivolumab and in Combination With Both Nivolumab and Ipilimumab in Cancers That Are Advanced or Have Spread.	Advanced Cancer; Melanoma; Non-Small Cell Lung Cancer	Drug: BMS-986205; Drug: Nivolumab; Drug: Ipilimumab	AZ; CA; FL; GA; IL; MD; MI; MN; MO; NJ; NY; OH; PA; TN	NCT02658890
Ipilimumab (Immunotherapy) and MGN1703 (TLR Agonist) in Patients With Advanced Solid Malignancies	Advanced Cancers; Melanoma	Drug: MGN1703; Drug: Ipilimumab	TX	NCT02668770
First-in-human Study of Oral TP-0903 (a Novel Inhibitor of AXL Kinase) in Patients With Advanced Solid Tumors	Advanced Solid Tumors; EGFR Positive Non-small Cell Lung Cancer; Colorectal Carcinoma; Recurrent Ovarian Carcinoma; BRAF-Mutated Melanoma	Drug: TP-0903	AZ; FL; MN; TX	NCT02729298
Pembrolizumab and Ipilimumab After Prior Immunotherapy for Melanoma	Melanoma	Drug: Pembrolizumab and Ipilimumab combination	AL; FL; IL; IN; VA	NCT02743819
Trial of Radiation and Gene Therapy Before Nivolumab for Metastatic Non-Small Cell Lung Carcinoma and Uveal Melanoma	Lung Squamous Cell Carcinoma Stage IV; Nonsquamous Nonsmall Cell Neoplasm of Lung; Metastatic Uveal Melanoma	Biological: ADV/HSV-tk; Drug: Valacyclovir; Radiation: SBRT; Drug: nivolumab	TX	NCT02831933
Adoptive T Cell Immunotherapy for Advanced Melanoma Using Engineered Lymphocytes	Melanoma	Biological: Escalating Doses	IL	NCT02870244
Trial of Intratumoral Injections of TTI-621 in Subjects With Relapsed and Refractory Solid Tumors and Mycosis Fungoides	Solid Tumors; Mycosis Fungoides; Melanoma; Merkel-cell Carcinoma; Squamous Cell Carcinoma; Breast Carcinoma; Human Papillomavirus-Related Malignant Neoplasm; Soft Tissue Sarcoma	Drug: TTI-621	CA; OR; PA; WA	NCT02890368

MELANOMA (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
A Study of the Anti-PD1 Antibody PDR001, in Combination With Dabrafenib and Trametinib in Advanced Melanoma	Melanoma	Biological: Spartalizumab (PDR001); Other: Placebo; Drug: Dabrafenib; Drug: Trametinib	AR; CA; CO; FL; KS; MA; MD; MO; NE; NJ; NY; OR; PA; TN; TX; UT	NCT02967692
Image Guided Hypofractionated Radiation Therapy, Nelfinavir Mesylate, Pembrolizumab, Nivolumab and Atezolizumab in Treating Patients With Advanced Melanoma, Lung, or Kidney Cancer	Metastatic Renal Cell Cancer; Recurrent Melanoma; Recurrent Non-Small Cell Lung Carcinoma; Recurrent Renal Cell Carcinoma; Stage IV Cutaneous Melanoma AJCC v6 and v7; Stage IV Non-Small Cell Lung Cancer AJCC v7; Stage IV Renal Cell Cancer AJCC v7	Drug: Atezolizumab; Radiation: Hypofractionated Radiation Therapy; Other: Laboratory Biomarker Analysis; Drug: Nelfinavir Mesylate; Biological: Nivolumab; Biological: Pembrolizumab	WA	NCT03050060
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
Study of Cellular Adoptive Immunotherapy Using Autologous CD8+ Antigen-Specific T Cells and Anti-CTLA4 for Patients With Metastatic Uveal Melanoma	Melanoma and Other Malignant Neoplasms of Skin	Biological: CD 8+ T Cells; Drug: Cyclophosphamide; Drug: Interleukin-2; Drug: Ipilimumab	TX	NCT03068624
Safety and Efficacy of IMCgp100 Versus Investigator Choice in Advanced Uveal Melanoma	Uveal Melanoma	Biological: IMCgp100; Drug: Dacarbazine; Biological: Ipilimumab; Biological: Pembrolizumab	CA; CO; FL; GA; IA; IL; MA; NC; NY; OR; PA	NCT03070392
Immunotherapy Study of Evofosfamide in Combination With Ipilimumab	Pancreatic Cancer; Melanoma; Squamous Cell Carcinoma of the Head and Neck; Prostate Cancer	Drug: Evofosfamide; Drug: Ipilimumab	TX	NCT03098160
A Study to Evaluate Adaptive Dosing of Ipilimumab and Nivolumab Combination Immunotherapy	Metastatic Melanoma	Drug: ipilimumab; Drug: nivolumab	CT; NJ; NY; PA	NCT03122522
CD40 Agonistic Antibody APX005M in Combination With Nivolumab	Cancer; Non Small Cell Lung Cancer Metastatic; Metastatic Melanoma; Neoplasm of Lung; Melanoma	Drug: APX005M; Drug: Nivolumab	AZ; CA; MI; PA; TN	NCT03123783
Study of BEvacizumab in Combination With ATezolizumab in Patients With Untreated Melanoma Brain Metastases	Melanoma and Other Malignant Neoplasms of Skin	Behavioral: Neurocognitive Exam; Behavioral: Questionnaires; Drug: Bevacizumab; Drug: Atezolizumab	TX	NCT03175432
Cobimetinib (Targeted Therapy) Plus Atezolizumab (Immunotherapy) in Participants With Advanced Melanoma Whose Cancer Has Worsened During or After Treatment With Previous Immunotherapy and Atezolizumab Monotherapy in Participants With Previously Untreated Advanced Melanoma	Malignant Melanoma	Biological: Atezolizumab; Drug: Cobimetinib	AZ; CA; CO; MO; MY; TN; TX	NCT03178851
Evaluate Efficacy, Immunological Response of Intratumoral/ Intralesional Oncolytic Virus (OBP-301) in Metastatic Melanoma Patients	Melanoma Stage III; Melanoma Stage IV	Drug: OBP-301	IA; NJ; PA; UT	NCT03190824
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
A Study of RO7198457 (Personalized Cancer Vaccine [PCV]) as a Single Agent and in Combination With Atezolizumab in Participants With Locally Advanced or Metastatic Tumors	Melanoma; Non-Small Cell Lung Cancer; Bladder Cancer; Colorectal Cancer; Triple Negative Breast Cancer; Renal Cancer; Head and Neck Cancer; Other Solid Cancers	Drug: RO7198457; Drug: Atezolizumab	AZ; CA; CO; CT; DC; MA; NV; NY; OK; OR; PA; TN; WA	NCT03289962
Ability of a Dendritic Cell Vaccine to Immunize Melanoma or Epithelial Cancer Patients Against Defined Mutated Neoantigens Expressed by the Autologous Cancer	Melanoma; Gastrointestinal Cancer; Breast Cancer; Ovarian Cancer; Pancreatic Cancer	Biological: Peptide loaded dendritic cell vaccine	MD	NCT03300843
EPR Tumor Oximetry With CE India Ink	Neoplasms, Malignant; Breast Neoplasm; Carcinoma, Basal Cell; Carcinoma, Squamous Cell; Melanoma; Skin Neoplasm; Head and Neck Neoplasms	Device: Carlo Erba Ink Injection; Other: EPR Oximetry Measurement	NH	NCT03321903
Study of MEDI0562 Prior to Surgical Resection in Head and Neck Squamous Cell Carcinoma (HNSCC) or Melanoma	Head and Neck Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Cell Cancer, Squamous; Carcinoma, Squamous Cell	Drug: MEDI0562	OR	NCT03336606
How Microbes and Metabolism May Predict Skin Cancer Immunotherapy Outcomes	Autoimmunity; Melanoma; Merkel Cell Carcinoma; Squamous Cell Carcinoma of the Skin; Basal Cell Carcinoma; Skin Cancer	Biological: Immunotherapy	MO	NCT03370861
A Study of IMO-2125 in Combination With Ipilimumab Versus Ipilimumab Alone in Subjects With Anti-PD-1 Refractory Melanoma (ILLUMINATE-301)	Metastatic Melanoma	Drug: Ipilimumab; Drug: IMO-2125	AL; AZ; CA; FL; GA; IL; IN; KY; MD; MI; NJ; OH; PA; WA; WV	NCT03445533
Messenger RNA (mRNA)-Based, Personalized Cancer Vaccine Against Neoantigens Expressed by the Autologous Cancer	Melanoma; Colon Cancer; Gastrointestinal Cancer; Genitourinary Cancer; Hepatocellular Cancer	Biological: NCI-4650, a mRNA-based, Personalized Cancer Vaccine	MD	NCT03480152
Study of Efficacy and Safety of Novel Spartalizumab Combinations in Patients With Previously Treated Unresectable or Metastatic Melanoma	Melanoma	Drug: Spartalizumab; Drug: LAG525; Drug: Capmatinib; Drug: Canakinumab	CA; NY; PA	NCT03484923
Safety and Efficacy of IMCnyeso in Advanced NY-ESO-1 and/or LAGE-1A Positive Cancers	Melanoma; Advanced NSCLC; Urothelial Carcinoma; Synovial Sarcoma	Drug: IMCnyeso	PA	NCT03515551
Methylphenidate and Physical Activity in Reducing Cancer-Related Fatigue in Participants With Metastatic Melanoma Who Receive Anti-PD1 Immunotherapy	Metastatic Melanoma	Other: Laboratory Biomarker Analysis; Drug: Methylphenidate; Other: Physical Activity; Other: Placebo; Other: Quality-of-Life Assessment; Other: Questionnaire Administration	TX	NCT03525873
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
Neoadjuvant Combination Targeted and Immunotherapy for Patients With High-Risk Stage III Melanoma	Clinical Stage III Cutaneous Melanoma AJCC v8; Pathologic Stage III Cutaneous Melanoma AJCC v8; Pathologic Stage IIIA Cutaneous Melanoma AJCC v8; Pathologic Stage IIIB Cutaneous Melanoma AJCC v8; Pathologic Stage IIIC Cutaneous Melanoma AJCC v8; Pathologic Stage IIID Cutaneous Melanoma AJCC v8	Drug: Atezolizumab; Drug: Cobimetinib; Drug: Vemurafenib	MN	NCT03554083

