

Medicine by John Grauerholz, M.D.

Aging research: extending human life

Current research indicates that human life could be considerably lengthened within the next decade.

A recent *New York Times* article predicts that, a century from now, the average woman will live to be 90 years of age, and the average man, somewhat less. It also postulates an extension of maximum human life span if certain alterations in food consumption and living habits take place. Although the *Times* typically displaces the potential benefits of present scientific research 100 years into the future, a review of the rapidly expanding area of aging research indicates that a commitment to translate present knowledge into practice would bring about amazing results in just one decade, and that many younger people living today might be around 100 years from now.

Most theories are based on random or programmed alterations in the genetic program contained in deoxyribonucleic acid (DNA). The extremes are represented, on the one hand, by the assumption of a random accumulation of errors in the form of point mutations, and, on the other hand, by the concept of a totally programmed readout of genetic information related to development, maturation, aging, and ultimate life span. Between these extremes lies the theory that there is, with age, an accumulation of chromosomal mutations whose lost functions are replaced by redundant (reserve) sequences until the reserves are depleted and senescence ensues.

In spite of the inherent theoretical limitations of viewing life in terms of

non-living chemistry and physics, a great deal of information on the aging process, and on the means of altering it, already exists.

One area of research which holds great promise is that on the immune system which protects the body against foreign organisms and against its own cells when they become cancerous. As an animal ages, certain changes in the immune system accompany, and even precede, the aging process.

For many years it has been known that the thymus, a gland located at the base of the neck, reaches its maximum size in late adolescence and then progressively shrinks, such that the entire gland has virtually disappeared by the mid- to late-forties. It is now known that the thymus secretes a number of hormones which are crucial for activating certain immune cells involved in defense against infections and cancer. By age 60, thymus hormone cannot be detected in most humans. The immune cells, known as T-lymphocytes or T (thymus-dependent) cells, show age-related loss of function that can be corrected by administration of thymus hormones.

On a more fundamental level, recent breakthroughs in molecular biology and neurochemistry are beginning to reveal intimate interactions between the brain and the immune and endocrine systems. These interactions have been especially well delineated in the study of the hypothalamus, an area at the base of the brain which is connected to the pituitary gland, the

so-called "master gland."

Immune function is also affected by pituitary hormones and, in addition, T-cells have been demonstrated to possess surface receptors for the so-called neurotransmitters, which are responsible for cell-to-cell communication in the brain.

The rapid developments in this area, along with major breakthroughs in understanding of DNA repair mechanisms, are certainly enough to justify a major effort—were the prolongation of life a major priority.

The real obstacle to life extension in the near future is not scientific or technical, but attitudes exemplified by such genocidal organizations as The Population Reference Bureau whose Sept. 5 press release issued in Washington, D.C. began: "If heart disease had been eliminated many years ago, federal programs for the elderly would have cost about \$67 billion more this year alone."

The Bureau's report recommended the elimination of efforts to prevent premature death because of the excessive cost to the taxpayer of letting people live. Echoing the cost-efficiency measures Adolf Hitler implemented when he began his euthanasia program for exterminating the mentally ill and handicapped, the report stated: "While these remarkable advances mean we can all look forward to longer lives, their impact on society and on the current system of programs for the elderly could be disastrous."

The solution according to the Population Reference Bureau is to begin killing the elderly. They state: "Leonard Hayflick of the University of Florida suggests a balance be struck between research directed at eliminating the major diseases and at slowing the aging process [emphasis added]." This coheres with the *New York Times'* desire to postpone the benefits of this research into the next century.