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So You Want to Live Forever

Immortality through advanced technology and primitive diet

Charlotte Allen

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Mountain View, Calif.

Aubrey de Grey, 51, is the man who insists that within a few decades technology will enable us human beings to beat death and live forever. Actually, he's not the only one to make these assertions—that death is a problem to be solved, not a fate to be endured—but he is the only one I know of to give eternal life an exciting, just-around-the-corner timeline. "Someone is alive right now who is going to live to be 1,000 years old," he told me when I interviewed him last fall at the SENS (for "Strategically Engineered Negligible Senescence") Research Foundation headquarters, a well-worn 3,000-square-foot cement building in the Silicon Valley flatlands where de Grey holds the title of chief science officer. He has made this prophecy to a number of reporters—and this is what makes de Grey the most famous of a growing number of people who have staked their lifestyles and futures on the prospect of never dying. He is constantly interviewed by the press, has written a 2007 book, *Ending Aging*, and has given at least two of the TED talks that are a genius-certification ritual for public intellectuals these days.

The British-born de Grey, with a doctorate in biology from Cambridge, is also the single most colorful figure in the livingforever movement, where colorful figures generously abound. "I look as though I'm in my 30s," he informed me after we settled, first into a cluttered conference room dominated by an enormous scribbled-over whiteboard, and then into a low-ceilinged lounge whose mélange of hard-bounce chairs and sofas looks as though it was scrounged from sidewalk discards. And maybe he does look that young, but it's hard to tell, because his waist-length, waterfall-style beard—a de Grey trademark—gives him the look of an extremely spry Methuselah, who, according to the Bible, made it only to 969 years. De Grey is actually of the phenotype Ageless British Eccentric: English Rose cheeks, piercing blue eyes, and someoneplease-make-him-a-sandwich slenderness; his tomato-red shirt and gray slacks hang from angular shoulders and legs. Bony frames that verge on gauntness are a hallmark of the living-forever movement, most of whose members hew to severe dietary restrictions in order to prolong their lives while they wait for science to catch up with death. De Grey, by contrast, claims to eat whatever he likes and also to drink massive quantities of carb-loaded English ale, working it all off by punting on the River Cam in the four months a year he spends doing research back at Cambridge. (During the rest of the year he lives in Los Gatos, a picturesque Victorian town in the Santa Cruz Mountains 14 miles southeast of Mountain View.)

De Grey subscribes to the reigning theory of the live-forever movement: that aging, the process by which living things ultimately wear themselves out and die, isn't an inevitable part of the human condition. Instead, aging is just another disease, not really different in kind from any of the other serious ailments, such as heart failure or cancer, that kill us. And as with other diseases, de Grey believes that aging has a cure or series of cures that scientists will eventually discover. "Aging is a side effect of being alive," he said during our interview. "The human body is exactly the same as a car or an airplane. It's a machine, and any machine, if you run it, will effect changes on itself that require repairs. Living systems have a great deal of capacity for self-repair, but over time some of those changes only accumulate very slowly, so we don't notice them until we are very old."

De Grey believes that the current approach of geriatric medicine to the systemic breakdowns that aging entails is "pitiful." "Cardiovascular disease is the number-one killer in the West today, and we know that it's caused by fatty deposits in the major arteries. So we try stents or manipulating cholesterol levels with Lipitor. But we know now that the problem isn't so much cholesterol as oxidized cholesterol [small, dense, chemically-modified particles that the aging human body isn't able to deal with via its own natural enzymes]. Oxidized cholesterol isn't properly processed, that is, carried away by the enzymes, so it poisons the arteries."

He maintains that his SENS-sponsored research, some of it conducted on the foundation's premises and some in university laboratories, has pointed to a better way to clear that "bad" cholesterol out of clogged arteries: "We've been able to identify genes and enzymes in bacteria that we should be able to inject into our own human cells to bring about this cleansing process," de Grey explained. "In 2006-2007 we succeeded in identifying some of them, and we've been able to have that research published. We put extra enzymes that kill bad cells into a human cell culture, and they worked. They're the kind of microphage bacteria that we need to fix problems in the human body. Then we can work on arteriosclerosis in mice, and then we'll have clinical trials in humans.

