

Memo

From: Paul Ferraresi

Date: 5/11/2006

Re: Live to 150

For over 35 years, I have spoken, written and taught the development of financial independence. Everyone works from age 25 to 65 to accumulate monies to live from 65 to say 90-95.

Guidelines, in the past, for my Certified Financial Planner license requires we plan for people to live to 105. Since, no one believes what I say ☺I recently sent an article on how most people live to over 120 years. I am including a great article from a special health report in Barron's. You may want to toss it, go into denial, or, be responsible, and, investigate, ponder and plan for living to 150 years. If, I, and the article, are wrong, then, you can develop a financial legacy for your family. If correct, and you have planned, then, it will be a financially comfortable period of time (no dog food).

If you want to discuss the concept....I am here for you! If you want to examine what you can do about it...I am here for you! If you want to supercharge your financial planning and wealth accumulation...I am here for you! (Please, no financial jelly fish!)

Regards,
Paul Ferraresi

Monday, April 17, 2006

BARRON'S COVER

Live to 150

New Agers

By JAY PALMER

NO ONE EVER SAID IT WOULD BE EASY to live forever. We may need ultra-low calorie diets -- think baked soybeans, sardines and protein powders -- and we'll certainly need to break a sweat at the gym. But throw in a generous helping of scientific advances, and beating the current world-record of 122½ years starts to look downright doable. You might even live to 150 or longer -- perhaps much, much longer.

A growing number of maverick scientists, doctors, researchers, biogeneticists and nano-technologists -- many with impeccable academic credentials -- insist that the war against aging can be won. All believe significantly longer life spans and, perhaps eventually, true biological immortality, are not only possible but also scientifically achievable. What's more, it could happen in time to aid those now living.

"The first person to live to be 1,000 years old is certainly alive today; indeed, he or she may be about to turn 60," says Aubrey de Grey, the Cambridge University geneticist who has become the de facto spokesman of the anti-aging crusade. "Whether they realize it or not, barring accidents and suicide, most people now 40 years or younger can expect to live for centuries." Nutty? Some scientists do dismiss de Grey as a wildly optimistic crank. But plenty of others, though not necessarily accepting all his predictions, have joined in the search for a real fountain of youth. "I am working on immortality," says Michael Rose, a professor of evolutionary biology at the University of California, Irvine, who has already achieved breakthrough results extending the lives of fruit flies. "Twenty years ago the idea of postponing aging, let alone reversing it, was weird and off-the-wall. Today there are good reasons for thinking it is fundamentally possible."


The U.S. government finds the field sufficiently promising that it's been pumping real money into it. Federal funding for research into "the biology of aging," excluding work on aging-specific diseases like heart failure and cancer -- has been running at about \$2.4 billion a year, according to the National Institute of Aging, part of the National Institutes of Health. Though enthusiasts of long living say much more spending is needed, the tally now is not far from \$3 billion the government doles out for research in all behavioral sciences, or the \$3.5 for research on women's health beyond breast cancer.



John Kuczala

THE MOST TANTALIZING FINDINGS have been coming out of the genetics labs of major universities, where anti-aging researchers are tinkering with living organisms ranging from yeast to worms and mice. Some are trying to breed for longevity, others are seeking to alter genes in existing organisms to extend life. Still others are studying how mice and flies, when put on a near-starvation diet, seem to switch on an anti-aging mechanism connected with a gene called SIR2.

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Just in the past year, researchers at Harvard Medical School and the University of California, Davis, have detected four "cousins" of SIR2 that also seem to play a role in aging. David Sinclair, director of the aging-research lab at Harvard, has called the SIR2 group "as important as any longevity genes discovered so far."

Molecular geneticists at the University of Southern California, meanwhile, stunned colleagues when they reported finding that deleting a gene known to prolong aging somehow ended up greatly extending life span. And at the University of Washington, researchers have successfully lengthened the lives of laboratory mice by 20% by boosting natural antioxidants. The hope is that these findings and others could point the way to entirely new classes of drugs to lengthen lives or treat specific, age-related ailments like cancer, heart disease and diabetes.

