

Living to 100 and Beyond: Survival at Advanced Ages

Session 1: Theory of Aging Session

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GENE HELD'S RESPONSE TO DISCUSSANT JAY OLSHANSKY'S COMMENTS REGARDING THE "PLASTIC OMEGA" PAPER

Professor Olshansky's comments add strength and perspective to the paper and are very welcome. In particular, I am thankful for his reference to Richard Miller's article, "A Position Paper on Longevity Genes", which is an excellent paper. I ran across Miller's work after my own paper had already been submitted; otherwise, I would have included comments and references to it. Subsequent discussions and correspondence with Jay have also proven enlightening and confirmed what was already evident from the literature on aging – that there is a great schism within the research community regarding the degree to which we may eventually forestall the aging process.

Some scientists feel the potential for affecting the aging process has been greatly exaggerated, thereby doing a major disservice to those seeking to understand the process on incontrovertible grounds. Some of these scientists have spent a good portion of their careers putting the science of aging on a respectable footing, and see the overzealous claims of less prudent researchers as bordering on "snake oil" medicine. Unsubstantiated claims could also lead to a withdrawal of already scarce research funds. The opposite end of the spectrum is often represented by the "gene jockeys" involved in cutting edge research aimed at uncovering the mysteries of cellular processes. These scientists are supremely confident that we will not only find what causes us to age, but will do so soon, and will be able to develop methods of slowing the process greatly.

My layman's opinion, which has been heavily influenced by the writings of Hayflick, Finch, and Miller, tends toward the cautious side. To paraphrase Carl Sagan on other matters, extraordinary claims require extraordinary proof. Hayflick's distinction between aging and longevity determination, and Miller's assessment of the different types of genes influencing longevity, are critical to the development of a balanced perspective on what might or might not be possible within this field. Genes don't operate in isolation. They are often part of one or more metabolic, immunological, or other biochemical pathways, pathways that harbor cascades of inter-related reactions and feedback loops. Whatever impact a gene might have on the aging / longevity determination process, it is more than likely incidental to its other 'duties'. Within the context of evolutionary biology and the above biochemical framework, it is easy to understand why there are no genes for aging, a point made by Hayflick and echoed by Olshansky in his comments. Presentation of earlier theories or opposing points of view was not meant as endorsement. This is, after all, a survey paper.

Nevertheless, I feel we may eventually influence the aging process to a greater extent than the writings of those scientists might currently indicate. Rose's work with fruit flies, along with caloric restriction experiments and other genetic research currently underway, fuels a recurring suspicion on my part that the payoff may be greater and occur earlier than some would think.

In summary, if the objective was to provide a balanced perspective on an interesting and important field of research, I think the paper achieves that. Conversely, if the objective was to provide equal coverage of opposing viewpoints, I believe I erred on the side of caution, favoring the more conservative viewpoints to the disadvantage of the more aggressively optimistic ones.

I am pleased to have been a part of this conference, and equally grateful to have had the opportunity to meet Professors Hayflick and Olshansky.