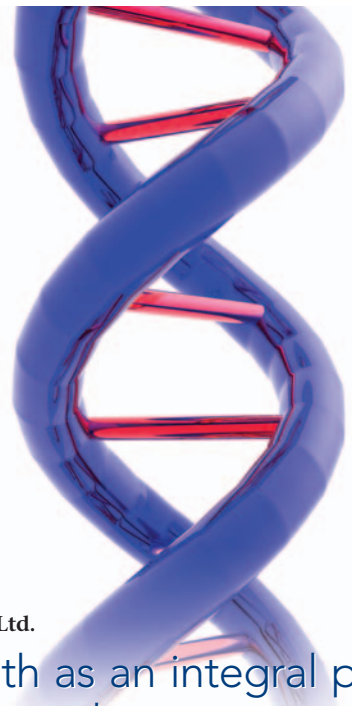




CHANGING THE AGING PARADIGM

by Dr. Wulf Dröge, Ph.D.
Senior Vice-President, Research & Development, Immunotec Research Ltd.



Most people consider the process of aging and death as an integral part of their life, but two key scientific findings have changed our concept of aging dramatically...

The first important finding dates back to 1954 when “free radicals”, i.e. a highly aggressive type of small chemical molecules, were first discovered in living tissues. In view of the chemically aggressive nature of free radicals, Dr. Denham Harman proposed in 1954 that aging may be — at least to a large extent — the consequence of free-radical-inflicted tissue damage. The antioxidant vitamins C and E function as radical scavengers and ameliorate thereby, the oxidative damage by oxygen radicals. The widely popular use of these vitamins illustrates the awareness of this health hazard in the general public. Few people know, however, that the free-radical scavenger and antioxidant glutathione is quantitatively far more important than the widely known vitamins C and E. Because Immunocal is an excellent source of the glutathione precursor cysteine, I proposed some years ago that Immunocal may also have ‘anti-aging’ properties in addition to its well-known effect on the immune system.

Another most surprising discovery by Cynthia Kenyon and her colleagues in 1993 had an even stronger impact on our current concepts of aging. The work of Kenyon on the round worm *C.elegans* and similar studies by other laboratories on worms, fruit flies, and mice revealed that the life span of these animals could be increased by up to 2.5-fold and more by mutating a single gene. A corresponding life span extension in humans would correspond to a life span of more than 200 years. Not surprisingly, the discovery of these longevity mutants has led to a tremendous hype and unreasonable speculations about human immortality. It also led to a flood of venture capital into small companies which promised to develop drugs against aging. Of course, we should be cautious not to fall into the trap of unreasonable expectations. But there is reason for optimism.

Most people know what a gene is. They know that our genes control the color of our eyes and the shape of our head and they know that

if a child is born with a defect in a certain gene, this defect is typically associated with a certain disease which tells us exactly what the function of that gene is. It was, therefore, most surprising that a defect in certain genes can cause an *increase* in life span and simultaneously ameliorate the aging-related functional decline. We cannot expect to extend our own life span by selectively mutating one of our genes. But we have learned in the course of these studies some important details of the mechanisms of aging. It was particularly satisfying for us at Immunotec to see that the mechanisms which were revealed by these studies on so-called longevity mutants are intimately linked to the availability of cysteine and glutathione. By supplying additional cysteine as a source of glutathione, we can expect to interact directly with these mechanisms of aging at very specific points.

Knowing this, we have to think about the optimal way of enhancing the cysteine supply. This is not as trivial a problem as it might seem at face value. Simply doubling daily food intake, for example, would create more problems than benefits. By developing Immunocal, Dr. Gustavo Bounous provided an invaluable tool for enhancing our cellular glutathione pool, but there was room for further improvement to strengthen its effect as an anti-aging product. To optimize the beneficial effects of Immunocal for those of us who are no longer in our twenties, we have to combine Immunocal with other ingredients. The new Immunocal Platinum formula is a big step forward as it contains additional ingredients which render this formula more effective and safe over long periods of time. These improvements are based on solid science. But concepts for the next generation of an anti-aging product are already in progress. It would be unreasonable to dream about human immortality. But our growing understanding of the aging process leads us to believe that the quality of life in old age can be significantly improved even during our own lifetime.