"The problem right now is that people think of aging as a universal phenomenon, but diseases such as heart disease are thought of as separate phenomena. But they're universal! Ninety-nine percent of the money spent on age-related research is spent on attempts to cure those diseases. But you can't cure people of side effects; you have to be able to cure aging itself. So what we want to see is preventative medicine, periodically cleaning up certain areas. Let's take Alzheimer's. We know that there are three factors: senile plaques in the brain, tangles in neurons, and cell death. We solved the plaque problem 15 years ago. You can clean up the plaques—but no cognitive goals for patients are being met. That's because we don't know the role that plaques play or their cause. Aging is this multifaceted. What we need to do is clean up lots of things at the same time. Initially, this could be a cleanup every 10 years. Then later, we might develop injections or oral medications. Right now, though, we have a 50-50 chance of getting it all into place in about 25 years."

Indeed, de Grey is confident that if we can figure out how to repair just seven bodily systems prone to breakdown—ranging from chromosomal mutations over time to protein junk accumulated from the cell disintegration that accompanies aging—there is no reason for any of us to die. The only obstacle he sees to our living, say, at least 5,000 years (unless we're unlucky enough to be hit by a car or whatever will substitute for a car in 7000 a.d.) is the money that SENS and its affiliated scientists committed to the hope of realizing eternal or near-eternal life need to develop those complex repair systems that they envision. "If we had ten times the money we have now, we could work at three times the speed," de Grey told me.

Right now SENS, founded in 2009 by de Grey and others, has a mere \$4.5 million annual budget, funded heavily from a \$16 million inheritance to de Grey from his mother's side of the family in 2011. That—coupled with the maverick nature of de Grey's theories—undoubtedly accounts for the modest appearance of the SENS headquarters; most of the budget funds a handful of university research grants. Indeed, it took years for anyone in the world of mainstream science to take de Grey and his theories about regenerative medicine seriously.

De Grey himself looks on paper like someone hard to take seriously. A graduate of Harrow, the elite boys' school in northwest London that Winston Churchill attended, de Grey received his bachelor's degree in computer science from Cambridge's Trinity Hall in 1985. His specialty was artificial intelligence. In 1990 he met and married his wife, Adelaide Carpenter, a fruit-fly geneticist at Cambridge 19 years his senior. Through his wife's connections, he started managing a fruit-fly database part-time at Cambridge.

That was his first introduction since a biology class at Harrow to the world of biochemistry—and also to experiments on fruit-fly telomeres, the molecular caps at the ends of cells' chromosomes that are thought to protect them from degradation. The shorter the telomere, it seems, the more prone an organism is to aging and then dying. The original length of telomeres is crucial, because as cells divide over the course of their host-organisms' lives, telomeres' lengths shorten substantially until they no longer offer any protection, hastening natural death, or at least the senescence that leads to death. Experiments on telomeres began during the 1970s, and more recently researchers at Harvard, using an enzyme called telomerase that inhibits telomere shortening, found that they could actually reverse the aging process in laboratory mice. Telomerase is a tricky substance for humans because it also reduces inhibitions for cancerous tumors to grow, but the discovery of its anti-aging powers has led scientists to explore the possibility of reducing cellular-level aging in other ways.

In 1999 de Grey published a book, *The Mitochondrial Free Radical Theory of Aging*. It centered on senescence-causing damage to mitochondria, the nonchromosomal genetic material in cells, from "free radicals," atoms or molecules with extra electrons in their outer shells that can damage cells over time by changing their chemical composition, typically by bonding with other atoms and molecules and causing oxidation. That book became the basis of de Grey's doctorate, which Cambridge awarded him in a shortcut process that bypassed the usual graduate-school classes and comprehensive exams. The Cambridge Ph.D. gave him the street cred in the scientific world to try to insinuate his theory of aging as a form of cell damage reversible via "regenerative medicine" into the world of mainstream geriatric research.

He has been startlingly successful, even though actual regenerative medicine is still in the highly theoretical stage. In 2003 de Grey established the Methuselah Foundation, headquartered in Springfield, Virginia, which awards hefty cash prizes to

researchers who can use genetic modifications to extend the normal three-year life of a lab rat. So far the longest-lived "Methuselah mouse" has survived nearly five years. (The foundation is also offering \$1 million to any scientist who can build a synthetic liver; such an organ would be invaluable as a substitute for expensive clinical trials in drug development.) Both the Methuselah and the SENS foundations have been funded partly by multimillion-dollar donations from Peter Thiel, the San Francisco-based cofounder of PayPal who has become fascinated by "transhumanism," the potential for using technology to alter and improve the human body. Every two years or so de Grey holds a SENS conference at Cambridge's Queen's College. The most recent of those, in September 2013, featured papers presented by researchers from such prestigious institutions as Harvard, Yale, Stanford, the University of California Berkeley, the Massachusetts Institute ofTechnology, the Mayo Clinic, the Albert Einstein College

of Medicine, the Buck Institute for Aging Research, and the International Immunology Foundation in Germany.