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MELANOMA (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
A Personal Cancer Vaccine (NEO-PV-01) and APX005M or Ipilimumab With Nivolumab in Patients With Advanced Melanoma	Metastatic Melanoma	Biological: NEO-PV-01; Biological: Nivolumab; Other: Adjuvant; Biological: APX005M; Biological: ipilimumab	TN	NCT03597282
Safety, Tolerability, Immunogenicity, and Antitumor Activity of GEN-009 Adjuvanted Vaccine	Cutaneous Melanoma; Non-small Cell Lung Cancer; Squamous Cell Carcinoma of the Head and Neck; Urothelial Carcinoma; Renal Cell Carcinoma	Biological: GEN-009 Adjuvanted Vaccine; Drug: Nivolumab	AZ; CA; CO; NY; PA; TN	NCT03633110
A Study of NKTR-214 Combined With Nivolumab vs Nivolumab Alone in Participants With Previously Untreated Inoperable or Metastatic Melanoma	Melanoma	Biological: NKTR-214; Biological: Nivolumab	CA; CO; CT; FL; GA; KY; MA; MN; MO; NJ; NY; OH; OR; PA; TX; VA	NCT03635983
Study of Autologous Tumor Infiltrating Lymphocytes in Patients With Solid Tumors	Metastatic Melanoma; Squamous Cell Carcinoma of the Head and Neck; Non-small Cell Lung Cancer	Biological: Lifileucel; Biological: LN-145; Drug: Pembrolizumab	FL; KY	NCT03645928
A Study of Several Radiation Doses for Patients With Progression on Immunotherapy/Checkpoint Inhibitors	Metastatic Cancer; Melanoma Cancer; Lung Cancer; Bladder Cancer; Renal Cancer; Head/Neck Cancers	Radiation: Stereotactic Body Radiotherapy; Biological: Ipilimumab, Nivolumab, Pembrolizumab or Atezolizumab	NJ; NY	NCT03693014

NEUROENDOCRINE

Title	Cancer Type	Treatment	Location	NCT Number
Localized Radiation Therapy or Recombinant Interferon Beta and Avelumab With or Without Cellular Adoptive Immunotherapy in Treating Patients With Metastatic Merkel Cell Carcinoma	Merkel Cell Polyomavirus Infection; Stage IV Merkel Cell Carcinoma AJCC v7	Drug: Avelumab; Other: Laboratory Biomarker Analysis; Biological: MCPyV TAg-specific Polyclonal Autologous CD8-positive T Cells; Radiation: Radiation Therapy; Biological: Recombinant Interferon Beta	WA	NCT02584829
Atezolizumab Combinations With Chemotherapy for Anaplastic and Poorly Differentiated Thyroid Carcinomas	Malignant Neoplasms of Thyroid and Other Endocrine Glands; Anaplastic Thyroid Carcinoma; Poorly Differentiated Thyroid Cancer	Drug: Nab-paclitaxel - INDUCTION COHORT; Drug: Paclitaxel - INDUCTION COHORT; Drug: Vemurafenib - COHORT 1; Drug: Cobimetinib - COHORT 1; Drug: Atezolizumab - COHORT 1; Drug: Bevacizumab - COHORT 3; Drug: Nab-paclitaxel - COHORT 4; Drug: Paclitaxel - COHORT 4; Drug: Cobimetinib - COHORT 2; Drug: Atezolizumab - COHORT 2; Drug: Atezolizumab - COHORT 3; Drug: Atezolizumab - COHORT 4	TX	NCT03181100

