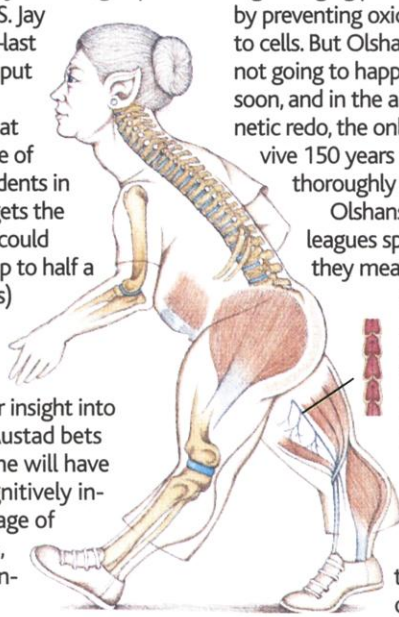
Long-Lived Bet

They won't live to see the payoff, but two researchers who study aging—University of Idaho, Moscow, zoologist Steven Austad and University of Chicago epidemiologist S. Jay Olshansky—last month each put $150 into a trust fund that will go to one of their descendents in 2150. Who gets the cash (which could amount to up to half a billion dollars) will depend on which researcher has a sharper insight into the future: Austad bets that someone will have made it, cognitively intact, to the age of 150 by then, while Olshansky doubts anyone will get past 130. The current documented record is 122.



Built to last.

Citing success in increasing the longevity of mice, worms, and fruit flies, Austad is confident that we'll soon have a handle on slowing the aging process—perhaps by preventing oxidative damage to cells. But Olshansky says that's not going to happen anytime soon, and in the absence of a genetic redo, the only way to survive 150 years would be to get thoroughly re-engineered.

Olshansky and colleagues spell out what they mean in an article in next month's *Scientific American*, "If Humans Were Built to Last." It notes that tinkering with human biomechanics would involve some questionable tradeoffs: For example, altering the trachea to reduce the risk of choking would make both mouth-breathing and speech difficult. Other improvements might be drawbacks in the mating game, such as a curved neck, back-bending knees, and forward tilting torso to counteract the damaging effects of bipedalism; and bigger and more mobile ears to compensate for hearing loss. Other design changes put forth by Olshansky's group: rewired optic nerves to prevent retinal detachment; extra ribs to hold organs in place; more muscles to bolster the female bladder; and replumbing of the troublesome male prostate.

Electrical Impulses Win Big

The Internet and the pacemaker are being honored this month with $1 million in awards from the National Academy of Engineering. That figure includes the annual Charles Stark Draper Prize and a new $500,000 award, the biennial Fritz J. and Dolores H. Russ Prize.

The Draper Prize of $500,000 will be shared by Internet pioneers Vinton Cerf, Robert Kahn, Leonard Kleinrock, and Lawrence Roberts. The Russ award goes to Earl Bakken and Wilson Greatbatch for invention and development of the first human heart pacemaker. Russ, founder of Systems Research Laboratories, has endowed the prize through Ohio University, Athens, where he graduated in 1942.

Both prizes will be presented at a dinner on 20 February.

Ancient Genomes Take Off

For the first time, scientists have sequenced the entire mitochondrial (mt) genome of an extinct animal. Writing in the 8 February issue of *Nature*, Alan Cooper of Oxford University in the U.K. and colleagues report the complete mtDNA sequence—almost 17,000 base pairs—from the bones of two kinds of moa, a group of large, flightless birds that lived in New Zealand until they were hunted to extinction 400 years ago. A second team, Allan Baker and Oliver Haddrath of the Royal Ontario Museum in Toronto, has a paper in press at the *Proceedings of the Royal Society*.

Success in getting the total mtDNA genome of an extinct species—possible in part because the bones were preserved in cold limestone caves—"is a landmark technologically," says ancient DNA expert Hendrik Poinar of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. "It moves the ancient DNA field into the genomics era."

The moa studies highlight the different evolutionary trees that can be drawn by classifying animals according to either their physical appearance or their genes. Classic morphological analysis of flightless birds, or ratites, groups the kiwi and the moa. But the mtDNA findings are consistent with a gene-based family tree that distances the kiwi, clumping it instead with the emu and the cassowary. What's more, the two mtDNA studies themselves part company on which ratite came first, the moa or South America's rhea. "Obviously, these DNA trees will be debated to some extent," says Baker.

Bringing Back Smell

A rose is a rose is—with apologies to Gertrude Stein—just not what it used to be. After 20 years of intense breeding for color, form, and shelf life, smell got lost in the shuffle. That's why roses, carnations, and chrysanthemums, among others, have lost most of their fragrance genes. "The breeders didn't care about scent," says Purdue University molecular biologist Natalia Dudareva.

Snapdragon has yielded a scent secret.

But redolence may be coming back in fashion. Over the last 5 years, Dudareva and evolutionary biologist Eran Pichersky of the University of Michigan, Ann Arbor, have identified five genes involved in the production of several of the 1000 or so volatile chemicals that make up floral smells. Pichersky's lab found four in the intensely fragrant California wildflower *Clarkia breweri*. And Dudareva announced last summer that she had isolated a fifth from the snapdragon, a flower that has kept its smell because of minimal meddling from breeders.

Athough initial odor bioengineering efforts haven't blossomed, Pichersky says that two groups, one at Plant Research International in Wageningen, the Netherlands, and another at Hebrew University in Jerusalem, have been able to splice into flowers a plant gene that codes for linalool synthase, which catalyzes the production of bergamot, a scent known to lovers of Earl Grey tea.

"We have shown that, technically, we can use molecular techniques to restore scent," says Pichersky. But until flower breeders take an interest, anyone looking for an odoriferous Valentine's Day bouquet might want to pass up the roses and head for the snapdragons.

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