A craving for immortality—living forever in defiance of death—has been a human preoccupation at least since humans learned how to write down what was on their minds. The Mesopotamian *Epic of Gilgamesh*, composed at least 4,000 years ago, featured its hero's arduous quest for immortality, ending only when he was told that the gods had decreed that death be man's lot from the moment they created him. In classical Greek mythology Eos, goddess of the dawn, fell in love with a mortal man, Tithonus, so she asked her father, Zeus, to grant Tithonus the immortality of the gods so that she might be with him forever. Zeus complied, but since Eos had forgotten to ask her father for the eternal youth that the gods also enjoyed, Tithonus grew older and more feeble with each passing year. There was a lesson to be learned from both myths: that death is an inescapable part of the human condition, but so is a longing for transcendence and eternal life.

The current fascination with achieving immortality via science seems to track the general loss of religious faith in the modern West. Since the New Testament phrase "death hath no more dominion" no longer resonates with many people as a promise of heavenly survival, scientific life extension can be explained as an effort to achieve transcendence and eternal life by other means. Aldous Huxley explored those themes satirically in his 1939 novel, *After Many a Summer*, whose most entertaining character, the cynical Dr. Obispo, during the day experiments with carp, fish that were reputed to live for centuries, so as to distill a longevity drug for a tycoon who is terrified of dying, and at night fornicates with the tycoon's youthful mistress. Dr. Obispo's ideological counterpoint is Mr. Propter, an eccentric who lives the ostentatiously simple life, making wooden furniture and philosophizing about his own route to transcendence by rising above earthly concerns. Huxley took the title of his novel from a line in Tennyson's "Tithonus," a poem that explores the classical myth.

Interestingly, today's living-forever movement involves precisely the same two themes that animated Huxley's novel: advanced medical technology and primitive living. And also faith of a steadfastness to rival that of a medieval saint. Living-forever people tend to display a consistent cluster of traits and fixations, of which de Grey's major benefactor Peter Thiel is a quintessential example. Among them are: political libertarianism (a *New Yorker* profile of Thiel in 2011 explains that he built PayPal—since sold to eBay—in part because "he wanted to create an online currency that could circumvent government control"); boundless optimism regarding a technically enhanced utopian future (for Thiel, according to the *New Yorker*, it's "sea-steading"—floating city-states on the high seas; for others, it's colonizing Mars); and a preoccupation with one's food intake. Nearly all living-forever people are on one version or other of the currently fashionable carb-free "Paleo diet," if not cutting back on eating altogether. Whenever Thiel is interviewed, wild salmon—very tasty and high in antioxidants and thus every life-extensioner's favorite protein source—seems to be on the plate. Finally, most living-forever people seem to be confident that they personally will be around long enough to take advantage of the biomedical breakthroughs that Aubrey de Grey predicts lie just around the corner. Thiel told *New Yorker* writer George Packer that he expected to live until age 120—which, because he's just 46 right now, should give him plenty of time to become that man of de Grey's prophecy who lives until age 1,000.

For a time, those who dreamed of scientifically engineered immortality had to resort to cryogenic freezing: having their bodies, or at least their brains, encased in liquid nitrogen immediately after death, to await, like corpses in a churchyard, for the trumpet sound that would usher them into eternal life, or at least into a second go-round when awakened by a scientist of the future who would know how to undo whatever got them dead in the first place.

Cryonics is still relatively popular—some 2,000 people plus a few pets are currently signed up for flash-freezing at various storage centers around the country—but the trend today in achieving immortality is to try to do it while you're still breathing. De Grey has coined the term "escape velocity"—or rather borrowed it from the space-travel jargon for overcoming gravity— to describe the process by which he and others believe that people will soon be able to live for centuries if they can manage to stay alive for just a few more decades. Escape velocity in this context is analogous to Moore's Law, the computer-industry maxim that microprocessing speed doubles every two years. The idea is that advances in anti-aging technology will similarly proceed not linearly but exponentially, so that there will eventually be a point at which, long as one may live, there will always emerge a new medical development that will allow one to live even longer. It will be eternal life the easy way. Back in the 1960s, when cryonic freezing changed from a topos of science fiction to the giant cooling bottles of the Alcor Life

Extension Foundation in Scottsdale, Ariz. (home to the head of the late Red Sox slugger Ted Williams), alternatives to cryonics seemed the stuff of fantasy. But that was before the arrival of such brand-new developments—most still at the conceptual stage—as de Grey's microphages, "liquid computers" (programmed systems of molecules that could enter the bloodstream and short-circuit viruses), biological nanotechnology (molecule-size robots that would travel through the bloodstream repairing systems, killing senescent cells, and cleaning out junk), and as-yet-unconceived-of stem cell therapies.

