

THE FOUNTAIN OF YOUTH

Stem cell research looks promising to help people age better

BY **KIMBERLY NICOLETTI**

THE NUMBER OF PEOPLE age 90 or older will quadruple between 2010 and 2050. But what's the point of living longer if you're burdened with disease and degeneration?

Not much, which is why Johnny Huard, PhD and other scientists have been studying healthy aging for 25 years. Dr. Huard is the chief scientific officer and director of the Center of Regenerative Sports Medicine at Steadman Philippon Research Institute, and he and other researchers may have found the key to slowing the effects of aging and helping people recover from injuries, illnesses and degeneration.

After decades of clinical trials, scientists finally understand why people age at a cellular level: essentially, our stem cells become dysfunctional, less active or "tired," as Dr. Huard explains it.

DIET AND EXERCISE

Dr. Huard asserts that healthy aging relies on five pillars: healthy diet, lifestyle, personalized medicine, regenerative medicine and prescription medications. Each of these five fundamentals contributes to supporting healthy stem cells. These interventions won't transform a 50-year-old into a 25-year-old, but they can assist that older person in aging much better from age 50 on.

A healthy lifestyle — including a ketogenic diet (low carb, high healthy fat intake), exercise and stress reduction — already goes a long way in preventing excess stem cell decay.

“Nutrition is vital. Eat less and live longer,” Dr. Huard says, adding that studies have shown the combination of a ketogenic diet, moderate calorie restriction and 14-hour fasts between dinner and breakfast increase health span in humans and lower risks for diabetes, cancer and aging in general.

Stem cells originate in blood vessel walls, so exercise is important because it increases vascularity, which results in more stem cells and, ultimately, faster healing and slower aging. He recommends a moderately to intensely active lifestyle.

But obviously, diet and exercise alone don't prevent stem cells from eventually dying off. As it turns out, other cells in the body, called senescent cells, drive inflammation and literally turn healthy cells

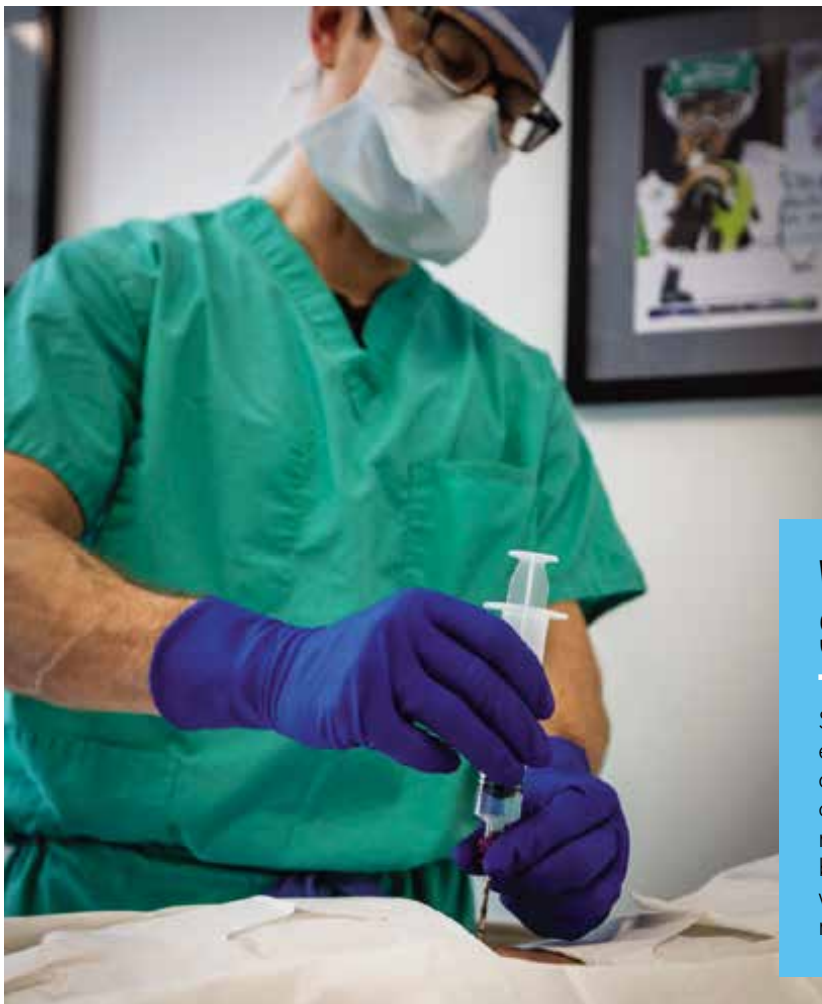
into dysfunctional ones by producing molecules that disturb the function of neighboring cells. So, the question becomes: Can we stop these nasty senescent cells?

