

Aging gracefully, slowly

Longevity medicine promises us a future that is amazing!

By Dana Wright

“It was only (10) years ago that I heard a very prominent gerontologist at a major aging meeting say there would never be any drug that extends lifespan in any organism,” said Simon Melvoy, Ph.D., a Massachusetts longevity researcher.

Undaunted, Melvoy continued with his work—developing a drug that could extend an animal’s normal lifespan. In November 2001, he announced the results of a study that did just that. Using very strong antioxidants, he and a consortium of researchers tripled the lifespan of mice bred to have neurological diseases.

“These studies are important and relevant to human diseases,” said Melvoy. “They clearly demonstrate the link between a buildup of . . . oxidative stress and several age-related degenerative diseases.”

Melvoy is just one of hundreds of researchers focused on the science of aging gracefully and slowly. As dreams of extending lifespan have moved from legend to laboratory, more and more studies are focusing on ways of getting a longer and healthier life out of the bodies we have. From complex science, like the role oxidative stress plays in wear and tear on our brain, to simpler questions, like how much does diet, exercise and smoking really have to do with our longevity, medical research is increasingly focusing its microscopes on the issue of aging gracefully. For example:

- Researchers in Europe studied the eating habits of elderly people and found that those who ate a low-fat, balanced diet were less likely to suffer from dementia.

- A 19-year study that followed 7,500 men found that exercising two or three times per week can

reduce the chance of getting any kind of cancer by 24 percent, and cancer of the upper digestive tract by 62 percent.

- Analyzing data from 877,000 patients, doctors at Duke University in Durham, N.C., concluded that stopping smoking at any age will reduce a smoker’s of getting heart disease, cancer and stroke, the three main causes of death in America.

‘PROGRAMMED’ AND ‘DAMAGE’ THEORIES

There are two dominant theories about why we age. The “damage theory” says that just the act of living causes wear and tear in our bodies that cause us to deteriorate a few cells at a time. The “programmed theory,” says that each of us follows a biological timetable that is programmed into us by our genes. This means that genes turn “on and off” at specific times, that our hormones might ebb or shut off entirely at a time pre-ordained by our genes, or that immune systems go into decline at a certain time, leaving us open to disease or infections.

Although calling this the “programmed theory” implies that it can’t be controlled, sometimes it can. Or sometimes, the deficiencies it causes can be compensated for.

THE CHALLENGE OF LONGEVITY

Life expectancy has grown dramatically in the last century. In 1900, for instance, the average life expectancy was 47 years. By 1990, the average life expectancy had increased to 75 years. The reason for this astounding increase was due to improvements in sanitation, the discovery of antibiotics and improvements in medical care and surgical procedures.

Now the challenge is even more daunting. To get a longer lifespan

today, scientists have to concentrate on improving the immune system as well as tackling “diseases of lifestyle,” like some cancers, heart disease and diabetes. They must also focus on how to best fight the daily assault of environment hazards each of us face, like excessive sun and lung damaging air pollution.

Plus, there is our genetic makeup, that great unknown. With genes, the researchers must wrestle with such factors as resetting the biological clock, and staving off the diseases that our bodies are pre-programmed to have. Still, most experts agree, there are the genes of nature and the genes of nurture. By improving our lifestyle, we can significantly alter many of the fates programmed into our genes.

REVERSING THE DAMAGE

With most of us, the damage theory is most obvious in the appearance of our skin. Such things as “wear and tear” are most apparent, as well as “free radical damage,” “rate of living” and “somatic mutation,” all factors in the damage theory.

If our skin is a reflection of what’s inside, how can it be made to stay beautiful, supple and strong? The answer, some researchers believe, is antioxidants.

Antioxidants keep free radicals from tearing through the body by giving them a molecule to bind to. Since free radicals on a rampage are often compared to rusting metal, the analogy is that antioxidants keep our bodies from rusting out.

The body produces some antioxidants of its own. But more and more experts are saying that to age gracefully and slowly we should supplement our natural antioxidants.

Among the most prominent antioxidants in research right now are folic acid and vitamins C and E.

A study published in the March 2002 issue of the *Journal of Neuroscience* found that mice fed normal amounts of folic acid had far less brain plaques that cause Alzheimer’s disease than those fed a diet deficient in foliates. The mice were specially bred with the mutant gene that causes Alzheimer’s.

The culprit, said the researchers, is an elevated level of homocysteine, an amino acid that causes damage to nerve cells as well as the cardiovascular system. Since elevated homocysteine levels are related to similar diseases in humans, the message of the research is clear: “There is a possible cause-effect relationship between elevated homocysteine levels and degeneration of nerve cells,” said Mark Mattson, Ph.D., chief of the National Institute of Aging’s Laboratory of Neurosciences.

Since 1998, the Food and Drug Administration has required additional folic acid added to breads, cereals, pasta, rice and other grain products. But because of its antioxidant properties, many researchers recommend taking folic acid supplements.

The same is true of vitamins C and E. Numerous studies have shown the antioxidant properties of these popular vitamins to have positive a positive effect on virtually every part of the body. Two recent studies underscore the importance of regular doses of these wonder supplements.

Doctors in Finland have found that middle-aged men with relatively low levels of vitamin C in their bloodstreams had twice the chance of having a stroke as those with high levels of the

vitamin. And an intriguing study from the National Eye Institute found that combining daily doses of vitamins C (500 milligrams) and E (400 mg) with zinc (80 mg) reduced the chances of getting a form of vision loss called age-related macular degeneration by 25 percent.

“This is an exciting discovery because these nutrients are the first effective treatment to slow the progression of this disease,” said Dr. Paul A. Sieving, Ph.D., director of the NEI.

THE FUTURE IS WOW!

Once a field that was looked down upon by traditional doctors, anti-aging or “longevity” medicine is one of medicine’s fastest growing fields. Almost 11,000 medical doctors and scientists belong to the American Academy of Anti-Aging, and thousands more are working on projects in preventive medicine, biotechnology and other fields to find more of the many keys to living long and aging gracefully.

The American College of Cardiology even went so far as to predict the future at its annual meeting of 2000. In their report to members, they wrote:

“It is the year 2024. You are 75 years old and you discover that a man next to you on an airplane has a pig heart and his arteries are swarming with ‘smart dust’ that sends continuous reports on his condition to his doctor’s computer. That’s not so strange, because you have a pig heart, too. And by 2049, when you are 100, many of your organs will be replaced. Plus you’ll feel better than you did at 50 because ‘nanolabs’ in your blood can manufacture and supply drugs whenever they are needed.”

IF THAT’S THE FUTURE OF AGING, THEN, WOW!