

## Gene for early aging found

Scientists have identified a gene that, when mutated, causes a disease of premature aging. They believe the same gene may also play a role in such important age-related diseases as heart disease, cancer, and diabetes.

People born with Werner syndrome start the decline to old age in their twenties. First, they sport gray hair and wrinkles. Then, a raft of diseases starts to hit. Few people with the syndrome survive to age 50.

Molecular biologist Gerard D. Schellenberg of the University of Washington in Seattle and his colleagues located the Werner syndrome gene on chromosome 8. In the April 12 *SCIENCE*, the researchers describe four different mutations of the gene that they found in Werner syndrome patients.

The protein that the gene codes for appears to be a helicase, an enzyme involved in DNA activity. "Here's a gene that affects the unwinding of DNA," says coauthor George M. Martin, also at the University of Washington. DNA consists of two twisted strands of genetic material. The researchers think the enzyme in question unwinds those strands, a process vital to DNA repair and replication.

The team speculates that a defective gene might cause DNA damage that would lead, in turn, to cancer or other diseases.

For people with Werner syndrome, the discovery does not suggest an obvious treatment. Schellenberg explains that every cell in the body of a patient with the disorder is affected by the rogue gene. He says it is difficult to imagine repairing such systemwide defects with gene therapy.

Yet, says Martin, research may give scientists vital clues about the way the normal aging process works.

## Growth hormone: No elixir for old age?

Human growth hormone may be losing its allure as an anti-aging drug.

In 1990, a team of researchers reported that a synthetic version of the hormone reversed some age-associated changes in body composition (*SN*: 7/14/90, p. 23). As part of the normal aging process, fat replaces lean body mass, including muscle. The researchers theorized that as people age, their secretion of growth hormone plummets, leaving them flabby and frail. In their study, elderly men who received treatment suddenly appeared more youthful and leaner.

But could growth hormone therapy actually boost the strength of an elderly person?

Maxine A. Papadakis of the Department of Veteran Affairs Medical Center in San Francisco, Calif., and her colleagues decided to find out. They recruited 52 healthy men age 70 to 85. The researchers assigned each man to a group that received either growth hormone or a dummy injection.

After 6 months, the team measured the effect of human growth hormone on body composition. It found that, compared to the placebo group, the growth hormone group's lean tissue mass increased by 4 percent and its fat mass dropped by 12 percent.

So far so good. But then the California scientists put the men through a series of tests designed to measure strength and cognitive function. Despite the changes in their body composition, the men demonstrated no significant improvement in muscle strength or endurance. They also found no change in mental acuity. The team reports its disappointing findings in the April 15 *ANNALS OF INTERNAL MEDICINE*.

For now, the researchers advise against using growth hormone to preserve functional ability in older adults. "There are no data to support its use in the elderly," Papadakis told *SCIENCE NEWS*, noting that a year's worth of the synthetic drug costs \$12,000.

## Double Great Wall spied from space

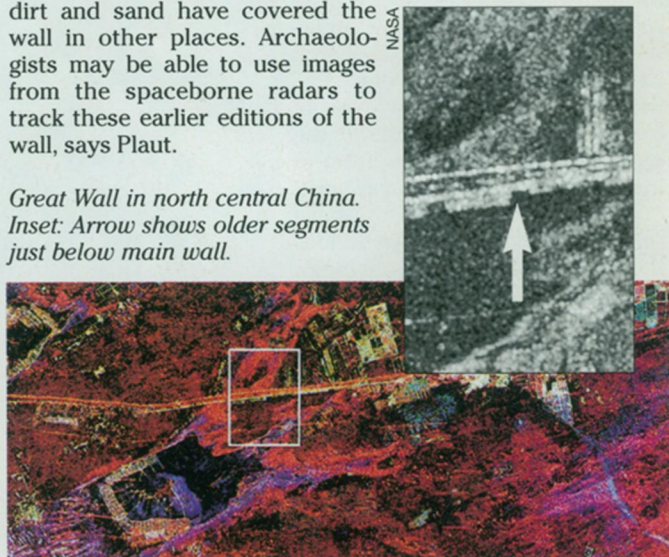
Despite the claims of an oft-repeated rumor, the Apollo astronauts could not spot the Great Wall of China from the moon, 400,000 kilometers away (*SN*: 12/24&31/94, p. 432). Crews on the space shuttle, however, orbiting only a few hundred kilometers above Earth, can pick out China's best-known monument when the lighting is right. But a trio of radars on the space shuttle demonstrates the best vision. The radar images show not only the current wall but also a previous edition running parallel to it, report NASA scientists.

The triple-radar instrument, known as SIR-C/X-SAR, operates at three different frequencies, and it flew on the space shuttle twice in 1994. Although archaeology was not an intended part of those missions, images from the radars can reveal hidden structures and help map man-made features.

The SIR-C/X-SAR team is investigating a section of the Great Wall running across the desert about 430 miles west of Beijing. The radar image shows two parallel lines separated by a span of only a few meters. According to Chinese scientists participating in the experiment, the main line represents the current wall, dating to the Ming Dynasty 600 years ago. A fainter line is an older section built during the Sui Dynasty, more than 1,000 years ago, says Jeffrey J. Plaut, the SIR-C experiment scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

In the location imaged by the radar, the walls were constructed out of dirt to form raised berms much simpler than the well-photographed sections of wall near Beijing. Although some segments of the older version are visible at the surface, dirt and sand have covered the wall in other places. Archaeologists may be able to use images from the spaceborne radars to track these earlier editions of the wall, says Plaut.

Great Wall in north central China. Inset: Arrow shows older segments just below main wall.



## An electrical way to measure pollution

Want to know how polluted the air is? Instead of measuring a half dozen different chemicals in the atmosphere, Canadian scientists have come up with a much simpler test based on electrical conductivity of the air.

Ya Guo of Agriculture Canada in Ottawa and his colleagues compared conductivity measurements made in downtown Toronto to simultaneous readings of the concentrations of carbon monoxide, sulfur dioxide, nitrogen dioxide, and airborne particles. Changes in electrical conductivity were correlated with variations in total pollution: Whenever pollution increased, conductivity dropped, the researchers report in the April 20 *JOURNAL OF GEOPHYSICAL RESEARCH*.

Pollution reduces the atmosphere's conductivity by neutralizing or binding to free ions in the air, explains Guo. This technique could provide a low-cost way of tracking pollution, he suggests.