

## **RISK FACTORS TO CARDIOVASCULAR DISEASE: COMPARATIVE STUDIES OF HUMAN AND CHIMPANZEE**

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Much evolutionary, biochemical and genetic evidence suggest the remarkable similarity between human and chimpanzee. Yet, in spite of this similarity, human has a lifespan about twice that of chimpanzee. There are additional data, although not extensive, suggesting that human and chimpanzee also age qualitatively in similar manner. The major difference is not how they age but the difference in aging rate. So the question naturally arises what are the key genetic/biochemical differences between human and chimpanzee that could explain why humans are able to maintain their general health status some 50 years or so longer than chimpanzee. It has been proposed that the processes involved in the evolution of the different primate species is largely a difference in the timing and degree of expression of a common set of structural genes and not by the appearance of new structural genes. The genetic change is likely to involve mutations occurring largely in key master regulatory genes. The evolution of lifespan along the hominid ancestral descent sequence to human has apparently been extraordinary rapid, indicating possibility few genetic changes involved that may be focused on a relative few key master regulatory genes. These data are consistent with the possibility that all primate species share a common set of structural genes that control general health maintenance of the organism. These genes have been identified as Longevity Determinant Genes. Our laboratory has been undertaking a detailed comparative study of the gene expression profile and biochemical difference of human and chimpanzee. We report here our findings related to serum risk factors to cardiovascular and diabetes. The risk factors for cardiovascular disease and diabetes appear in general to be greater in chimpanzee than human. This includes the following serum risk factors: CRP-HS, IGF-1, insulin, mean LDL particle size and Lp(a). This data will be discussed as to their potential identification as Longevity Determinants and with similar investigations using human centenarian populations.