



**Sanford Regenerative Medicine
Orthobiologics**

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HEALTH

What Is Regenerative Medicine?

Regenerative Medicine is an area of medical care that uses cell therapy such as stem cells or regenerative cells to treat disease or injury. While it is not perfectly understood how these cells work, it is thought they may be able to repair diseased or damaged tissues. They may also serve as a natural anti-inflammatory process.

Orthobiologics, a part of regenerative medicine, refers to the use of biological (natural) substances found in your body to help treat musculoskeletal (muscles and the bones) issues. This may include injuries to muscles, tendons, and ligaments, or more chronic conditions such as osteoarthritis. Treatment may decrease the need for pain medication, accelerate healing, and improve recovery. These treatments may also be an alternative to surgery.

Regenerative Medicine and orthobiologics are an advancing area of medical treatment. It is important to know that some treatments, such as adipose-derived stem cell therapy, are currently being studied using research to gain more knowledge in this advancing area of medicine. Research is a critical part of any regenerative medicine program and Sanford Health is leading several research projects. This brochure is to help you learn more about which treatment options may be best for you and help prepare questions to ask your doctor.

Why Consider Treatment With Orthobiologics?

Early results show that orthobiologics may help several musculoskeletal conditions. Offering this in our clinic, allows us to provide treatment options in a well-controlled and safe environment. Because this treatment is advancing, you will be asked to complete a questionnaire. The questions are related to how you are feeling as well as your level of pain and function at certain times following treatment. Your answers will help us to understand how well the treatment works and guide treatment for future patients.

Same-Day Treatment Options

Platelet-Rich Plasma (PRP)

What Is Platelet-Rich Plasma?

Platelet-Rich Plasma (PRP) is created from blood taken from a patient, processed, and injected back into his or her own body. The injection contains a high number of platelets. Platelets are known for their role in clotting of blood but also contain growth factors that may help the body heal.

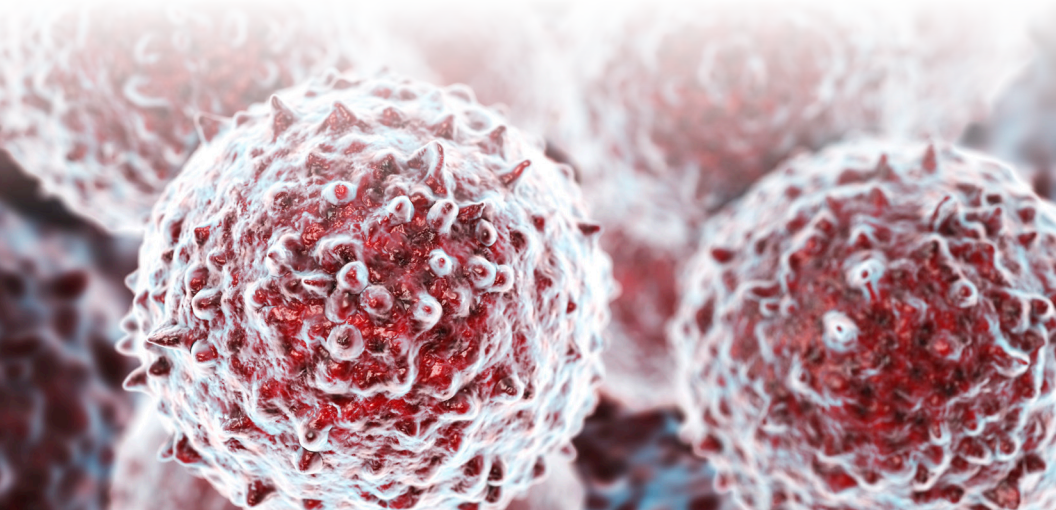
How PRP Works

To produce PRP, a small portion of the patient's blood is removed from the arm with a needle. Then, it is processed to separate the different parts of the blood. The part containing the platelets are separated and injected directly into the site of injury. This injection may help your body heal, improve movement, and decrease pain.

Stem Cells

What Are Stem Cells?

Stem cells are immature cells or 'starter cells'. These stem cells are a special human cell that have the potential to develop into many different types of cells. When a stem cell divides, each new cell can stay as a stem cell or has the potential to become a different type of cell with a specialized purpose.



How Are Stem Cells Different Than Other Cells in Our Body?