OVARIAN

Title	Cancer Type	Treatment	Location	NCT Number
Vaccine Therapy in Treating Patients With Metastatic Solid Tumors	Malignant Solid Tumour; Breast Cancer; Malignant Tumor of Colon; GIST; Ovarian Cancer	Biological: HER-2 vaccine; Biological: Extension HER-2 vaccine trial at OBD	OH	NCT01376505
CAR T Cell Receptor Immunotherapy Targeting Mesothelin for Patients With Metastatic Cancer	Cervical Cancer; Pancreatic Cancer; Ovarian Cancer; Mesothelioma; Lung Cancer	Drug: Fludarabine; Biological: Anti-mesothelin CAR; Drug: Cycolphosphamide; Drug: Aldesleukin	MD	NCT01583686
PARP-inhibition and CTLA-4 Blockade in BRCA-deficient Ovarian Cancer	Ovarian Cancer; Fallopian Tube Cancer; Peritoneal Neoplasms	Drug: Olaparib; Drug: Tremelimumab	NM	NCT02571725
A Study of Pembrolizumab With Standard Treatment in Patients With Recurrent Platinum-resistant Ovarian Cancer	Ovarian Cancer	Drug: Pembrolizumab; Drug: Gemcitabine; Drug: Cisplatin	CA	NCT02608684
First-in-human Study of Oral TP-0903 (a Novel Inhibitor of AXL Kinase) in Patients With Advanced Solid Tumors	Advanced Solid Tumors; EGFR Positive Non-small Cell Lung Cancer; Colorectal Carcinoma; Recurrent Ovarian Carcinoma; BRAF-Mutated Melanoma	Drug: TP-0903	AZ; FL; MN; TX	NCT02729298
GL-ONC1 Oncolytic Immunotherapy in Patients With Recurrent Ovarian Cancer	Ovarian Cancer; Peritoneal Carcinomatosis; Fallopian Tube Cancer	Biological: GL-ONC1	FL	NCT02759588
Study of DPX-Survivac Vaccine Therapy and Epacadostat in Patients With Recurrent Ovarian Cancer	Recurrent Epithelial Ovarian Cancer; Recurrent Fallopian Tube Cancer; Recurrent Peritoneal Cancer	Biological: DPX-Survivac; Drug: Cyclophosphamide; Drug: Epacadostat (INCB024360)	CA; NY; OR; PA; TX	NCT02785250
Intraperitoneal Infusion of Autologous Monocytes With Sylatron (Peginterferon Alfa-2b) and Actimmune (Interferon Gamma-1b) in Women With Recurrent or Refractory Ovarian Cancer, Fallopian Tube Cancer or Primary Peritoneal Cancer	Fallopian Tube Cancer; Ovarian Cancer; Primary Peritoneal Cancer	Biological: Autologous Monocytes + ACTIMMUNE + SYLATRON	MD	NCT02948426
A Dose Escalation Phase I Study to Assess the Safety and Clinical Activity of Multiple Cancer Indications	Colorectal Cancer (CRC); Ovarian Cancer (Epithelial and Fallopian Tube); Urothelial Carcinoma; Triple-negative Breast Cancer (TNBC); Pancreatic Cancer; Acute Myeloid Leukemia/Myelodysplastic Syndrome; Multiple Myeloma (MM)	Biological: NKR-2 cells	FL; NY; PA	NCT03018405
Trial of Atezolizumab and Vigil for Advanced Gynecological Cancers (A Companion Study to CL-PTL-119)	Advanced Gynecological Cancers; Ovarian Cancer; Cervical Cancer; Uterine Cancer	Biological: Vigil; Drug: Atezolizumab	AL; GA; MI; MT; NH; SC	NCT03073525
The Safety and Antitumor Activity of the Combination of Oregovomab and Hiltonol in Recurrent Advanced Ovarian Cancer	Cancer of Ovary; Neoplasms, Ovarian; Ovarian Cancer Stage IV; Ovarian Cancer Recurrent; Ovarian Cancer Stage III; Ovary Cancer	Biological: Oregovomab; Drug: Poly ICLC	FL; VA	NCT03162562
Ability of a Dendritic Cell Vaccine to Immunize Melanoma or Epithelial Cancer Patients Against Defined Mutated Neoantigens Expressed by the Autologous Cancer	Melanoma; Gastrointestinal Cancer; Breast Cancer; Ovarian Cancer; Pancreatic Cancer	Biological: Peptide loaded dendritic cell vaccine	MD	NCT03300843
T Cell Immunotherapy for Advanced Ovarian Cancer	Platinum Resistant Ovarian Cancer	Procedure: Leukapheresis; Drug: Utomilumab; Drug: Cyclophosphamide; Biological: T Cell Infusion; Drug: Interleukin-2	TX	NCT03318900
Administration of Autologous T-Cells Genetically Engineered to Express T-Cell Receptors Reactive Against Mutated Neoantigens in People With Metastatic Cancer	Glioblastoma; Non-Small Cell Lung Cancer; Ovarian Cancer; Breast Cancer; Gastrointestinal/Genitourinary Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Aldesleukin; Biological: Individual Patient TCR-Transduced PBL	MD	NCT03412877
A Safety and Tolerability Study of NC318 in Subjects With Advanced or Metastatic Solid Tumors	Advanced or Metastatic Solid Tumors; Head and Neck Squamous Cell Carcinoma; Non-Small Cell Lung Cancer; Ovarian Cancer	Drug: NC318	CA; CT; NJ; NY; TX	NCT03665285
A Study to Evaluate Safety/Tolerability of Immunotherapy Combinations in Participants With Triple-Negative Breast Cancer and Gynecologic Malignancies	TNBC - Triple-Negative Breast Cancer; Ovarian Cancer	Drug: AB928; Drug: Pegylated liposomal doxorubicin	NC	NCT03719326

