

# A Brief Overview of Chimpanzees and Aging Research

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## What Causes Aging?

It is thought that aging is caused by a gradual accumulation of cellular damage over time, resulting in a decline in function of the in-built systems that keep us healthy<sup>(1)</sup>. This manifests in the familiar "symptoms" associated with increasing age, for example, changes in appearance, problems with bones and joints, loss of vision and hearing, decline in cognitive function and increased susceptibility to diseases such as cancer, stroke, and neurodegenerative disorders like Alzheimer's and Parkinson's. The mechanisms that underlie the aging process are relatively poorly understood and so it is understandably a major research focus. Furthermore, life expectancy continues to increase and it is clearly important that the aging population be as healthy as possible, for personal, social and economic reasons.

## Aging research

Aging research can be split into 2 major areas; the first studies the basic science of cellular aging, often on a molecular level. This research largely uses isolated cells and tissues (human and non human) and *in vitro* methods to study the fundamental mechanisms of aging. The second major research area examines common age related health problems using human subjects, human epidemiological data and animal models of certain age-related diseases.

## Use of chimpanzees in aging research

Because chimpanzees are genetically very similar to humans, they have been used as models of some human diseases. Recent research<sup>(2)</sup> coupled with conspicuous lack of output in terms of effective treatments has cast serious doubts on their suitability as such models. It has been suggested that a number of aged chimpanzees that have been the subjects of various research projects throughout their lives could now be used in aging research. This is despite the fact that in 1998, the National Advisory Council on Aging stated "there is no scientific demand for a center for aging chimpanzees". Prior to this, of 1600 NIH grantees who were surveyed regarding their interest in using chimpanzees in aging research, three said that they would be interested in using *post mortem* brain tissue and only one indicated a positive interest in using live subjects. The scientific community clearly believes that there is enough meaningful information to be gained elsewhere without having to resort to chimpanzees. It is perhaps not surprising that scientists undertaking aging research do not wish to use chimpanzees when one considers the following: Though chimpanzees have been used in the past as models of cancer and cardiovascular disease both of which are also studied in aging research., they have not been used as models of these diseases for many years as they do not suffer from them to the same degree as humans and results gained from these studies were shown not to reflect the human situation<sup>(3,4)</sup>. Additionally, chimpanzees are not affected by Alzheimer's or Parkinson's diseases, which makes their use in these areas of research difficult to rationalize and certainly much less relevant than research utilizing human cells and tissues.

## Human Studies on Aging

One of the most persuasive reasons to adopt different research methods than using chimpanzees is that many studies are now using the best possible model of human aging: human volunteers. Any results gained from chimpanzee studies may not be applicable to humans and so have to subsequently be confirmed by studying people in any case. The numbers of human studies that are ongoing are testimony to the fact that there is no shortage of volunteers willing to participate. Human volunteers provide samples to allow all aspects of aging research, some even agreeing to donate tissue after their death. Recent advances in whole body scanning techniques such as MRI and PET mean that internal organs and even specific areas of the brain can be examined in great detail in live humans<sup>(5)</sup>. Some studies follow groups of aged individuals and use donated samples to make correlations between aspects of the aging process and changes that are observed in cells and

