



## SCIENCE SHEET

# StemRenu

## Biological Activity of StemRenu

It has long been known that no matter the original cause, whether it is lifestyle excesses, environmental toxicity, deficiencies, etc., all bodily breakdowns first begin at the cellular level. StemRenu provides the foundational clinical nutrients needed to imprint, shape and manufacture the cell and its component parts for regeneration and repair.

## StemRenu and the Cell

Every cell in the body is like a mini person. It functions with its own digestive system, circulatory system, immune system and disposal system. There is also an assembly line within every cell that directs all the key elements needed to make enzymes, hormones, neurotransmitters, and even new cells. Within the complexity of the systems, there are pathways that are compromised with aging and stress. This is when it becomes incumbent to find specific nutrients or foods from nature, to reestablish those cellular pathways for repair of the synchronized orchestration of the trillions of metabolic functions happening every second.

Imagine a new form of nutrition that deals with the high stress demands of today's lifestyle challenges; nutrients that could make our regulatory systems and cellular functions more efficient and our metabolic pathways more effective. StemRenu is that formula, which acts as an architect to provide a sequenced combination of nutrition to orchestrate the body's biochemistry specific to maintaining health, preventing disease, and restoring vitality right down to the cell and its genetic expression.

All of the biological processes defining the activity of cells, such as division, differentiation, metabolism and even cellular death can be attributed to signal molecules and their ability to maintain intercellular connections and communication.

The initial stage of the development of any pathological process can be traced back to a breakdown of the genetic signaling under extreme stress to interrupt or block the instructions to the cell's internal assembly line, known as the Endoplasmic Reticulum (ER) and to the Golgi Apparatus. The rough ER makes protein chains and the smooth ER makes lipid chains. Inside the Golgi Apparatus of the cell, the proteins and lipids are further modified with biological sugars to identify or tag them so they can be targeted to a particular site in, on, or outside the cell.<sup>1</sup>

The biological sugars configure themselves and function like antennae or receptors for the proteins to be able to link and communicate instructions within the cell and to other cells. The signaling between the receptors initiates the behavior. If there is a defective antenna or malformed protein sequencing, then there's no communication and subsequently no actions can be taken or behavioral responses carried out. Over time, this all can lead to a loss of function and a disruption in healthy cell metabolism.



## StemRenu and the Central Nervous System

The Central Nervous System (CNS) plays a major role in the control and regulation of most bodily functions, including awareness, movements, sensations, thoughts, speech, and memory. It determines coordination, reflexes and responsiveness. The CNS is at the top of the chain that directs and interfaces with all the other systems of the body. In 1962, it was discovered that neuro-stem cells assemble in certain parts of the brain where there is some form of malfunction or trauma.<sup>2</sup> It was shown that Fibroblast Growth Factors (FGFs) and other signal molecules feed and nurture these neuro-stem cells to help the repair of these malfunctioning cells and damaged tissue.<sup>3</sup>

Research has also revealed clearly that cell cultures show a dramatic increase in peptide and amino acid uptake in the presence of these signal molecules. This result gives credence to the understanding that CNS development is influenced by a very precise mechanism, which requires a unique set of signal molecules available from embryonic extracts and other sources of neuropeptides. These proteins direct the internal machinery within brain cells and the connective tissue between brain cells. They also can control the chemical reactions that allow brain cells to develop and communicate with each other. A compelling argument was made for the use of FGFs, when the Johns Hopkins University School of Medicine chose them as a treatment for degenerative neural diseases from a study they conducted in 2005. They used FGFs as a neurogenesis factor, and found that there was a fivefold increase and proliferation of neuro-stem cells.

Other studies have confirmed the use of FGFs for the neurogenesis of the Central Nervous System. This is why our scientists feel StemRenu has such a positive influence on an individual's ability to stay focused, maintain concentration and mental clarity by facilitating repair and function of damaged neurons.

## StemRenu and the Endocrine System

From an endocrine perspective, we can determine the response to stress and stressful events by measuring an overproduction of stress hormones like: cortisol, aldosterone, and epinephrine. Psychological and physical stress tests have shown how our body responds to stressful events by an excessive release of these hormones, not to mention the cardiovascular response of an increase in heart rate and blood pressure. One of the mechanisms identified with the embryonic peptides contained in StemRenu works by the elevation of 17-ketosteroid levels, which improves anabolism (buildup) through increased synthesis of hormones like DHEA and testosterone and a decrease in cortisol (a catabolic breakdown hormone).

StemRenu is capable of lowering the body's production of cortisol, by mediating the body's response to stress. Medical science has learned that prolonged cortisol secretion results in significant physiological changes such as:

- Cortisol-induced collagen loss in the skin is ten times greater than in any other tissue. Cortisol breaks down the glue (collagen) that is holding our cells together. Stress and the excess cortisol that it produces are literally making us come unglued!
- Insulin resistance contributing to hyperglycemia, more commonly known as diabetes. The ingredients of StemRenu balance the synthesis and release of insulin helping to regulate blood sugar.
- Reduces bone formation, favoring long-term development of osteoporosis by reducing calcium absorption in the intestines.
- Damages cells in the hippocampus; this damage results in impaired learning and has been shown to inhibit memory retrieval of already stored information.
- Suppression of the immune system increases susceptibility to infection (short term) and cancer (long term).
- Accelerates weight gain, mood disorders (including depression), anxiety, insomnia and even fertility issues.