PANCREATIC

Title	Cancer Type	Treatment	Location	NCT Number
A Trial of Boost Vaccinations of Pancreatic Tumor Cell Vaccine	Pancreatic Cancer	Biological: PANC 10.05 pcDNA-1/GM-Neo and PANC 6.03 pcDNA-1 neo vaccine.	MD	NCT01088789
Immunotherapy Using Tumor Infiltrating Lymphocytes for Patients With Metastatic Cancer	Metastatic Colorectal Cancer; Metastatic Gastric Cancer; Metastatic Pancreatic Cancer; Metastatic Hepatocellular Carcinoma; Metastatic Cholangiocarcinoma	Biological: Young TIL; Drug: Aldesleukin; Drug: Cyclophosphamide; Drug: Fludarabine; Drug: Pembrolizumab	MD	NCT01174121
A Study of LGK974 in Patients With Malignancies Dependent on Wnt Ligands	Pancreatic Cancer; BRAF Mutant Colorectal Cancer; Melanoma; Triple Negative Breast Cancer; Head and Neck Squamous Cell Cancer; Cervical Squamous Cell Cancer; Esophageal Squamous Cell Cancer; Lung Squamous Cell Cancer	Drug: LGK974; Biological: PDR001	MA; MD; MI; TX	NCT01351103
CAR T Cell Receptor Immunotherapy Targeting Mesothelin for Patients With Metastatic Cancer	Cervical Cancer; Pancreatic Cancer; Ovarian Cancer; Mesothelioma; Lung Cancer	Drug: Fludarabine; Biological: Anti-mesothelin CAR; Drug: Cycolphosphamide; Drug: Aldesleukin	MD	NCT01583686
Safety and Immunological Effect of Pembrolizumab in Resectable or Borderline Resectable Pancreatic Cancer	Pancreatic Cancer	Drug: Pembrolizumab; Radiation: Neoadjuvant Chemoradiation	FL; MA; TX; VA	NCT02305186
Study With CY, Pembrolizumab, GVAX, and SBRT in Patients With Locally Advanced Pancreatic Cancer	Pancreatic Cancer	Drug: Cyclophosphamide; Drug: GVAX; Drug: Pembrolizumab; Radiation: SBRT	MD	NCT02648282
Epacadostat, Pembrolizumab, and CRS-207, With or Without CY/GVAX Pancreas in Patients With Metastatic Pancreas Cancer	Metastatic Pancreatic Adenocarcinoma	Drug: Epacadostat; Drug: Pembrolizumab; Biological: CRS-207; Drug: CY; Biological: GVAX	MD	NCT03006302
A Dose Escalation Phase I Study to Assess the Safety and Clinical Activity of Multiple Cancer Indications	Colorectal Cancer (CRC); Ovarian Cancer (Epithelial and Fallopian Tube); Urothelial Carcinoma; Triple-negative Breast Cancer (TNBC); Pancreatic Cancer; Acute Myeloid Leukemia/Myelodysplastic Syndrome; Multiple Myeloma (MM)	Biological: NKR-2 cells	FL; NY; PA	NCT03018405
A Phase 1/2 Safety Study of Intratumorally Dosed INT230-6	Melanoma; Head and Neck Cancer; Lymphoma; Breast Cancer; Pancreatic Cancer; Liver Cancer; Colon Cancer; Lung Cancer; Glioblastoma	Drug: INT230-6; Biological: anti-PD-1; Biological: anti-PD-1 antibody	CA; MA; MD; PA	NCT03058289
Immunotherapy and Irreversible Electroporation in the Treatment of Advanced Pancreatic Adenocarcinoma	Pancreatic Adenocarcinoma	Drug: Nivolumab; Procedure: Irreversible Electroporation	KY	NCT03080974
Study of Talimogene Laherparepvec (T-VEC) in Pancreatic Cancer	Pancreatic Cancer	Drug: Talimogene laherparepvec	NY	NCT03086642
Immunotherapy Study of Evofosfamide in Combination With Ipilimumab	Pancreatic Cancer; Melanoma; Squamous Cell Carcinoma of the Head and Neck; Prostate Cancer	Drug: Evofosfamide; Drug: Ipilimumab	TX	NCT03098160
Pilot Study With CY, Pembrolizumab, GVAX, and IMC-CS4 (LY3022855) in Patients With Borderline Resectable Adenocarcinoma of the Pancreas	Pancreatic Cancer	Drug: Cyclophosphamide; Drug: GVAX; Drug: Pembrolizumab; Drug: IMC-CS4	MD	NCT03153410
Phase 2 GVAX Pancreas Vaccine (With CY) in Combination With Nivolumab and SBRT for Patients With Borderline Resectable Pancreatic Cancer	Pancreatic Cancer	Drug: Cyclophosphamide; Drug: Nivolumab; Drug: GVAX Pancreas Vaccine; Radiation: Stereotactic Body Radiation (SBRT)	MA; MD	NCT03161379
Study of CRS-207, Nivolumab, and Ipilimumab With or Without GVAX Pancreas Vaccine (With Cy) in Patients With Pancreatic Cancer	Pancreatic Cancer	Drug: Cyclophosphamide; Drug: Nivolumab; Drug: Ipilimumab; Drug: GVAX Pancreas Vaccine; Drug: CRS-207	MD	NCT03190265
Administering Peripheral Blood Lymphocytes Transduced With a Murine T-Cell Receptor Recognizing the G12V Variant of Mutated RAS in HLA-A*1101 Patients	Pancreatic Cancer; Gastric Cancer; Gastrointestinal Cancer; Colon Cancer; Rectal Cancer	Drug: Cyclophosphamide; Drug: Fludarabine; Biological: anti-KRAS G12V mTCR; Drug: Aldesleukin	MD	NCT03190941
A Study of Multiple Immunotherapy-Based Treatment Combinations in Participants With Metastatic Pancreatic Ductal Adenocarcinoma (Morpheus-Pancreatic Cancer)	Pancreatic Adenocarcinoma	Drug: Nab-Paclitaxel; Drug: Gemcitabine; Drug: Oxaliplatin; Drug: Leucovorin; Drug: Fluorouracil; Drug: Atezolizumab; Drug: Cobimetinib; Drug: PEGPH20; Drug: BL-8040	CA; CT; MA; NY; OR; PA; TN	NCT03193190
A Phase 2 Study of NIR178 in Combination With PDR001 in Patients With Solid Tumors and Non-Hodgkin Lymphoma	NSCLC, Non Small Cell Lung Cancer; RCC, Renal Cell Cancer; Pancreatic Cancer; Urothelial Cancer; Head and Neck Cancer; DLBCL, Diffused Large B Cell Lymphoma; MSS, Microsatellite Stable Colon Cancer; TNBC, Triple Negative Breast Cancer; Melanoma	Drug: NIR178; Drug: PDR001	CA; FL; MD; OH; TX; WI	NCT03207867
A Clinical Trial of Entinostat in Combination With Nivolumab for Patients With Previously Treated Unresectable or Metastatic Cholangiocarcinoma and Pancreatic Adenocarcinoma	Previously Treated Unresectable or Metastatic Cholangiocarcinoma and Pancreatic Cancer; Cholangiocarcinoma; Pancreatic Cancer; Metastatic Pancreatic Cancer	Drug: Entinostat; Drug: Nivolumab	MD	NCT03250273
BATs Treatment for Pancreatic Cancer, Phase Ib/II	Locally Advanced Pancreatic Adenocarcinoma; Metastatic Pancreatic Adenocarcinoma	Drug: EGFR BATs after standard of care chemo	VA	NCT03269526
Ability of a Dendritic Cell Vaccine to Immunize Melanoma or Epithelial Cancer Patients Against Defined Mutated Neoantigens Expressed by the Autologous Cancer	Melanoma; Gastrointestinal Cancer; Breast Cancer; Ovarian Cancer; Pancreatic Cancer	Biological: Peptide loaded dendritic cell vaccine	MD	NCT03300843
FATE-NK100 as Monotherapy and in Combination With Monoclonal Antibody in Subjects With Advanced Solid Tumors	HER2 Positive Gastric Cancer; Colorectal Cancer; Head and Neck Squamous Cell Carcinoma; EGFR Positive Solid Tumor; Advanced Solid Tumors; HER2-positive Breast Cancer; Hepatocellular Carcinoma; Small Cell Lung Cancer; Renal Cell Carcinoma; Pancreas Cancer	Drug: FATE-NK100; Drug: Cetuximab; Drug: Trastuzumab	MN; TX	NCT03319459
VX15/2503 and Immunotherapy in Resectable Pancreatic and Colorectal Cancer	Colon Carcinoma Metastatic in the Liver; Colorectal Adenocarcinoma; Pancreatic Adenocarcinoma; Resectable Pancreatic Carcinoma; Stage I Pancreatic Cancer; Stage IA Pancreatic Cancer; Stage IB Pancreatic Cancer; Stage II Pancreatic Cancer; Stage IIA Pancreatic Cancer; Stage IIB Pancreatic Cancer; Stage III Pancreatic Cancer; Stage IV Colorectal Cancer; Stage IVA Colorectal Cancer; Stage IVB Colorectal Cancer	Biological: Anti-SEMA4D Monoclonal Antibody VX15/2503; Biological: Ipilimumab; Biological: Nivolumab; Procedure: Surgery	GA	NCT03373188

