



FOREVER LABS INFORMATION



## FOREVER LABS CRYOPRESERVES YOUR STEM CELLS.

Your stem cells grow older as you do. Forever Labs can bank them now, so that you have a reserve of your own young stem cells for future use.

## FOREVER LABS WAS FOUNDED BY SCIENTISTS.

Forever Labs was founded by researchers and clinicians who specialize in MSC therapy for neurologic disease, who each have more than a decade of experience in state-of-the-academy research.

The foundational ideal of Forever Labs is that everyone should have the best opportunity to provide a long, healthy life for themselves and their families.

We strive to bring to our clients the best available knowledge, resources, and medical personnel, so that they may make choices about stem cell banking with confidence and conviction. We believe stem cell banking should be available to everyone. For this reason, we strive to bring stem cell banking to our clients at an affordable price without sacrificing the integrity of the process, which we will never conduct with less than full and total care and precision. Your stem cells are a fleeting resource, and our reverence for them is complete and total.

We urge our clients and anyone else who may be interested to visit our website at [www.foreverlabs.com](http://www.foreverlabs.com) to find more in-depth resources, such as information about our uniquely skilled team, our research page, which has more detailed information than can fit into this leaflet, and our blog, where we discuss current and exciting research in the MSC community.

## WHAT ARE MSCs?

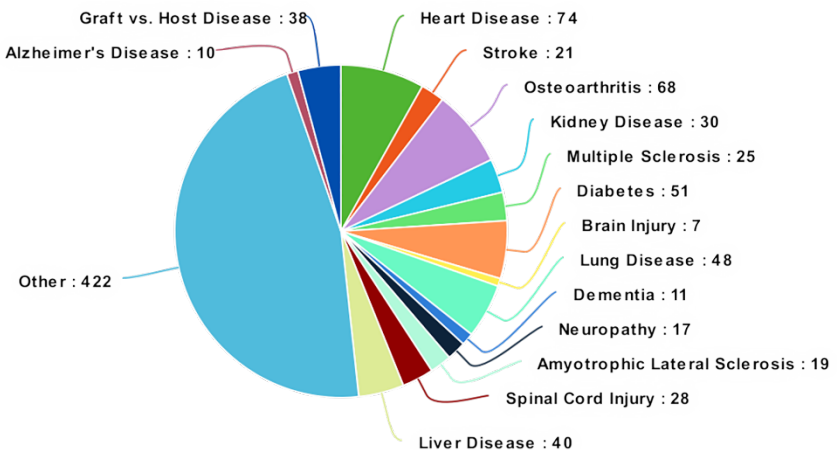
MSC stands for mesenchymal stem cell. MSCs are special cells that possess the unique ability to stimulate tissues to grow and repair themselves.

Stem cell banking offers a way to freeze our MSCs in time. We cryopreserve your cells at a temperature so cold that the day your cells are thawed, they are effectively the same age as the day they were frozen, as if transported through time.

All that is needed to preserve this vital resource is a small sample of your bone marrow from an aspiration, or fat tissue after a liposuction. This one-time procedure will preserve your MSCs until you and your doctor decide that MSC therapy is right for you in the future.

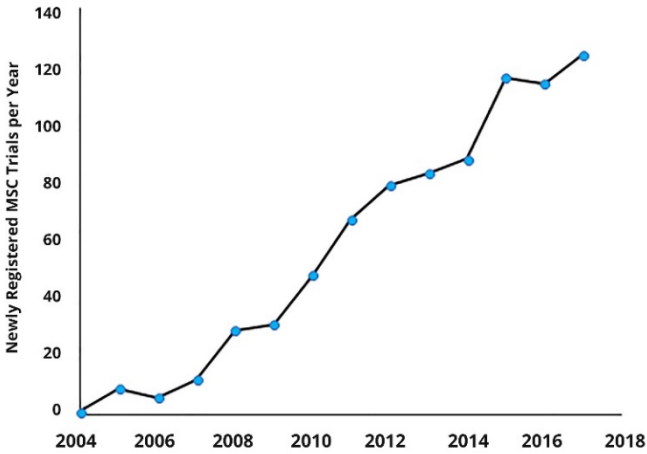
## HOW ARE MSCs USED TODAY?

There are more than 700 registered clinical trials investigating the effectiveness of MSCs to fight disease and injury. Heart disease, stroke, and arthritis are some of the most active and advanced areas of clinical investigation. MSCs appear to have the greatest effectiveness at promoting healing and regeneration. Most tissues repair themselves to a limited degree. MSCs have been shown to promote the body's natural healing ability in a safe and efficient way.



