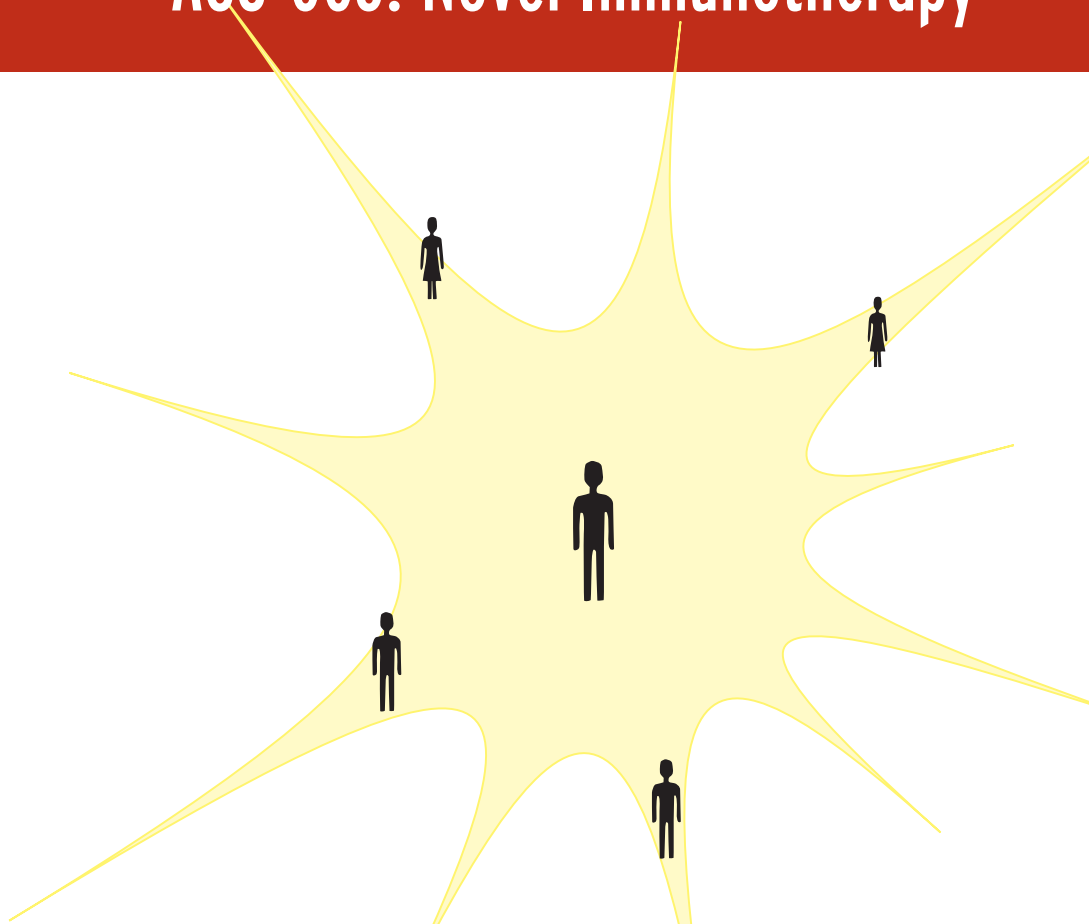


# AGS-003: Novel Immunotherapy



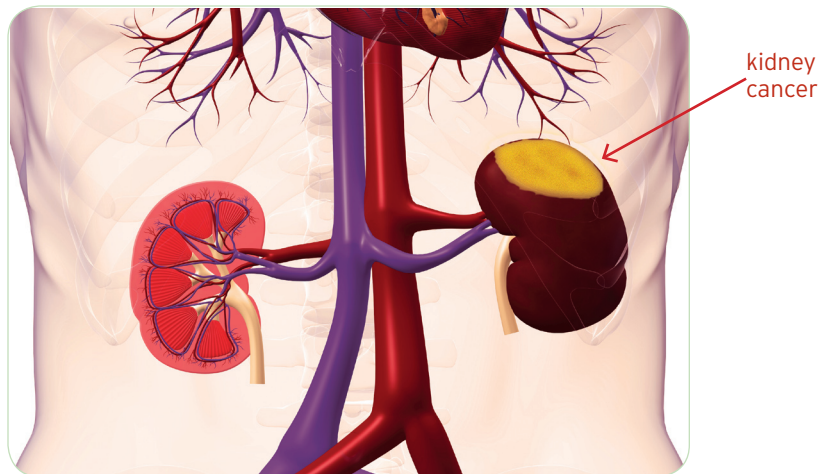
New cases of kidney cancer have increased over the past 30 years. While advances in surgery and drug treatments have been recently introduced, there is still a great need for safer and more effective treatments.

