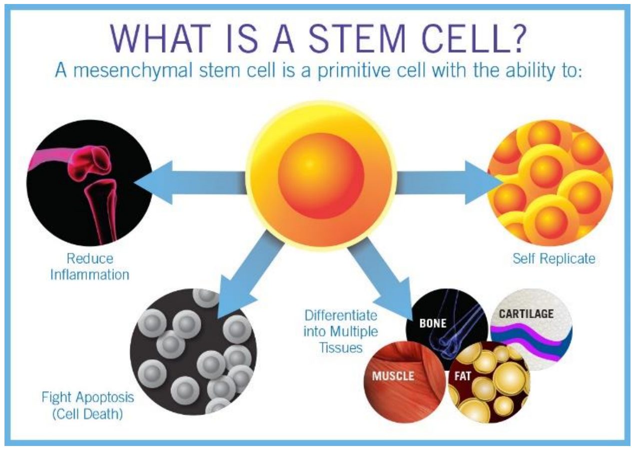
STEM CELL STIMULATION



Stem cells are those able to become (differentiate into) **specialized cells and can divide to produce more stem cells. In humans, the two main types of stem cells are embryonic** (found in the developing fetus) **and adult** (found in various tissues)**. Adult stem cells act as the body's repair system, replenishing damaged tissues. They are found in bone marrow, adipose tissue, and blood and in the umbilical cord immediately after birth.**

We now have the technology to artificially stimulate adult stem cells into specialized cell types with characteristics consistent with cells of various tissues such as muscles or nerves. Undifferentiated stem cells in the blood have to be turned into differentiated stem cells in the target tissue or organ. Adult stem cells have less differentiation capacity than fetal/embryonic stem cells, so stem cell therapies don't always work well without additional external stimulation, such as with sound frequency therapy.

One of the goals of frequency therapy is to help stem cells differentiate themselves into specific tissues to help with regeneration and healing. This can be used as a therapeutic modality to address an injury or disease state, but it can also be used as a health maintenance modality. By encouraging existing stem cells to maintain their regeneration capabilities, you ensure they are available to differentiate or reproduce at the first sign of degradation.

It's much more efficient to stimulate stem cells to differentiate into the cell type of the tissue they already exist within as opposed to trying to get a stem cell to differentiate into a different type of tissue. Every tissue has its own supply of stem cells available and ready to do the necessary regeneration and repair of tissues as they are injured or die off naturally.

The goal with sound frequency therapy is to be able to stimulate stem cells that are already present in tissues to keep those tissues healthy. It takes less energy to maintain health constantly than to repair or regenerate tissues after injury. Either way, health maintenance or repair/regeneration using frequency therapy is possible and effective.

Sound frequencies affect stem cells. Sound frequencies increase RNA building blocks of neuronal progenitor embryonic stem cells. Human bone marrow stem cells (hB-MSCs) **can differentiate into nerve cells and sound frequencies induce this differentiation. Proteins turned on through sound frequency stimulation may help as a therapeutic option for treating neurodegenerative diseases. Sound frequency stimulation may help as a therapeutic option for treating neurodegenerative diseases.**

The sound frequency stimulation exposed hB-MSCs have the ability to differentiate into multiple types of cells. Sound frequency stimulation also differentiated neural stem cells and neurons.

NASA studied the use of 10 Hz frequency stimulation on the growth of nerve stem cells. With their particular 10 Hz signal, NASA discovered about a 400% increase in neural stem cells and this signal turned on about 160 growth and regeneration genes.