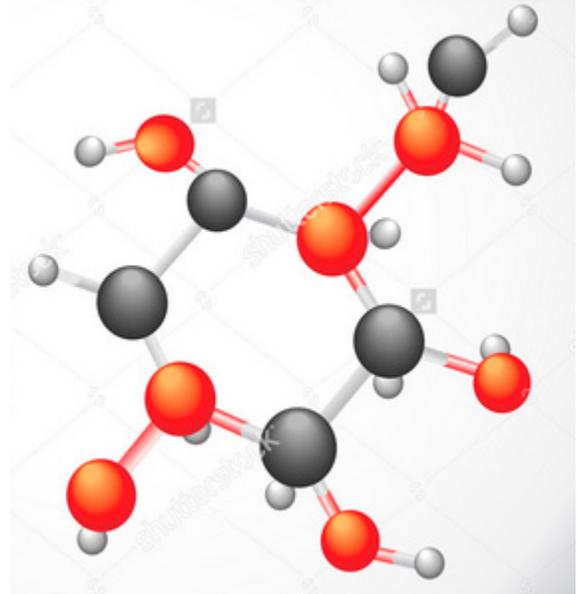
*All are significant affects that would impact our overall health and recovery mechanisms!*

## StemRenu and the Immune System

Our Immune System, amongst many other things is responsible for our defense from foreign invaders and is the vehicle for wound healing and tissue repair. It is about recovery from trauma. The ingredients in StemRenu help to initiate the following immune responses and more.<sup>8a</sup>

- Increase the number and activity of monocytes and macrophages, which have the ability to attract stem cells, which are particularly important in conditions characterized by persistent tissue wasting diseases, including skeletal muscle and myocardium.
- Strengthen a sluggish system, enhancing the release of TNF $\alpha$  and cytokines. The ability to retard cell division critical to the prevention of cancer.
- Anti-inflammatory properties to include, but not limited to, blocking the generation of histamine and bradykinin, and inhibit inflammatory eicosanoids.
- Anti-microbial properties induced by the stimulation of macrophages to produce nitric oxide and cytokines to kill and degrade intracellular microorganisms. The ability to inhibit bacterial growth and viral replication (HIV and HSV-1) by the inhibition of the proper glycosylation of viral proteins and an increase in the production and function of cytotoxic T cells.
- And function as an effective intracellular antioxidant and free radical scavenger.

## StemRenu and Gene Expression



The nucleus contains the bulk of our DNA and is responsible for orchestrating cellular structure and function to enhance who we are by expressing the roadmap for healing and repair. It provides the blueprints for the protein sequencing and gene expression. The process is known as transcription of the genetic expression for the synthesis of proteins.

The epigenetic influence (environmentally induced gene expression) and signaling peptides found in StemRenu embryonic extract can be utilized to deliver powerful signaling to turn on healthy genes and turn off damaging ones to experience results like:

- Turn off chronic inflammation to prevent chronic-degenerative disease.
- Turn on melatonin production and restful sleep.
- Turn on serotonin production to feel good.
- Turn off the stress response before it damages our healthy cells.

*These are but a few of the many important switches that StemRenu facilitates.*

# StemRenu and the Stem Cell



Our bodies are loaded with stem cells and as we age they lose their ability to regenerate and repair the tissue. The main reason is due to a breakdown in the signaling needed to activate these stem cells. The signaling is diminished by environmental stressors, aging, and limited number of growth factors available. Therefore, the stem cells stay dormant in spite of their constant signaling for help sent out by your aging and damaged tissue.

The reprogramming of our stem cells and the regeneration of the body is enhanced with embryonic signal molecules found in StemRenu. The egg is essentially a stem cell once it is fertilized. Once fertilized, the egg releases signal molecules critical to the development of life. It's this production and signaling of the stem cell released molecules that don't require downstream solubilization, refolding, or other processes the body would need to synthesize for a similar response. The "correct" control signals initiate the multiplication and activation of reserve stem cells in the corresponding tissues.

All the ingredients introduced by StemRenu work on multiple pathways simultaneously to reactivate the compromised communication affecting the system and organ functions of the body. The short molecular chains of amino acids found in StemRenu are able to cross the digestive barrier without breaking down, requiring only small amounts to produce a profound effect.

The marine mineral complex in StemRenu is a natural occurring mixture of bone and tissue building nutrients, containing calcium, magnesium and includes more than 70 trace minerals, as well as vitamin K<sub>2</sub>, important for maintaining bone mineral density, and vitamin C. These cofactors ensure that the plant calcium ingested goes into the bones and are not deposited in the kidneys or arteries in the form of plaque. In clinical studies, these minerals have proven to be effective in reversing bone loss due to its astounding 97% absorption rate.

From one individual cell to another, a healthy gene expression and the right nutrients are needed to restore cellular damage and assure "good health" for the individual. The ingredients in StemRenu are supportive and in alignment with how the body heals and repairs itself during this process.

Today's lifestyle and environment requires every part of our bodies to withstand and endure extreme stress, both physical and psychological. The ingredients in StemRenu are nutrient dense foods derived from nature that are all organic or wild crafted. They are all great ingredients fundamental for creating ideal biochemistry for the life of the cell that the body recognizes for conducting cellular defense, repair, growth, healing, and overall homeostasis. All the living components in a dynamic synergy of information for optimal health and vitality!

## Sources and References

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