One type of treatment being actively tested in clinical trials is called **immunotherapy**. This approach uses a person's own immune system to fight cancer.

**AGS-003** is an experimental immunotherapy being tested in people with advanced kidney cancer. This immunotherapy treatment is being developed by **Argos Therapeutics, Inc.**, a biotechnology company based in Durham, North Carolina.



This brochure reviews **AGS-003**, an experimental immunotherapy being tested, and how it is developed specifically for each patient, its potential effects on kidney cancer, and its open research study for people with advanced kidney cancer.



## Kidney Cancer

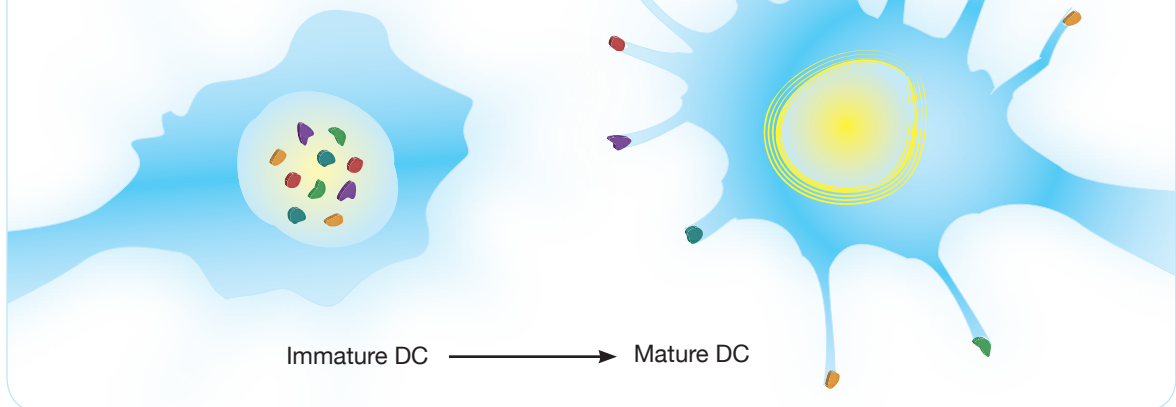
In 2008, more than 54,000 men and women will be diagnosed with kidney cancer in the United States. While many different types of cancer can develop in the kidneys, the most common form is called renal cell cancer. Renal cell cancer makes up more than 85% of all new kidney cancer cases. Kidney cancer most often develops in just one kidney. When the cancer spreads to other parts of the body, it is referred to as advanced or metastatic kidney cancer.

Treatment for advanced kidney cancer most often starts with surgery to remove the affected

kidney. The removal of a kidney is referred to as a **nephrectomy**. Two to four weeks after recovering from surgery, patients usually receive one or more of the following types of treatments: **targeted treatments**, immunotherapy and/or **chemotherapy**.

Various treatments will have more serious side effects than others and some treatments do not always work over long periods of time. So, safer and more effective treatments are being developed in an attempt to improve the lives of people with advanced kidney cancer.

Dendritic cells (DCs) process foreign invaders and present information from them on their surface to turn on the immune system.



## Cancer and Your Immune System

Your immune system plays an important role in helping your body fight disease—including cancer. Normally, your body produces many different types of white blood cells that help defend against attack from bacteria, viruses and cancer cells. A certain type of white blood cells, called **dendritic cells**, play an important part in helping to turn on the **immune system**, so that it is ready to seek and capture foreign invaders from outside and inside the body.

Unfortunately, when cancer develops, the immune system is often weak and unable to properly defend the body. In fact, research has shown that people with kidney cancer often have weaker immune systems.

Even though the immune system is weak in most people with kidney cancer; on rare occasions, people still experience a complete disappearance of their cancer. While this complete disappearance has been seen when people are treated with an older type of immune therapy, called interleukin-2, it has also been seen in others who have no further treatment after surgery alone.

This complete disappearance may occur because a person's immune system is turned back on and once again ready and able to fight off the cancer. For this reason, and due to the serious side effects associated with older types of immune therapy, researchers continue to search for better and safer immunotherapy treatments.