Frequency stimulation of Schwann cells was studied. Schwann cells are a variety of nerve-associated cells that keep peripheral nerve fibers (both *myelinated* and *unmyelinated*) **alive. Sound frequency stimulation produced high regeneration ability. A sound frequency stimulation has an additive effect on human dental pulp stem cells. Stimulated Schwann-like cells improved nerve regeneration after transplantation into a body. Sound frequency stimulation improved peripheral nerve regeneration.**

Human soft tissue *mesenchymal stem cells* *(MSCs)* **derived from different sources have been extensively used in building bone tissue. MSCs obtained from bone marrow** (BMSCs)**, those from fatty tissue** (ASCs) **are easier to obtain and available in larger amounts. ABCs have less ability to turn into bone building *osteogenic* cells than hB-MSCs. Sound frequency stimulation may be a tool to improve one's own stem cells obtained to enhance regeneration.**

Sound frequency stimulation is known to affect cartilage tissue. *Human mesenchymal stem cells* (hMSCs) **are an alternative approach for cartilage repair. Sound frequency stimulation of hMSCs increases collagen type II and *glycosaminoglycan*** (GAG)**/DNA content. Sound frequency stimulation is a good way to stimulate and maintain growth of cartilage from either implanted or naturally present hMSCs.**

Sound frequency stimulation of BMSCs appears to enhance the development of bone cells, but also it appears to inhibit the development of fat cells. Sound frequency stimulation promotes bone formation from stem cells and at the same time, inhibits fat cell formation. This has interesting implications for people using whole-body sound frequency stimulation routinely, whether for the prevention of growing fat cells or incidentally during use for other reasons. Unfortunately, this research does not provide support for the ability of Sound frequency stimulation to help people lose fat cells that have already developed. So it may have more of a preventive effect than therapeutic value regarding development of fat cells.

Human skin is considered the biggest reservoir of stem cells. Normal wound healing requires the proliferation and differentiation of new skin cells from skin stem cells. Epidermal stem cells can be used to repair various damaged tissues, not just the skin itself. The accelerated growth of *human epidermal stem cells* (hESCs) **induced by sound frequency stimulation may be one of the factors contributing to the accelerated healing of skin wounds. This same stimulated tissue may also provide easy access to a larger pool of epidermal cells for harvesting for non-skin purposes.**

Low frequency sound frequency stimulation significantly enhances the proliferation of hESCs in culture. Exposure to a sound frequency stimulation significantly increases the percentage of cells at an early growth phase. The cell cycle proceeds in three phases, the G0/G1-phase, S-phase, and G2/M-phase. In general, the proportion of S-phase cells is considered to represent the proliferative potential of a cell population.

The amount of hESCs in the S-phase cells is considered to represent the proliferative potential of a cell population. The amount of hESCs in the S-phase increase with sound frequency stimulation, enhancing the proportion of cells synthesizing DNA and increasing cell growth.

In a laboratory study, cell proliferation and osteogenic differentiation was evaluated in human bone marrow stem cells *(hBCSCs)*. Results showed no significant cell damaging effects on the hBMSCs, even with high intensity sound frequency stimulation treatment, proliferation was enhanced. Bone cell differentiation of hBMSCs was significantly increased in the high intensity sound frequency stimulation-treated groups.

Deposition of bone minerals increased after treatment in sound frequency stimulation-treated groups, compared to the control group. Sound frequency stimulation also accelerates bone-forming differentiation of cultured hBMSCs and enhances bone repair, growth of new blood vessels, and cell growth in necrotic bone in mice.

hBMC cells with sound frequency stimulation begin differentiation earlier than untreated stem cells. Sound frequency stimulation is able to increase the bone building cell differentiation potential of adult mesenchymal cells.

Tendons and ligaments regenerate very slowly if at all. Stimulating the stem cells in these tissues would go a long way to healing damage. Human tendon stem cells were exposed to a one-hour treatment with Sound frequency stimulation. This stimulation had no damaging or stimulating effects on the stem cells in cell viability, proliferation, and migration. However, they did improve some stem cell markers, preserving these stem cells to be available for regenerative repair work. Without the stimulation, these types of stem cells would simply die off.

So, sound frequency stimulation of stem cells not only helps for health maintenance, but it also helps with tissue healing, and in the future, we will see more use of stem cells to heal various parts of the body. Sound frequency stimulation can help with increased stem cell harvest, increased differentiation, better preservation of the tissues into which the stem fells are being implanted, and likely will increase the ability of those stem cells to be successful.