PANCREATIC (CONTINUED)

Title	Cancer Type	Treatment	Location	NCT Number
QUILT-2.025 NANT Neoepitope Yeast Vaccine (YE-NEO-001): Adjuvant Immunotherapy Using a Personalized Neoepitope Yeast-Based Vaccine To Induce T-Cell Responses In Subjects W/ Previously Treated Cancers.	Colorectal Cancer; Triple Negative Breast Cancer; Head and Neck Squamous Cell Carcinoma; Melanoma; Non Small Cell Lung Cancer; Pancreatic Cancer; Liver Cancer; Hormone Receptor Positive Tumor	Biological: YE-NEO-001	CA	NCT03552718
CAR-T Intraperitoneal Infusions for CEA-Expressing Adenocarcinoma Peritoneal Metastases or Malignant Ascites (IPC)	Peritoneal Carcinomatosis; Peritoneal Metastases; Colorectal Cancer; Gastric Cancer; Breast Cancer; Pancreas Cancer; Carcinoembryonic Antigen	Biological: anti-CEA CAR-T cells	NJ; RI	NCT03682744

PENILE

Title	Cancer Type	Treatment	Location	NCT Number
E7 TCR T Cells With or Without PD-1 Blockade for Human Papillomavirus-Associated Cancers	Cervical Cancer; Vaginal Cancer; Anal Cancer; Penile Cancer; Oropharyngeal Cancer	Biological: E7 TCR Transduced PBL cells; Drug: pembrolizumab; Drug: aldesleukin; Drug: fludarabine; Drug: cyclophosphamide	MD	NCT02858310

PERITONEAL

Title	Cancer Type	Treatment	Location	NCT Number
PARP-inhibition and CTLA-4 Blockade in BRCA-deficient Ovarian Cancer	Ovarian Cancer; Fallopian Tube Cancer; Peritoneal Neoplasms	Drug: Olaparib; Drug: Tremelimumab	NM	NCT02571725
GL-ONC1 Oncolytic Immunotherapy in Patients With Recurrent Ovarian Cancer	Ovarian Cancer; Peritoneal Carcinomatosis; Fallopian Tube Cancer	Biological: GL-ONC1	FL	NCT02759588
Study of DPX-Survivac Vaccine Therapy and Epacadostat in Patients With Recurrent Ovarian Cancer	Recurrent Epithelial Ovarian Cancer; Recurrent Fallopian Tube Cancer; Recurrent Peritoneal Cancer	Biological: DPX-Survivac; Drug: Cyclophosphamide; Drug: Epacadostat (INCB024360)	CA; NY; OR; PA; TX	NCT02785250
Intraperitoneal Infusion of Autologous Monocytes With Sylatron (Peginterferon Alfa-2b) and Actimmune (Interferon Gamma-1b) in Women With Recurrent or Refractory Ovarian Cancer, Fallopian Tube Cancer or Primary Peritoneal Cancer	Fallopian Tube Cancer; Ovarian Cancer; Primary Peritoneal Cancer	Biological: Autologous Monocytes + ACTIMMUNE + SYLATRON	MD	NCT02948426
CAR-T Intraperitoneal Infusions for CEA-Expressing Adenocarcinoma Peritoneal Metastases or Malignant Ascites (IPC)	Peritoneal Carcinomatosis; Peritoneal Metastases; Colorectal Cancer; Gastric Cancer; Breast Cancer; Pancreas Cancer; Carcinoembryonic Antigen	Biological: anti-CEA CAR-T cells	NJ; RI	NCT03682744