- They are able to divide and renew themselves over a person's life and have the potential to develop into cells with a specific job
- They send "messages" for other cells that may be able to signal healing in an injured area

The two types of cell therapy used in Orthobiologics at Sanford Health include **adult bone marrow-derived cells** and **adult adipose-derived stem cells**. The injection your doctor uses is not strictly stem cells. The aspirate or sample taken from either bone marrow or adipose tissue is filtered before injection, creating a mixture that contains many cell types and stem cells. This cell mixture is what is injected into the area of treatment.

Bone Marrow-Derived Cell Treatment

What Is Bone Marrow?

Bone marrow is the soft, spongy part inside of bones. Bone marrow contains many cells.

How Bone Marrow-Derived Cell Therapy Works

Cells are obtained through a process called 'bone marrow aspiration'. A needle is used to remove a small portion of your bone marrow, most often from the back of the pelvis. The cells in your bone marrow are separated and prepared for an injection. On the same day, the doctor will inject the cell mixture into the specific area of your body that needs treatment.

Adipose-Derived Stem Cells

What Are Adipose-Derived Stem Cells?

Adipose-derived means the stem cells come from a person's body fat.

How Adipose-Derived Stem Cells Work

The adipose-derived stem cells may stimulate healing and can help decrease inflammation. Stem cells are obtained through a process called lipoaspirate (lip o-as pi-rat). This is also called liposuction.

- A small amount of fat is taken from your abdomen (belly) or gluteal (buttock) area
- The stem cells are separated from the other cells
- The stem cells are washed of other cellular parts
- On the same day, the cells are injected into a specific area of your body that needs treatment

This service is offered at Sanford Health through a clinical trial and is being conducted in full compliance with FDA regulations. Use of adipose-derived stem cells is not currently an FDA-approved clinical treatment.



Cell Testing and Cell Counting For Orthobiologics

Therapeutic cells are evaluated and tested for your safety. To ensure the best possible outcome for you, the sample is evaluated to make sure enough active or live cells are present. Tests are also done to decrease the chance of infection. The types of tests described below may be used in your treatment plan.

- **Cell counting**—cells are put into a machine that counts the number of live and dead cells. This is to make sure there are enough live cells to make the injection successful.
- **Endotoxin testing**—this test is done to keep you safe and decrease the chance your body will have a negative response to the injection.
- **Gram stain**—the cells must be sterile (free from bacteria). Gram staining is used to make sure there is no bacteria in the sample.
- **Aerobic and anaerobic culture**—this is done to make sure there is no bacteria in the sample.

One of the challenges in studying outcomes in orthobiologics is that each person has different types and amounts of cells. This means that the cells you get from one patient can be very different from another patient. However, cell testing can provide valuable information about the cells before they are injected back into the patient.

What If I Do Not Qualify For Orthobiologics?

Orthobiologic procedures are not appropriate for all conditions and may not benefit all patients. If orthobiologics are not a good choice for you, we can discuss other treatment options that you may benefit from. This may include treatments such as hyaluronic acid and corticosteroids.



Hyaluronic Acid

What Is Hyaluronic Acid?

Hyaluronic acid (HA) is a natural substance found in the fluid that surrounds a healthy knee. The fluid in which hyaluronic acid is present is called synovial fluid. Synovial fluid helps cushion, lubricate, and protect the joint. HA acts similar to synovial fluid.

How Hyaluronic Acid Works

Over time the amount of hyaluronic acid in your joints may decrease. Your doctor can inject hyaluronic acid directly into your joint to help cushion and protect the joint. It can help the joint work as it should, by acting as a lubricant, shock absorber, and anti-inflammatory agent.

Steroid Injection

What Is a Steroid?

Inflammation is often a cause of pain. A steroid is a type of medication that helps decrease inflammation in your body.

How Steroid Injections Work

Your doctor injects the steroid medication directly into the inflamed area. They may use a local anesthetic to reduce the amount of pain you feel during the procedure. The steroid works to decrease the amount of inflammation and improve pain.

How to Make an Appointment

Sanford offers a variety of treatment options. It is important to see and discuss these options with your doctor to decide what treatment is best for you. As with most new treatments, insurance carriers may not pay all or any of the treatment expenses. Check with your insurance carrier about your coverage for this treatment.

Please call to schedule your appointment.

Monday-Friday
8:00 AM-5:00 PM

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