SUPPLEMENTS

Studies show we can, and that's where personalized medicine, regenerative medicine and medication come into play.

Dr. Huard begins with personalized medicine: He tests blood for a host of markers most doctors don't routinely look for, including vitamin E, hormone, mineral levels, heavy metals, etc. Once people bring their blood markers to baseline readings, he recommends the next two steps: regenerative medicine and medication.

Supplements and prescription drugs are the most straightforward, though Dr. Huard cautions people to work with their doctors, as some medications and supplements are contraindicated in certain situations. Several prescription drugs look promising in their ability to kill senescent cells.



Johnny Huard, PhD is a world-renowned scientist and the Chief Scientific Officer and Director of the Center for Regenerative Sports Medicine at the Steadman Philippon Research Institute.



The Steadman Clinic physician and SPRI researcher Dr. Thos Evans performs a clinical trial focused on the aging process. Photos courtesy Steadman Philippon Research Institute

WHAT IS A STEM CELL?

Stem cells are undifferentiated cells, which can develop into a variety of cell types, such as muscle, red blood or brain cells. They also work as an internal repair system in tissues.

STEM CELLS

Regenerative medicine, the fifth pillar of anti-aging, includes stem cell banking. At birth, all of our cells are “good,” accommodating 100% rejuvenation potential. By age 50, only 50% of our cells are “good,” and at around 75, only 25% have regenerative potential, due to the destructive force of senescent cells.

In a study of mice with progeria (accelerated aging and its related, debilitating symptoms), mice injected with 500,000 young stem cells lived three times longer with significantly better health than non-injected mice. Another study showed that young mice receiving blood from old mice aged prematurely, and old mice receiving blood from young mice slowed down their aging process; these old mice also suddenly possessed rejuvenating factors, including the ability to fight Alzheimer's disease. And, the results seem to transfer to humans, too. Dr. Huard asserts that, on average, women (and female animals) live longer than males because more women than not become pregnant and benefit from the young stem cells of their fetuses, women who become pregnant between age 40 and 50 age slower and achieve extreme longevity, he says.



It's not going to be one thing. It's going to be multiple things, and it's not going to be tomorrow; it's going to take time. **The goal is not to make you look younger. It is to make you age better.**

DR. JOHNNY HUARD



"Your stem cells may prove someday to be a lifesaver," Dr. Huard says, adding that the best gift parents can give their baby involves "banking" the stem cells in the umbilical cord. "Stem cell banking is the best investment you can make in your life."

The process of banking usually involves extracting 10 cc of fat and freezing the stem cells. Dr. Huard began banking his a year ago.

However, a few major sticking points still exist. First of all, there

are companies who take people's money and don't follow the proper banking procedures, Dr. Huard says. The cost to bank stem cells is approximately \$6,000 to \$7,000, but that amount only covers the actual banking process; getting stem cells re-injected into the body costs much more. And, the main problem in this nation is that the FDA has approved the removal and freezing of stem cells, but it hasn't approved injecting them back into the body.



SPRI scientists pursue "bench-to-bedside" research, a term they use to describe studies that begin at the laboratory bench and develop into treatments or therapies that physicians will use for their patients.

The FDA wants to ensure scientists growing stem cells have mastered the technique because "a lot of things can go wrong," Dr. Huard says. Still, other countries such as Germany and Mexico regularly grow and re-inject banked stem cells into people. Dr. Huard and others are committed to educating the FDA about how they have discovered safe ways to grow the necessary amount of stem cells. Perhaps in the future, we will not need to grow all stem cells if we know in advance the cells that are the best for healthy aging.

Ultimately, Dr. Huard sees a day where stem cells are banked at birth, or at least banked prior to soldiers being deployed, astronauts launching into space and diseases progressing. Banked, younger stem cells can help those astronauts counteract high radiation exposure, help the wounded warriors heal and save older people from age-related degeneration.

Though stem cell research suggests profound breakthroughs, it's important to remember that it's not the only intervention necessary for healthy-aging effects; diet, exercise and personalized and regenerative medicine all play a role.

"It's not going to be one thing. It's going to be multiple things, and it's not going to be tomorrow; it's going to take time," Dr. Huard says. "The goal is not to make you look younger. It is to make you age better." **V**