PROSTATE

Title	Cancer Type	Treatment	Location	NCT Number
Phase 3 Study of ProstAtak® Immunotherapy With Standard Radiation Therapy for Localized Prostate Cancer	Prostate Cancer	Biological: ProstAtak®(AdV-tk) + valacyclovir; Biological: Placebo + valacyclovir	AZ; CO; DC; MA; MD; NM; NY; OH; PA; TX	NCT01436968
C11-Sodium Acetate PET/CT Imaging for Metastatic Disease in Intermediate-to-high Risk Prostate Adenocarcinoma	Prostate Cancer; Prostate Adenocarcinoma	Drug: C11-Sodium Acetate	AZ	NCT01530269
A Randomized Phase 2 Trial of Combining Sipuleucel-T With Immediate vs. Delayed CTLA-4 Blockade for Prostate Cancer	Prostate Cancer	Drug: SipT Treatment; Drug: Ipilimumab	CA; TX	NCT01804465
A Phase 1 Study To Evaluate Escalating Doses Of A Vaccine-Based Immunotherapy Regimen For Prostate Cancer (PrCa VBIR)	Prostatic Neoplasms	Biological: PF-06755992; Biological: PF-06755990; Device: TDS-IM Electroporation Device; Biological: Tremelimumab; Drug: Sunitinib; Biological: PF-06801591	CT; MD; MI; NC; NE; NV; NY; PA; WA	NCT02616185
Prostvac in Patients With Biochemically Recurrent Prostate Cancer	Prostate Cancer	Biological: PROSTVAC -V; Biological: PROSTVAC-F	MD; NY	NCT02649439
Docetaxel and PROSTVAC for Metastatic Castration-Sensitive Prostate Cancer	Prostate Cancer; Prostate Neoplasms; Neoplasms, Prostatic	Biological: PROSTVAC-V; Biological: PROSTVAC-F; Drug: Docetaxel	MD	NCT02649855
Randomized Controlled Trial of ProstAtak® Immunotherapy During Active Surveillance for Prostate Cancer (ULYSSES)	Prostate Cancer	Biological: aglatimagene besadenovec; Biological: placebo; Drug: valacyclovir	CO; MA; MD; NY; OH; PA; TX	NCT02768363
PROSTVAC in Combination With Nivolumab in Men With Prostate Cancer	Prostate Cancer	Biological: PROSTVAC-V/F; Drug: Nivolumab	MD	NCT02933255
Immunotherapy Study of Evofosfamide in Combination With Ipilimumab	Pancreatic Cancer; Melanoma; Squamous Cell Carcinoma of the Head and Neck; Prostate Cancer	Drug: Evofosfamide; Drug: Ipilimumab	TX	NCT03098160
PD-L1 Inhibition as CheckPoint Immunotherapy for NeuroEndocrine Phenotype Prostate Cancer	Prostate Cancer	Drug: Avelumab	NC	NCT03179410
Tremelimumab + Durvalumab Chemotherapy Naive CRPC	Castration-resistant Prostate Cancer	Drug: Durvalumab; Drug: Tremelimumab	TX	NCT03204812
Neoadjuvant Hiltonol® (PolyICLC) for Prostate Cancer	Prostate Cancer	Biological: Intratumoral (IT) Poly ICLC 0.5 mg; Biological: Intratumoral (IT) Poly ICLC 1.0 mg; Biological: Intramuscular (IM) Poly ICLC; Procedure: Radical Prostatectomy	NY	NCT03262103
Combination Immunotherapy in Biochemically Recurrent Prostate Cancer	Prostate Cancer	Biological: PROSTVAC-V; Biological: PROSTVAC-F; Drug: MSB0011359C (M7824); Biological: CV301	MD	NCT03315871
An Investigational Immunotherapy Study of Nivolumab in Combination With Rucaparib, Docetaxel, or Enzalutamide in Metastatic Castration-resistant Prostate Cancer	Prostate Cancer	Biological: Nivolumab; Drug: Docetaxel; Drug: Enzalutamide; Drug: Rucaparib; Drug: Prednisone	AL; CA; CT; FL; GA; KY; LA; MA; MD; MI; MN; MO; MS; NC; NE; NY; OR; PA; VA	NCT03338790
Treatment of Castration Resistant Prostate Cancer Using Multi-Targeted Recombinant Ad5 PSA/MUC1/Brachyury Based Immunotherapy Vaccines	Prostatic Neoplasms; Prostatic Cancer	Biological: ETBX-071; adenoviral PSA vaccine; Biological: ETBX-061; adenoviral MUC1 vaccine; Biological: ETBX-051; adenoviral brachyury vaccine	MD	NCT03481816
Phase I/II Study of Immunotherapy Combination BN-Brachyury Vaccine, M7824, ALT-803 and Epacadostat (QuEST1)	Metastatic Prostate Cancer; Prostate Cancer; Prostate Neoplasm; Advanced Solid Tumors; Solid Tumor	Biological: M7824; Drug: ALT-803; Biological: MVA-BN-Brachyury; Biological: FPV-Brachyury; Drug: Epacadostat	MD	NCT03493945
Combination of Nivolumab Immunotherapy With Radiation Therapy and Androgen Deprivation Therapy	Prostate Cancer; Prostate Disease	Drug: Nivolumab; Radiation: Brachytherapy; Radiation: External Beam Radiation Therapy; Drug: Androgen Deprivation Therapy	FL	NCT03543189
Immunotherapy in Patients With Metastatic Cancers and CDK12 Mutations	Metastatic Castration Resistant Prostate Cancer; Metastatic Cancer	Drug: Nivolumab; Drug: Ipilimumab	MI	NCT03570619

RECTAL

Title	Cancer Type	Treatment	Location	NCT Number
ExIST Study of LY2157299 (Galunisertib) in Rectal Cancer	Rectal Adenocarcinoma	Drug: LY2157299; Drug: Capecitabine; Drug: Fluorouracil; Procedure: Tumor specific mesorectal excision	OR	NCT02688712