# AGS-003: Personalized Immunotherapy

Cancer can be very different from one patient to another. In fact, two people with the same type of cancer may actually have cancer with very different features. This is why current treatment approaches do not usually work to the same degree for each person who receives treatment.

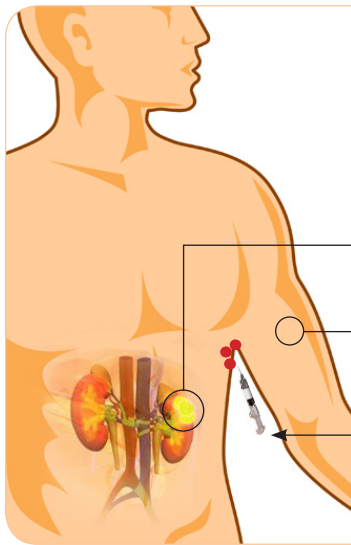
*AGS-003 is an experimental immunotherapy that is very personal because it is developed specifically for every person's own cancer.*

*AGS-003 uses important information taken from each person's kidney cancer and uses their own dendritic cells to create a personalized therapy. This therapy trains the individual patient's immune system to better recognize and attack their own cancer/disease.*

## How is AGS-003 made specifically for you?

1. The process for creating your personalized AGS-003 treatment begins with the standard "nephrectomy" or tumor resection procedure previously mentioned. A sample of your kidney cancer is taken from the diseased kidney that is removed. In cases where the kidney cancer has spread to other parts of the body, a sample may also be taken from another affected area. Your treatment team will determine the most appropriate way to get the sample.
- 2) In addition, you must undergo a procedure called **leukapheresis**. This procedure is similar to donating blood, but may take between 4-6 hours to obtain. Blood is removed from the vein in one arm, passed through a special machine and then returned through the other arm. The machine separates and collects your white blood cells from other blood components. Overall, less than one cup of white blood cells is collected during this procedure.
- 3) Your kidney cancer sample and white blood cells are sent to an Argos laboratory team, where each is processed to obtain the ingredients of your personalized AGS-003 treatment—**ribonucleic acid**, commonly known as RNA, and **dendritic cells**.
  - RNA is taken directly from the kidney cancer sample. It holds all of the specific information about your kidney cancer.
  - The dendritic cells are made from your white blood cells. Dendritic cells serve as the master switch that sparks your immune system into action.

In the laboratory, the RNA from your kidney cancer sample and dendritic cells developed from your white blood cells are combined to make a personalized AGS-003 treatment. This process normally supplies what amounts to approximately two years



## The Arcelis™ Process

### at the clinic

- Gather sample of tumor
- Collect white blood cells from arm (leukapheresis)
- Give personalized therapy

### in the lab

- Tumor RNA is collected
- Dendritic cells are processed
- Combined to make your personal AGS-003 treatment

of treatment for each person who receives AGS-003, however the process may yield fewer treatments in some cases.

### How is AGS-003 given?

The personalized AGS-003 treatment is given through a series of injections into the skin. The injections are given in areas of the body where **lymph nodes** exist, usually in the underarm area, as depicted in the diagram. AGS-003 is designed to turn on the immune system and help your own body mount a personal attack on the kidney cancer cells that exist. Just like other types of immunotherapy, AGS-003 is designed to work long after you receive injections. The goal is for the personalized AGS-003 treatment to continually identify new cancer cells and strengthen your immune system to attack these cells as they show up.

### What are the potential effects of AGS-003?

The first study involving a previous version of AGS-003 has been completed

in 20 people with advanced kidney cancer. This study tested the safety and immune system effects of this treatment. Overall, this version of AGS-003 was very safe and not linked to any serious side effects. The most common side effects were mild or moderate and included:

- Injection site reactions (pain, swelling, redness at injection site)
- Fatigue or tiredness
- Flu-like symptoms
- Skin reactions (rash, itching)

Overall these effects did not last long and were never considered serious.

The results of the initial study showed encouraging immune system responses and survival rates. More studies for people with advanced kidney cancer have been opened to test the latest and most advanced version of AGS-003.

# AGS-003-006 Study in Advanced Kidney Cancer

AGS-003 is currently being tested at locations throughout the U.S. and Canada. To be included in the ongoing AGS-003-006 study, the following criteria must be met:

- Newly diagnosed, advanced kidney cancer
- The type of kidney cancer must be “clear cell”
- The cancer must not be advancing too fast
- Patients with cancer that has spread to the brain are not eligible
- Enrollment must occur prior to surgery related to kidney cancer

This study is designed to test the effects of AGS-003 along with another commonly used drug, called Sutent® (sunitinib). Participants will receive their own personalized AGS-003 treatment along with the standard dose of sunitinib.