Of course, not everyone wants to live forever, or even to 150. Many feel it would rob life of meaning, or that it simply isn't possible. Then there are the practicalities: Where would everyone live? What would become of "till death do us part"? Which banks would be first with 150-year mortgages? "The incentive to achieve, to stand out, to do something within a known life span would disappear," wrote an anonymous visitor to a message board of the nonprofit Immortality Institute. "The world would be filled with nonproductive, disabled senior citizens who would consume more resources than they would produce."

But even people who are cool to the idea of seriously extended longevity say they would heartily welcome more modest lengthenings of life expectancies -- say, by another five or 10 years.

For these shorter-term gains, folks will have to follow all the time-honored recommendations -- exercise properly, eat well, don't smoke. Exercise routines that make you sweat for 21 minutes can effectively turn you 3.7 years younger, writes Dr. Michael F. Roizen of the Cleveland Clinic in his new book, *The RealAge Workout*. Strength training with dumbbells and such can cut the risks of osteoporosis and other bone disorders by 80%, he says.

On the food front, some studies have shown that when small mammals are put on ultra-low-calorie diets approaching starvation, they enter states of quasi-suspended animation in which they can move but don't apparently age. Even if suspended animation isn't your bag, it's entirely possible that low-calorie eats like kale, blueberries, flax seeds and tofu will help you tack on a few more years.

To get you still closer to 150, it will be essential for laboratories, at both universities and corporations, to discover new, effective treatments for the common ailments of aging, such as cancer, heart disease and diabetes. Recent breakthroughs like "smart drugs" that target tumors or their blood supplies offer some encouragement. As scientists pursue remedies for each specific ailment of aging, right down to wrinkled skin, the efforts may increasingly overlap and shed still more light on the broad process of aging.

"What will happen is that we will find some drugs that will be approved by the Food and Drug Administration because they prevent heart disease or Alzheimer's," says Thomas Johnson, a University of Colorado geneticist. "Then we will discover -- aha! -- they also make 80-year-olds look like 60-year-olds."

Finally -- and this may be at least 40 years off -- proponents of extra-long living see a day when nanotechnology really kicks in. In what now seems strictly sci-fi, molecular robots could be running through our bodies and continually making repairs.

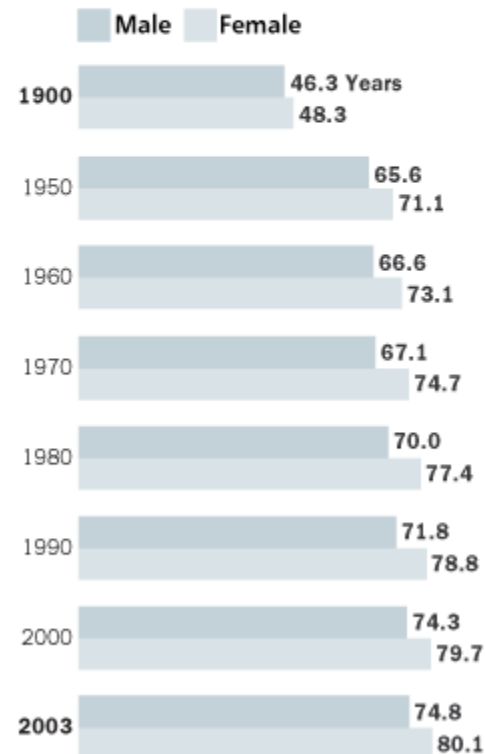
"There are many, many different components of aging and we are chipping away at all of them," insists Robert Freitas, a senior research fellow at the Institute for Molecular Manufacturing, a nonprofit, nanotechnology group in Palo Alto, Calif. "It will take time and, if you put it in terms of the big developments of modern technology, say the telephone, we are still about 10 years off from Alexander Graham Bell shouting to his assistant through that first device. Still, in the near future, say the next two-to-four decades, the disease of aging will be cured."