SARCOMA

Title	Cancer Type	Treatment	Location	NCT Number
Phase 2 STIR Trial: Haploidentical Transplant and Donor Natural Killer Cells for Solid Tumors	Ewing Sarcoma; Neuroblastoma; Rhabdomyosarcoma; Osteosarcoma; CNS Tumors	Procedure: Allogeneic HCT; Drug: Donor NK Cell Infusion	WI	NCT02100891
In Situ, Autologous Therapeutic Vaccination Against Solid Cancers With Intratumoral Hiltonol®	Melanoma; Head and Neck Cancer; Sarcoma; Non-Melanoma Skin Cancers	Biological: Hiltonol	GA; MD; MO; NY; PA; SC	NCT02423863
Trial of Intratumoral Injections of TTI-621 in Subjects With Relapsed and Refractory Solid Tumors and Mycosis Fungoides	Solid Tumors; Mycosis Fungoides; Melanoma; Merkel-cell Carcinoma; Squamous Cell Carcinoma; Breast Carcinoma; Human Papillomavirus-Related Malignant Neoplasm; Soft Tissue Sarcoma	Drug: TTI-621	CA; OR; PA; WA	NCT02890368
A Phase II Trial of Avelumab in Patients With Recurrent or Progressive Osteosarcoma	Osteosarcoma	Drug: Avelumab; Other: Questionnaires	CA; NY; TN; TX	NCT03006848
Neoadjuvant Durvalumab and Tremelimumab Plus Radiation for High Risk Soft-Tissue Sarcoma	Soft Tissue Sarcoma	Combination Product: Combination Radiation, Immunotherapy, Surgery	MD	NCT03116529
Trabectedin, Ipilimumab and Nivolumab as First Line Treatment for Advanced Soft Tissue Sarcoma	Advanced Soft Tissue Sarcoma; Metastatic Soft Tissue Sarcoma	Drug: Trabectedin; Drug: Ipilimumab; Drug: Nivolumab	CA	NCT03138161
Study of Adoptive Immunotherapy Using Autologous CD8+ NY-ESO-1-Specific T Cells and the NY-ESO-1 Immunostimulatory Agents LV305 or CMB305 For Patients With Sarcoma	Malignant Neoplasms of Bone and Articular Cartilage; Malignant Neoplasms of Mesothelial and Soft Tissue; Synovial Sarcoma; Myxoid Liposarcoma	Biological: Modified T Cells; Drug: Cyclophosphamide; Biological: IL-2; Biological: LV305; Biological: CMB305	TX	NCT03450122
Immunotherapy + Radiation in Resectable Soft Tissue Sarcoma	Sarcoma	Drug: nivolumab; Drug: ipilimumab	NY	NCT03463408
Vigil + Irinotecan and Temozolomide in Ewing's Sarcoma	Ewing Sarcoma; Ewing Family of Tumors; Ewing's Tumor Metastatic; Ewing's Sarcoma Metastatic	Biological: Vigil; Drug: Irinotecan; Drug: Temozolomide	AR; FL; MA; MO; OH; PA; TX	NCT03495921
Safety and Efficacy of IMCnyeso in Advanced NY-ESO-1 and/or LAGE-1A Positive Cancers	Melanoma; Advanced NSCLC; Urothelial Carcinoma; Synovial Sarcoma	Drug: IMCnyeso	PA	NCT03515551

STOMACH

Title	Cancer Type	Treatment	Location	NCT Number
Trial of Active Immunotherapy With OBI-833 (Globo H-CRM197) in Advanced/Metastatic Gastric, Lung, Colorectal or Breast Cancer Subjects	Metastatic Gastric Cancer; Metastatic Breast Cancer; Metastatic Colorectal Cancer; Metastatic Lung Cancer	Drug: OBI-833/OBI-821	OH; TX	NCT02310464
Combination Margetuximab and Pembrolizumab for Advanced, Metastatic HER2(+) Gastric or Gastroesophageal Junction Cancer	Gastric Cancer; Stomach Cancer; Esophageal Cancer	Drug: margetuximab in combination with pembrolizumab	CT; DC; IL; MA; MD; MI; MO; NC; PA; TN; WA	NCT02689284
A Study of Multiple Immunotherapy-Based Treatment Combinations in Patients With Locally Advanced Unresectable or Metastatic Gastric or Gastroesophageal Junction Cancer (G/GEJ)	Gastric Adenocarcinoma or Gastroesophageal Junction Adenocarcinoma	Drug: 5-Fluorouracil (5-FU); Drug: Leucovorin; Drug: Oxaliplatin; Biological: Atezolizumab; Drug: Cobimetinib; Biological: Ramucirumab; Drug: Paclitaxel; Biological: PEGylated recombinant human hyaluronidase (PEGPH20); Drug: BL-8040; Drug: Linagliptin	AZ; CA; MA; NY; TN; TX	NCT03281369

UTERINE

Title	Cancer Type	Treatment	Location	NCT Number
Trial of Atezolizumab and Vigil for Advanced Gynecological Cancers (A Companion Study to CL-PTL-119)	Advanced Gynecological Cancers; Ovarian Cancer; Cervical Cancer; Uterine Cancer	Biological: Vigil; Drug: Atezolizumab	AL; GA; MI; MT; NH; SC	NCT03073525

VAGINAL

Title	Cancer Type	Treatment	Location	NCT Number
E7 TCR T Cells With or Without PD-1 Blockade for Human Papillomavirus-Associated Cancers	Cervical Cancer; Vaginal Cancer; Anal Cancer; Penile Cancer; Oropharyngeal Cancer	Biological: E7 TCR Transduced PBL cells; Drug: pembrolizumab; Drug: aldesleukin; Drug: fludarabine; Drug: cyclophosphamide	MD	NCT02858310

ASSISTANCE & SUPPORT RESOURCES

CAREGIVERS & SUPPORT

4th Angel Patient & Caregiver Mentoring Program www.4thangel.org
CanCare ..... www.cancare.org
CANCER101 ..... www.cancer101.org
Cancer and Careers ..... www.cancerandcareers.org
Cancer*Care* ..... www.cancercare.org
Cancer Connection ..... www.cancer-connection.org
Cancer Hope Network ..... www.cancerhopenetwork.org
Cancer Information and Counseling Line 800-525-3777
Cancer Support Community ..... www.cancersupportcommunity.org
Cancer Support Helpline 888-793-9355
Cancer Survivors Network ..... csn.cancer.org
Caregiver Action Network ..... www.caregiveraction.org
CaringBridge ..... www.caringbridge.org
Family Caregiver Alliance ..... www.caregiver.org
Fighting Chance ..... www.fightingchance.org
Friend for Life Cancer Support Network www.friend4life.org, 866-374-3634
The Gathering Place ..... www.touchedbycancer.org
Guide Posts of Strength, Inc. ..... www.cancergps.org
The Hope Light Foundation ..... www.hopelightproject.com
Imerman Angels ..... www.imermanangels.org
LIVESTRONG Foundation ..... www.livestrong.org
LivingWell Cancer Resource Center ..... www.livingwellcrc.org
MyLifeLine.org ..... www.mylifeline.org
The Lydia Project ..... thelydiaproject.org
Patient Empowerment Network ..... www.powerfulpatients.org
Patient Power ..... www.patientpower.info
SHARE Caregiver Circle ..... www.sharecancersupport.org/caregivers-support
Stronghold Ministry ..... www.mystronghold.org
Support Groups ..... www.supportgroups.com
Triage Cancer ..... www.triagecancer.org
Well Spouse Association ..... www.wellspouse.org
weSPARK Cancer Support Center ..... www.wespark.org

CLINICAL TRIALS

ACCESS ..... cantria.com/access
AccrualNet ..... accrualnet.cancer.gov
ACT (About Clinical Trials) ..... www.learnaboutclinicaltrials.org
Center for Information and Study on Clinical Research Participation ..... www.searchclinicaltrials.org
CenterWatch ..... www.centerwatch.com
ClinicalTrials.gov ..... www.clinicaltrials.gov
Lazarex Cancer Foundation ..... www.lazarex.org
LIVESTRONG Foundation ..... www.livestrong.org
My Clinical Trial Locator ..... myclinicaltriallocator.com
National Cancer Institute ..... www.cancer.gov/clinicaltrials
NCI Contact Center (cancer information service) 800-422-6237
TrialCheck ..... www.trialcheck.org

