

Interview with Dr. Huber Warner

Biomarkers

KYLE JENSEN: Welcome to SAGE Crossroads, the premier online forum in issues of human aging. These podcasts feature lively discussion with the experts on the ethical, political, economic, scientific, and societal implications of aging related science. Thank you for listening.

I'm speaking now with Dr. Huber Warner. Dr. Warner is a past program director for the NIA Biology of Aging Program and the current Associate Dean of research for the College of Biological Sciences at the University of Minnesota.

Dr. Warner, why do we need biomarkers of aging?

HUBER WARNER: We would like to be able to predict or to determine the biological age of an individual rather than the chronological age since it's more informative about the state of health of the individual.

KYLE JENSEN: What kinds of biomarkers in particular are needed to reduce the burden of disease and increase lifespan?

HUBER WARNER: Biomarkers would certainly be one way to indicate what kind of pathology people are dealing with. It would be a different sort of diagnostic tool.

KYLE JENSEN: What's your outlook on finding the biomarkers of aging?

HUBER WARNER: It's been a very difficult process. The NIA ran a program for ten years back in the 1980s and 90s to try to identify such biomarkers and in fact was essentially not successful in that activity. The NIA invested a fair amount of money in this process, perhaps 20 million dollars, to come up with a panel of biomarkers and in the end did not come up with such an informative panel of biomarkers that could predict the chronological age of an individual within a species or the length of remaining life the individual could anticipate.

KYLE JENSEN: What in particular though did we learn from that study? I mean we didn't obviously find any biomarkers of aging, but was there any knowledge that advanced the science forward?

HUBER WARNER: The program certainly learned more about age related changes that occur in rodent species, in this case rats, which is certainly part of the mission of the NIA is to identify what age related changes are and which of those changes have adverse consequences for health in older individuals, particularly humans. So we did gain some general expertise and understanding of the impact of age on health and longevity but nothing of a real good predictive nature.

KYLE JENSEN: Do you think it's the science that's holding the research back, or is it the funding?

HUBER WARNER: I think it's currently funding that's holding research back. In a whole different program, the National Institute on Aging had much success in identifying genes which played a role in longevity regulation. We identified a whole pathway called the insulin signaling pathway. If you could reduce activity to that pathway, you were able to lengthen lifespan in a variety of species, mice, rats, fruit flies, and nematodes. We still don't know how well this translates into humans, so the scientific techniques are available to identify informative biomarkers, but the research in biomarkers has not continued to be a high priority, and with the funding situation as tight as it is now, more emphasis is being put into genetic and environmental factors in aging and less on actually identifying biomarkers.

KYLE JENSEN: Are you willing to make any predictions for the next 5 or 10 years? Do you think there will be any major breakthroughs, or are we looking farther down the pipeline?

HUBER WARNER: I've been optimistic right along that the ability to do gene expression micro arrays might be a kind of biomarker that might turn out to be useful. It's been a very complicated technique to get control of, and it provides an awful lot of data and I think gene expression arrays might provide some biomarker type information in the future, possibly within the next 5 or 10 years.

KYLE JENSEN: The audience of SAGE Crossroads is made up of scientists, policy makers, and curious consumers. If there is one last statement that you could make to them about biomarkers of aging, what would it be?

HUBER WARNER: I would say that it's something that would clearly be useful to the field. They will continue to be identified sort of sporadically, maybe not exactly with the intent to identify biomarkers, but they will continue to turn up, but I don't see a concerted effort to identify biomarkers as occurred in the past.

KYLE JENSEN: Thank you. On behalf of SAGE Crossroads, I'm Kyle Jensen.