RIGHT NOW, THE REWARDS ARE still too distant for many private companies to openly join in the hunt for giant gains in longevity. "Anti-aging is just too far out for the stock market, too wacko," said an executive at one major biotech firm, who feared being associated with the topic publicly. "And there's the really huge hurdle that the FDA does not recognize aging as a disease and therefore would never approve any anti-aging drug, even if one were to be found. So, officially,

Marching to Immortality?

The average life expectancy of Americans jumped more than 60% in the past century, with women recently crossing the mark of age 80. Much faster gains could lie ahead as genetic research advances.

LIFE EXPECTANCIES



Source: National Center for Health Statistics

we are working with stem cells to battle cancer or examining genes to discover treatments for arteriosclerosis. Still, truth be told, there's not a biotech or pharmaceutical company in the world not involved to some degree."

Cover Story -- Part II¹

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Saturday, April 15, 2006

BARRON'S COVER

Live to 150 -- Part II

Cover Story -- Part I¹

HUNDREDS OF COMPANIES OF ALL SIZES are in the hunt for genetic breakthroughs relating to particular diseases of aging. Many are focusing specifically on therapies involving stem cells, the basic cells of life, each of which is capable of growing into any type of cell. Giants like **Amgen** (ticker: AMGN) and **Genentech** (DNA), along with smaller companies like **Geron** (GERN) and a number of private outfits, are all taking a crack at this approach. Though controversial, stem-cell work is considered perhaps the most promising avenue the anti-aging field. (For a look at current investment opportunities in biotech, see the [roundtable discussion](#)².)

Universities, meanwhile, continue to do most of the heavy lifting in the broad, basic research into aging. Much of the recent work has pointed to two specific genes, dubbed the "grim reaper" and "fountain of youth" genes. The first of those has a protein that looks very much like a receptor for human insulin, which controls the body's metabolism of glucose. Researchers suspect that the manner of human glucose metabolism, the burning of sugar for energy, throws off a kind of cell-damaging pollution that in turn damages other cells and tissues, a symptom of aging. Once this pollution is removed, the other gene may be able to extend life.

FROM WHERE AUBREY de Grey sits, the science boils down to this: "Aging is a side effect of being alive." A complicated network of interacting molecular and cellular processes create damage that accumulates over time. The Cambridge researcher argues that there are seven major types of damage -- and each, he insists, can and will be fixed.

For starters, there is the way that, over the years, certain proteins in our bodies become susceptible to chemical reactions, hurting everything from the elasticity of arterial walls to the tensile strength of ligaments to the transparency of the eye. As we age, damage results from chemical reactions that allow so-called cross-links to form among proteins that were previously able to slide across or along each other. De Grey notes it is possible to identify chemicals that can break these links. **Alteon** (ALT), a small biotech company in Parsippany, N.J., is testing a drug that may do just that.

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Another problem is the accumulation of what de Grey calls "junk" inside the cell -- the steady buildup of complex waste materials. As we age, the garbage eventually multiplies to the point of causing damage, most often to nerve cells, the arterial wall, the heart and the back of the eye. The solution may lie in giving cells enzymes that destroy the junk before it can cause harm. Preliminary work at de Grey's lab has identified enzymes in soil bacteria and fungi that might do the job. For de Grey's other five problems, see www.sens.org³.

It is de Grey's confidence in overcoming the obstacles that leads to his strikingly upbeat predictions. "By the time someone now 60 is 90," he says, "the science will be in place to allow them to live to be 125 -- and when they approach 125, we'll be able to get them to live to 200. By then, we will be able to roll back the body clock, give that person the health of a 30 year old and extend their life indefinitely."

Progress on Two Fronts

Both universities and companies are learning more about aging—and possible approaches for fighting its diseases. Here's a sampling.