Simultaneously with these advances or projected advances in the miniaturization of medical technology has grown a burgeoning industry in strategies for staying on this earth for as long as possible on one's own steam until escape velocity arrives. These can be quite drastic, including severe restrictions on caloric intake, the daily ingestion of massive quantities of different supplements (those pills in the boulder-size jars in the Whole Foods vitamin aisle), regular bouts of an intravenous procedure called chelation, originally developed to combat lead poisoning but now used by practitioners of "alternative medicine" to cleanse the bloodstream of a range of presumably debilitating metals and other minerals, and a range of drugs and therapies still regarded as experimental by both mainstream medical practitioners and the FDA. It also involves the relentless monitoring of one's body for the smallest signs of deterioration.

The vast majority of enthusiasts for life-extension techniques are men, possibly because the regimens involved are so demanding, or because their strictness appeals to male ultra-rationality, or because there can be a cult-like quality to the enterprise that implicitly encourages practitioners to consider themselves superior to the ordinary folk who dine on pizza or pasta primavera. To enter into the world of serious longevity efforts is to go way beyond your typical family doctor's advice to eat healthy, keep your weight down, and get plenty of sleep and exercise. It is a world populated by relatively few women, possibly because it is decidedly unglamorous, and possibly because women aren't so prone to the frightening heart disease that strikes down many men at relatively young ages.

It's also a world with its own Golden Age: the Paleolithic era. The theory derives from Jared Diamond's influential 1997 bestseller *Guns, Germs, and Steel: The Fate of Human Societies*, in which he argued that the invention of agriculture was mankind's worst mistake, bringing about war, oppression, subjugation of women, and, worst of all, diseases and shortened lifespans arising from what Diamond—and most longevity people—believe are the nutritional defects of a grain-heavy, carbohydrate-focused modern diet. "People who eat paleo get rid of grains and dairy," said John Durant, the 30-year-old author of *The Paleo Manifesto: Ancient Wisdom for Lifelong Health* (2013), in a phone interview. The Cro-Magnon-bearded Durant regularly runs barefoot through Central Park to simulate the animal-chasing of hunter-gatherer cultures and stores a refrigerated meat locker in his living room. The cover of his book displays a photo of a chipped flintstone.

It is highly unlikely that actual Paleolithic people subsisted on the steaks and bison-burgers that are the typical fare of today's paleo people, or, for that matter, survived much past age 30, thanks to predators, poor hygiene, and generally rough lives. But "they didn't have Type 2 diabetes, obesity, dental problems, mental issues, or difficulty reproducing," Durant says. Like many paleo people, Durant argues that the human body evolved to adapt to humanity's millions of years of hunter-gatherer existence and is ill-suited to either a grain-based agricultural diet or the complex stresses of present-day life.

Durant represents the primitive-living side of the longevity movement. Epitomizing the technological-progress side is Ray Kurzweil, 66, the indisputably brilliant inventor of a range of revolutionary electronic devices including the first synthesizer to use the sampled sounds of real musical instruments and the first print-to-speech reading machine for the blind—and also a relentless promoter of trans-humanism and futurism in general. Kurzweil popularized the phrase "the singularity," coined by the mathematician John von Neumann in 1958 to refer to a point in the future at which artificial intelligence will surpass human intelligence, so that it will become impossible for humans to predict the future because computers will be so much smarter than they. At that point, Kurzweil predicts, humans will so load themselves with artificial intelligence and other computer-generated features as to become postbiological. The title of Kurzweil's 2005 book, *The Singularity Is Near* (he predicts the year 2045), has become a catchphrase among futurists as popular as "Winter is coming" among *Game of Thrones* aficionados. In 2009 Kurzweil cofounded the Singularity University near Mountain View with impressive cosponsorship from several Silicon Valley corporations (Kurzweil is an engineering director for Google). The unaccredited university, which offers summer seminars, conferences, and the like, operates as a kind of forum for Kurzweil-style futurism, including biological futurism, with Aubrey de Grey as one of its lecturers.