IMMUNOTHERAPY

The Answer to Cancer ..... www.theanswertocancer.org
Cancer Research Institute ..... www.cancerresearch.org
Immuno-Oncology ..... www.immunooncology.com
Society for Immunotherapy of Cancer ..... www.sitcancer.org

MENTAL HEALTH SERVICES

American Psychosocial Oncology Society Helpline 866-276-7443

NUTRITION

American Cancer Society ..... www.cancer.org
Cancer*Care* ..... www.cancercare.org
LIVESTRONG Foundation ..... www.livestrong.org
OncoLink ..... www.oncolink.org
PearlPoint Nutrition Services ..... www.pearlpoint.org
Physicians Committee for Responsible Medicine ..... www.pcrm.org/health/cancer-resources

PAIN MANAGEMENT

American Chronic Pain Association ..... theacpa.org
American Society of Anesthesiologists ..... www.asahq.org
Cancer Pain Research Consortium ..... www.cancerpainresearchconsortium.org
LIVESTRONG Foundation ..... www.livestrong.org
The Resource Center of the Alliance of State Pain Initiatives ..... www.trc.wisc.edu
U.S. Pain Foundation ..... uspainfoundation.org

PRESCRIPTION EXPENSES

Cancer*Care* Co-Payment Assistance Foundation ..... www.cancercarecopay.org, 866-552-6729
Cancer Financial Assistance Coalition ..... www.cancerfac.org
Foundation for Health Coverage Education ..... www.coverageforall.org
GoodDays ..... www.mygooddays.org, 972-608-7141
HealthWell Foundation ..... www.healthwellfoundation.org, 800-675-8416
NeedyMeds ..... www.needymeds.org, 800-503-6897
Partnership for Prescription Assistance ..... www.pparx.org
Patient Access Network Foundation ..... www.panfoundation.org, 866-316-7263
Patient Advocate Foundation Co-Pay Relief ..... www.copays.org, 866-512-3861
Patient Services, Inc ..... www.patientservicesinc.org, 800-366-7741
RxAssist ..... www.rxassist.org
RxHope ..... www.rxhope.com
RxOutreach ..... www.rxoutreach.com, 888-796-1234
Singlecare ..... www.singlecare.com, 844-234-3057
Together Rx Access ..... www.togetherrxaccess.com, 800-444-4106

REIMBURSEMENT & PATIENT ASSISTANCE PROGRAMS

Amgen Assist 360 ..... www.amgenassist360.com/patient, 888-427-7478
AstraZeneca Access 360 ..... www.myaccess360.com, 844-275-2360
AstraZeneca Patient Savings Programs For Specialty Products ..... www.astrazenecaspecialtysavings.com, 844-275-2360
Bavencio CoverOne ..... www.coverone.com, 844-826-8371
Bristol-Myers Squibb Access Support ..... www.bmsaccesssupport.bmscustomerconnect.com/patient, 800-861-0048
Bristol-Myers Squibb Patient Assistance Foundation ..... www.bmspaf.org, 800-736-0003
Celgene Patient Support ..... www.celgenepatientsupport.com, 800-931-8691
Darzalex Janssen CarePath Savings Program ..... www.janssencarepath.com/patient/darzalex/patient-support, 844-553-2792
Darzalex Prescription Assistance ..... www.janssenprescriptionassistance.com/darzalex-cost-assistance, 844-553-2792
Empliciti Patient Support ..... www.empliciti.com/access, 844-367-5424
Gazyva Access Solutions ..... www.genentech-access.com/patient/brands/gazyva.html, 866-422-2377
Genentech Access Solutions ..... www.genentech-access.com/patient, 866-422-2377
Genentech BioOncology Co-pay Card ..... www.copayassistancenow.com, 855-692-6729
Imfinzi Access 360 ..... www.myaccess360.com/patient/patient-branded-imfinzi/home.html, 844-275-2360
Imlygic Co-Pay and Reimbursement Resources ..... www.imlygic.com/savings-and-support, 888-657-8371
IncyteCARES ..... www.incytecares.com, 855-452-5234
Intron A Patient Assistance program www.merckhelps.com/intron%20%20a, 800-727-5400
Janssen CarePath ..... www.janssencarepath.com, 877-227-3728
Janssen Prescription Assistance ..... www.janssenprescriptionassistance.com
Keytruda Patient Assistance ..... www.merckaccessprogram-keytruda.com/hcc/, 855-257-3932
Kymriah Cares ..... www.us.kymriah.com, 844-459-6742
Lilly Cares Foundation Patient Assistance Program ..... lillycares.com, 800-545-6962
Lilly PatientOne ..... www.lillypatientone.com, 866-472-8663
Merck Access Program ..... www.merckaccessprogram.com, 855-257-3932
Merck Helps ..... www.merckhelps.com, 800-727-5400
Novartis Financial Assistance ..... www.patient.novartisoncology.com/financial-assistance, 800-282-7630
Novartis Patient Assistance Now ..... patientassistancenow.com, 866-669-6682
Opdivo with You ..... www.patientsupport.bmscustomerconnect.com/opdivo-with-you-registration, 855-673-4861
Pfizer Oncology Together ..... www.pfizeroncologytogether.com/patient, 877-744-5675
Pfizer RxPathways ..... www.pfizerrxpathways.com, 844-989-7284
Pomalyst Patient Support ..... celgenepatientsupport.com/pomalyst-patient, 800-931-8691
Prometheus IV Bolus Proleukin Inpatient Reimbursement Hotline 877-776-5385
Provenge Financial Coverage ..... www.provenge.com/reimbursement, 877-336-3736
Revlimid Patient Support ..... www.revlimid.com/mds-patient/resources, 800-931-8691
Rituxan Hycela Access Solutions ..... www.genentech-access.com/patient/brands/rituxanhycela.html, 866-422-2377
Rituxan Patient Assistance Programs ..... www.rituxan.com/hem/patient/rituxan-patient-assistance, 888-249-4918
Seattle Genetics SeaGen Secure ..... www.seagensecure.com, 855-473-2873
Sylatron Patient Assistance ..... www.merckhelps.com/sylatron, 800-727-5400
Tecentriq Access Solutions ..... www.genentech-access.com/patient/brands/tecentriq.html, 866-422-2377
Thalomid Patient Support ..... celgenepatientsupport.com/thalomid-patient, 800-931-8691
Yescarta Patient Support ..... www.yescarta.com/support, 844-454-5483
Zevalin Reimbursement Support & Patient Assistance ..... www.zevalin.com/patient/support-resources-downloads/reimbursement-and-assistance, 888-537-8277

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