*Over 700 clinical trials employing MSCs to treat disease and injury were registered on ClinicalTrials.gov in 2018.*

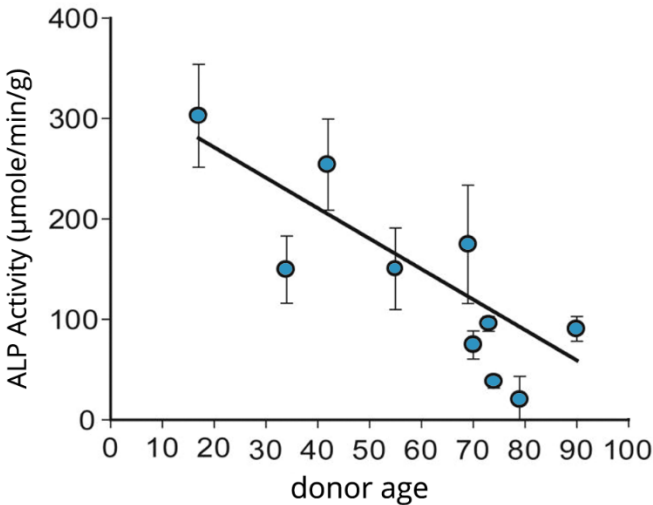
MSC therapy is a fast-expanding area of clinical research. MSCs capability for self-renewal, multilineage differentiation, and their immunomodulatory properties make them attractive for many clinical applications. MSCs have been shown to promote the body's natural healing ability in a safe and efficient way.



*Mesenchymal stem cell-based therapies are an area of active and increasing interest in the field of regenerative medicine.*

### YOUR MSCs DECLINE WITH AGE.

Your MSCs grow old as you do. Aging compromises the therapeutic potential of MSC cells [1]. Young people tend to have more MSCs than older people, and the ones they have are more effective at promoting healing, replacing tissue, and dividing to create more MSCs. Clinical evidence indicates that the therapeutic potential of MSCs diminishes with age. For example, in clinical trials treating patients with MSCs for osteoarthritis of the hip, younger patients are significantly more likely to report positive results [2]. MSCs from older people divide more slowly, and they cannot easily replace damaged bone.



*MSCs from older donors differentiate into bone-building cells less efficiently than MSCs from younger donors (adapted from [3]).*

There are several ways that aging impairs MSCs, but all cells accrue DNA damage throughout life. Stem cells respond to damage by shutting down, or by dying off. In either case, the pool of stem cells inside you is diminished. This process starts in early adulthood, continues through middle age, and accelerates as we get older.

By cryopreserving a population of your own MSCs locked in time, you will have the perfect stem cell donor waiting for you when you need it: yourself.

## WHAT IS THE CLINICAL RELAVENCE OF MSCs?

There are many diseases for which MSCs may be useful. A few are highlighted here:



**ARTHRITIS:** Osteoarthritis, the degeneration of cartilage around the bone, affects up to half of all adults over the age of 60, causing chronic joint pain and decreased mobility. MSCs are quite efficient at replacing damaged bone and connective tissue. Osteoarthritis is the most common disease to be treated with MSCs, and it has been shown to be safe and effective. MSCs are typically injected directly into the affected joint. Unfortunately, the ability of an MSC to become a bone or cartilage cell has been shown to decrease with age, a phenomenon that accelerates after middle age.



**HEART ATTACK:** When one suffers from a myocardial infarction, commonly known as a heart attack, heart cells die, a scar is formed, and the heart cannot pump blood efficiently. MSCs have been shown to promote recovery after a heart attack by simultaneously helping to soften the scarred heart, as well as stimulating growth of new cardiac myocytes, the cells that make up the muscle that is your heart. Improvements in objective measures of heart function, such as

ejection fraction (the efficiency of blood pumping) and resting heart rate, have been shown to occur after MSC treatment.

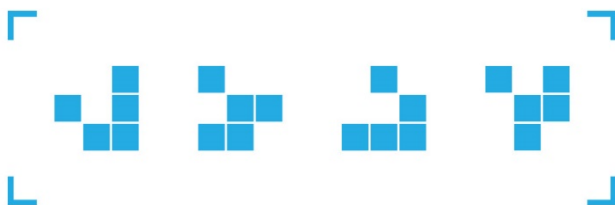


**STROKE:** Stroke is one of the leading causes of death and physical disability among adults. MSCs have been administered into the damaged brain or intravenously for the treatment of stroke with positive results. In a recent meta-analysis covering multiple clinical trials including 1,279 patients, the overall condition of ischemic stroke patients significantly improved after MSC therapy [4].

For more information about the state of MSC therapy, visit our research page and our blog at [www.foreverlabs.com](http://www.foreverlabs.com).

### WHY NOT A FAMILY MEMBER'S CELLS?

Each of us has a very specific immune system that detects cells that originate outside our own bodies. If we introduce “foreign” cells, our immune system recognizes them as such. MSCs from unrelated individuals do not cause any serious harm like an organ transplant might. However, there is evidence that cells that come from others do not survive for an extended period of time once injected into the body [5]. On the other hand, our own cells appear to engraft into our tissue and function normally for very long periods of time. Therefore, having perfectly matched cells from your own body likely offers you the best chance of having a high-impact therapy.



- [1] Liu et al., *Exp Biol Med*. 2015; 240(8):1099-106.
- [2] Centeno et al., *Stem Cell Res. Ther*. 2014; 4(10): 242.
- [3] Zhou et al., *Aging Cell*. 2008; 7(3):335-43.
- [4] Xue P, et al., *Ther Clin Risk Manag*. 2018; 14: 909-28.
- [5] Berglund et al. *Stem Cell Res & Ther* 2017; 8:288

Please do not hesitate to contact us  
with any questions at 888.344.8463  
or at [info@foreverlabs.com](mailto:info@foreverlabs.com)

© Forever Labs, Inc. 2018