In a 2006 interview with the writer David Jay Brown, Kurzweil revealed that, in order to defer his death for the maximum possible length of time, he ingested a whopping 250 different pills every day. His all-you-can-eat smorgasbord of supplements included curcumin, a derivative of the turmeric that serious life-extenders now pour onto nearly every plate of food they eat, Ginkgo biloba, believed by some to forestall Alzheimer's, though research hasn't proved that it does any such thing, and a rainbow of antioxidants, including resveratrol, a popular red-grape-skin derivative that again hasn't been definitively proven to be effective and also makes you wonder: Why not just drink wine? In addition, Kurzweil eschewed

carbs, monitored "fifty or sixty" different blood levels of his every few months, and flooded his body once a week with intravenously injected phosphatidylcholine, which is supposed to dissolve fat and cholesterol deposits inside cells.

In 1999 Kurzweil became a patient of Terry Grossman, a onetime family physician in Colorado who in 1995 had decided to get into alternative, or, as Grossman phrases it, "complementary" medicine, and opened a clinic near Denver focusing on longevity. After an exchange of some 10,000 emails, Grossman and Kurzweil coauthored a 2004 bestseller, *Fantastic Voyage: Live Long Enough to Live Forever*, that encapsulated nutritional and other theories of "immortality medicine." A 2010 sequel followed: *Transcend: Nine Steps to Living Well Forever*. Like *Fantastic Voyage, Transcend* assured its readers that if they could make it through the next 20 or so years, they might never have to meet the Grim Reaper at all (2030 seems to be the magical year during which life-extenders believe that escape velocity will start to kick in). The two books also helped launch an online side business for Grossman and Kurzweil: Ray and Terry's Longevity Products, offering more than 100 different kinds of supplements, plus nutritional shakes and even "healthy" chocolates. The Grossman Wellness Center in Golden, Colorado, is a one-stop shop for every sort of "holistic" medical procedure that may or may not be covered by conventional health insurance: not just nutritional supplements but weight loss, Botox, acupuncture (his wife is a licensed acupuncturist), dermabrasion, stem cell therapy, food allergies, stress management, insomnia, life coaching, and sexual dysfunction (Grossman is a certified homeopathic physician as well as an M.D.). Prices aren't cheap: The one-day diagnostic "longevity evaluation" runs to at least \$3,000.

Grossman's own life-extension regimen these days is a toned-down version of Kurzweil's, possibly because his genetic inheritance is better: Kurzweil's father died of diabetes complications at age 58, while both of Grossman's parents are still alive and healthy at nearly 90 and one of his grandfathers lived to age 105, Grossman told me in a telephone interview. Now 67, Grossman, a lifelong jock who had started his practice in Colorado to take advantage of the skiing, discovered while in his forties that two of his favorite recreations, jogging and mountain-biking, had suddenly become difficult for him after a skiing accident. "I had gained 30 extra pounds," he told me. "So I tried herbal medicine, and I became very happy again."

Grossman swallows a mere 30 pills a day ("It's easy: 15 in the morning and 15 before going to bed") in contrast to Kurzweil's 250. "They increase the blood flow to my brain and help my memory," he said. He also pursues what he called "detoxification strategies—we live in a polluted world." They consist of steam showers "to get rid of the toxins," infrared saunas, and regular chelation. Grossman's daily diet, laid out in a 2008 article in *Westword*, Denver's arts weekly, revolves around green tea (no coffee), salmon (but of course!), and blueberries, which life-extenders consider to be the fruit version of salmon because of its antioxidant qualities. Grossman described the diet as "anti-aging." That and the rest of his rigorous self-preservation rituals don't actually make him look any younger, but they do give him the appearance of a reed-slender, exceptionally healthy specimen of a man in his late 60s, helped along by some dazzling dental work. (Kurzweil also looks startlingly vigorous for a man his age, although again, no one would mistake him for a youth.)

Spartan food consumption is *de rigueur* in much of the longevity world, after research on mice dating to the 1930s revealed that rodents subjected to calorie restriction live from 40 to 50 percent longer than their well-fed cousins—possibly because the mice's reduced blood sugar curtails the production of destructive free radicals. Scientists have tried to develop drugs for humans that mimic calorie restriction, but their sole successful product, rapamycin, approved by the FDA in 1999, has deleterious side effects (provoking cancer and diabetes), so it is prescribed only rarely. Thus many life-extenders devise some version of calorie restriction, or "CR": paleo, vegan, no red meat, no meat at all, no fat, no carbs, just plain fasting, and always, no sugar. It's not unusual for CR people—mostly men, as might be expected—to obsessively weigh, tabulate via software, and take notes on their daily calorie intake (as low as 1,800 or even 1,500 for some). Critics sometimes deride CR, with its skeletal six-footers complaining about their low sex drives, as the male equivalent of anorexia.

