Let's Look at Your Telomeres

By Editor Test *Wed, Oct 7, 2009*

These loss-leaders at the ends of chromosomes, which help determine our longevity, were the basis for this week's Nobel Prize in Medicine.

Will *homo sapiens* discover a way to live significantly longer? Perhaps. Elizabeth H. Blackman, Carol W. Greider, and Jack W. Szostak won the Nobel Prize in medicine this week for their work on telomeres, the tiny protective bumpers at each end of our chromosomes that wear away after our cells divide about 50 times.

If science can find a way to keep telomeres from eroding, our cells may replicate in a normal way indefinitely, keeping us forever young. On the down side, cells that never lose their telomeres can turn cancerous.

The limits of human longevity were, not surprisingly, a key topic of discussion at the Longevity 5 conference in New York in late September, where experts such as Joseph Coughlin of the MIT Aging Lab and John Iacovino of Fasano Associates, a Washington, D.C., underwriting firm, spoke at length. (See 'Old People with Attitude and Expectations'.)

The two men painted a complex picture. Most of the gains in longevity in the last 40 years, for instance, have come from improvements in the treatment of cardiovascular diseases. The beneficial effect of those advances may have peaked—at least among people who have followed the recommended dietary, exercise and drug regimens. The eradication of cancer might extend the average American's life by six years—a tremendous boon, perhaps, but not immortality.

Looking backward, of course, the gains have been impressive. In 1950, a 65-year-old American male could expect to live 13.9 years and a 75-year-old man could expect to live an average of 10.9 years. By 2000, a 65-year-old man could expect to live 18 years and a 75-year-old could expect to live 11.4 years.

It's a truism that women outlive men, but on average it's becoming less so. Among 65-year-olds, an estimated three out of four men and four out of five women will reach age 75. The average 65-year-old couple can expect to live a combined 38.4 person years. But they will only spend 13.5 years of those years together, on average—even without taking separate vacations. Elderly women still spend more time alone than men. Married women on average spend 6.8 years as widows. Men spend 4.5 years as widowers. Women have a 57% chance of outliving their husbands.

Just as there are income disparities in the U.S., there are also longevity disparities. There's a widening gap between the lifespans of the more affluent 50% of the U.S. population and the less affluent 50%. Obesity raises the mortality rate of a growing segment of American society. As a result, Americans are not as long-lived as, say, the Japanese or Norwegians. From roughly the late 1970s to 2000, the obesity rate in the U.S. more than doubled, to 31% from 15%.

But even as some people have extended their lives and others shortened theirs, the end game has become increasingly expensive. Many Americans spend their final months, weeks, days or hours in cost-intensive care settings. To some extent, that's probably to be expected. But it distorts the use of resources, in that 80% of the nation's health care expenditures go to people during their final two years.

"I'm not so sure that's sustainable long-term," Dr. Iacovino said.