Your treatment team can help determine if you might be eligible for this study.

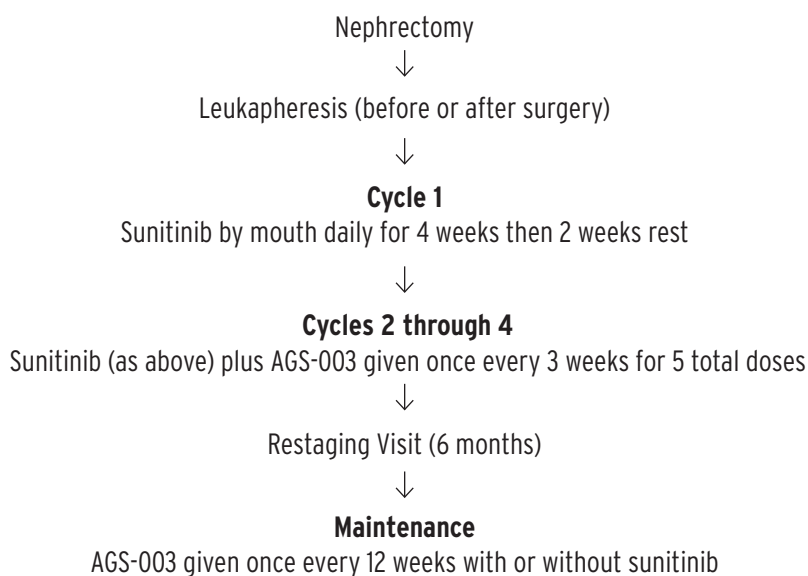
## What should you expect in this study?

People who participate in the studies will undergo testing on a regular basis to determine the safety and effects of AGS-003 combined with sunitinib on their immune system and cancer. As a reminder, side effects seen with AGS-003 in previous studies have included:

- Mild flu like symptoms
- Fatigue or tiredness
- Stinging, redness or swelling around the injection site
- Rash or itching at the site of injection

In addition, side effects can also be expected with sunitinib. Your treatment team will discuss potential sunitinib side effects in greater detail, should you qualify and choose to participate.

## AGS-003-006 Study Design



# GLOSSARY

**AGS-003** - a personalized, experimental immunotherapy treatment being studied for patients with kidney cancer

**dendritic cells** - a special type of cell that recognizes a foreign substance (such as infection or disease) in your body and tells it to turn on its immune system

**immune system** - the body system made up of many organs and cells that defends the body against infection, disease, and foreign substances; it is often stimulated in specific ways to fight cancer

**immunotherapy** - treatment to boost or restore the ability of your body's immune system to fight cancer, infections and other diseases

**leukapheresis** - a laboratory procedure in which white blood cells are separated from a sample of a patient's blood

**lymph nodes** - located throughout the body, these small ovals of tissue contain white blood cells and help filter out bacteria and other foreign substances

**nephrectomy** - surgery to remove a kidney or part of a kidney

**ribonucleic acid (RNA)** - one of the two types of nucleic acids found in all cells that plays a role in sending your genetic or heredity information to other parts of the cell

# Clinical Studies as a Treatment Option

Clinical studies are integral to making improvements in the care of people with cancer. In a recent survey entitled "Cancer Clinical Trials Awareness and Attitudes in Cancer Survivors", which was conducted by the Coalition of Cancer Cooperative Groups and Northwestern University, more than 2,000 U.S. cancer survivors were surveyed. The results of this survey found that as few as one in 10 cancer survivors reported ever being made aware of clinical studies during their treatment. For those survivors who were aware of and took part in clinical studies, the survey found that 92 percent of them had a positive experience with their clinical study.

If you have kidney cancer and would like to learn more about the open AGS-003-006 study, please contact us at:



For more information on kidney cancer, ongoing clinical studies and general patient support, please utilize the following links:

Kidney cancer association web site:

**[www.kidneycancer.org](http://www.kidneycancer.org)**

American cancer society web site:

**[www.cancer.org](http://www.cancer.org)**

National Cancer Institute kidney cancer specific web site:

**[www.cancer.gov/cancertopics/wyntk/kidney](http://www.cancer.gov/cancertopics/wyntk/kidney)**

ClinicalTrials.gov web site:

**<http://www.clinicaltrials.gov/ct/show/NCT00272649?order=1>**

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