It is difficult to assess scientifically how useful any of this is. Visit the websites of most longevity gurus, and you will get a mix of hard-to-evaluate nutritional tips, medical information of a sort that might raise some doctors' eyebrows, and, mostly, marketing. John Durant of *The Paleo Manifesto* credits his inspiration to the thinking of Loren Cordain, a health and exercise professor at Colorado State University whose *The Paleo Diet: Lose Weight and Get Healthy by Eating the Foods You Were Designed to Eat* (2002) has been a bestseller for more than a decade. Cordain's website is a mélange of paleo recipes, photos of the 65-year-old Cordain himself (another preserved-in-amber specimen), pitches for his most recent books (including a cookbook), and a section on foods that supposedly heal "leaky gut syndrome"—food molecules permeating the intestinal wall—an alarming-sounding ailment but not one that's recognized by most of the medical profession. The website of rival paleo guru Mark Sisson, 61, author of *The Primal Blueprint: Reprogram Your Genes for Effortless Weight Loss, Vibrant Health, and Boundless Energy* (2009), blasts grain products and hawks Sisson's own line of supplement pills, an odd feature considering that real Paleolithic people wouldn't have known what a supplement was. Sisson's trademark emblem is a loin-clothed, bare-chested figure (somewhat like Sisson himself, who likes to show off his log-rolling abs in his photos) executing a balletic leap while waving a javelin.

This is advertising, of course—and the Internet is clogged like a drainpipe in autumn with pitches for life-extending pills and free-radical neutralizers. But a more important question than the efficacy of pills, protein, and chelation looms: Even if we

had the technology, would it really be possible to extend life by centuries just by repairing 7—or even 10—features of genetic and cellular breakdown, as Aubrey de Grey predicts we soon will be doing? The answer of mainstream geriatrics researchers is sorry, but no. "Aubrey says there are seven pathways to repair, but the problem is that there are hundreds of thousands of genes involved in aging," said Michael R. Rose, a lab director in the University of California, Irvine's ecology and evolutionary biology department, in a phone interview. "His theories don't take into account the genomic complexity of aging." He added: "Maybe 70 years from now, we'll have a better understanding of that genomic complexity, where molecular repairs, nano-repairs, will be possible. But right now that's a fantasy."

S. Jay Olshansky, a public-health professor at the University of Illinois-Chicago who has devoted the past 20 years to researching the upper limits of human mortality, maintains that lifespan is built into an organism's genes. The bristlecone pine trees of the Western-state mountains can easily survive for 5,000 years or more, but human beings simply aren't evolutionarily programmed to live much longer than they do now, Olshansky argues. "Human biology doesn't change," he said in a phone interview. "We can trace human ancestry back maybe 200,000 generations, and it would seem that human beings going back that far are pretty much like us." He continued: "We can see a biological strategy at work, a life-history strategy that favors parenting and grandparenting for children's survival. A woman is usually able to have her last child at about age 38. So it makes sense that you can survive into your 50s, and you can push that up to age 60, so that people generally can live into their 50s and 60s in relatively good health and vigor. But the further you get into your 60s and 70s, gerontological processes inevitably take over. It's like the difference between a pond and a whitewater river."

In other words, *The Epic of Gilgamesh* might have expressed a hard truth: that death really is man's lot, and that aging really isn't a disease awaiting a cure. But even if Rose and Olshansky are right and Aubrey de Grey is wrong, the scientific quest for immortality has produced some beneficial side effects: a better understanding of how to stay in reasonably good health for as long as possible and perhaps—at least in the future—some ways to cure some of the killer-diseases associated with old age. "There's a lot of snake oil in this business," according to Christine Peterson, a cofounder of the Foresight Institute in Palo Alto, which sponsors nanotechnology research. Peterson, 56, is one of the handful of women in the life-extension movement. "But most of us—I just want to be healthy and not lose interest in people at the other end of my life."

Charlotte Allen, a frequent contributor to The Weekly Standard, last wrote on the "Jesus' wife" papyrus.

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