UNIVERSITIES

University of California, San Diego

Studying the idea that injections of genetically altered cells into the brain may slow cognitive decline in Alzheimer's patients.

Harvard Medical School

Recently produced a complete genetic road map of human aging, including calculations of each gene's impact on aging.

University of Southern California

The so-called SIR2 gene, long associated with extended longevity, may play an even greater role when deleted, researchers have found.

University of Washington

Scientists have prolonged the lives of laboratory mice 20% using a technique that boosts natural antioxidants.

COMPANIES

Amgen (AMGN)

Market value: \$83 billion.

The biotech giant is in Phase 3 trials of a drug that shows "significantly improved" survival rates in patients with colon cancer who previously failed chemotherapy.

Geron (GERN)

Market value: \$477 million.

It's using stem-cell research to target and manipulate Telomerase, an enzyme expressed in nearly all cancer cells but not in normal cells. There could be implications for other diseases.

MedImmune (MEDI)

Market value: \$8.6 billion.

It will shortly begin trials of the tumor-fighting treatment Abegrin, which



Cambridge University geneticist Aubrey de Grey, 42, has emerged as the leading spokesman for anti-aging. He contends the aging process can be reversed, not just slowed.

works by reducing cell toxicity and inhibiting the cancer cell's ability to grow.

Targeted Genetics (TGEN)

Market value: \$41.6 million.

It's using gene therapies to find products to treat acquired and inherited diseases, including AIDS, rheumatoid arthritis and cardiovascular ailments.

WHILE SUCH PRONOUNCEMENTS have attracted more public attention to the field of anti-aging, they also have drawn some bitter criticisms. De Grey and those of like mind are "dangerous ignorami," says Prof. Leonard Hayflick of the University of California, San Francisco, the grand old man of U.S. aging research. In 1965 he discovered that cells have a programmed moment of death, the so-called Hayflick Limit, often after dividing about 50 times. Anti-aging researchers hope to push beyond such limits, but some others voice serious doubts.

"I just don't think [immortality] is possible," says Sherwin Nuland, a professor of surgery at the Yale School of Medicine. "Aubrey and the others who talk of greatly extending life span are oversimplifying the science and just don't understand the magnitude of the task. His plan will not succeed. Were it to do so, it would undermine what it means to be human."

That latter point could make the field red-meat for some politicians. An increasingly influential alliance of what some call bioconservatives, including many who helped persuade President Bush in 2001 to restrict federal funding for embryonic-stem-cell research, are uniting to oppose the idea of life extension and anti-aging research on ethical, moral and ecological grounds.

American Enterprise Institute fellow Leon Kass, the former head of Bush's Council on Bioethics, insists that "the finitude of human life is a blessing for every human individual." Bioethicist Daniel Callahan of the Garrison, N.Y.-based Hastings Center, agrees: "There is no known social good coming from the conquest of death."

Arguments like that could hurt the efforts of anti-aging enthusiasts to win more federal funding. They'd like to see more funds not just for stem-cell research but for the full range of anti-aging studies. Despite the efforts by the National Institute of Aging, federal support for the field still lags well behind that for specific diseases. Research into brain disorders, for instance, gets \$4.7 billion a year, nearly double the sum for anti-aging. "If the same amount of money was spent on this as is now being spent on AIDS, breast cancer or even diabetes, we would see breakthroughs come much faster," argues noted futurist Ray Kurzweil, author of the book *Fantastic Voyage: Live Long Enough to Live Forever*.

Despite the obstacles, the seekers of immortality remain very much on the job. And they say are they convinced that the

task of keeping the human body going is just as manageable as any other important chore -- say, maintaining a home. Betting that they're wrong could prove perilous. Is their goal really any more implausible than heavier-than-air flight, the nuclear bomb, satellites and any number of other 20th-century innovations?

Just remember: He who is first to live forever gets the last laugh.

E-mail comments to editors@barrons.com⁴

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