



U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY

Opening Statement

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of the Subcommittee on Investigations and Oversight

Investigations and Oversight Subcommittee Hearing
The Fountain of Youth? The Quest for Aging Therapies

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Good morning, and welcome to our members and our panelists.

One of the most important functions of the Science Committee is to help inform Congress of rapidly emerging technologies that will have important policy implications, so that we are not always playing catch-up. The past decade has seen progress in medical technology that would previously have been seen as science fiction. Not long after its discovery in 2012, I started getting increasingly urgent requests for meetings from cellular biologists, telling me about the discovery of an incredible gene editing called CRISPR; and that *Brave New World* was not going to be a century away, and might not even be a decade.

Many of us were here for the 2015 Science Committee hearing on *The Science and Ethics of Genetically Engineered Human DNA*. In fact, it was only three years after that – six years after the discovery of CRISPR – that a Chinese scientist shocked the world when he announced that he had created the first gene-edited human child. We are still grappling with the potential societal, ethical, and economic implications of that breakthrough.

I believe that the aging therapies being evaluated by the geroscience community today may be equally seismic in their impact.

The hypothesis at the heart of geroscience is that aging itself is a relatively small set of general processes, and that some of them may be malleable. It is a hypothesis reinforced by the wide range of aging processes observed in the natural kingdom.

We didn't used to think of aging as a disease, but that may be changing. Rather than looking at individual conditions, the entire process of aging is being considered as the driving factor behind increasing morbidities. And because of the analytical tools that have been developed through decades of federally funded research, scientists now have the ability to break down aging into a collection of biological events, and developing deep knowledge about how it happens at the cellular level. They are making connections between these cellular changes and how they manifest as illness and pain throughout our aging bodies.

They're learning that these biological events at their most basic level may be influenced by deliberate, or even inadvertent, intervention.

And if you can do that safely, aging and the goal of increasing healthy lifespan – healthspan – may come within sight.

In just the past three years or so, scientists have started testing aging interventions on humans through small, FDA-approved clinical trials. The first trials had fewer than 100 human subjects, sometimes fewer than ten. But right now, the Albert Einstein College of Medicine, with support from the National Institutes of Health, is standing up a clinical trial with a cohort of 3,000 subjects to evaluate whether a prescription drug called metformin can help delay age-related chronic diseases in general. A formal trial like this that seeks to solve for several otherwise-unrelated diseases is unprecedented.

Imagine how profound it would be to identify a drug or a therapy that can mitigate Alzheimer's, cancer, macular degeneration, hearing loss, and joint pain with a single, or a small set of treatments. Among other things, this would have enormous implications for the federal budget.

Of course, we are not there yet. This field is still nascent enough that the leading thinkers are still sorting out some basic vocabulary issues. It seems that almost all of the serious research efforts are focused on expanding the human healthspan, not the absolute limit of the duration of a human life. We will hear from our witnesses about the concept of healthspan today. But to be sure, the definition of "healthy" varies from person to person. If increasing healthspan is the goal, how will scientists know they have done it?

And how can the field determine the success or failure of an aging intervention without waiting for decades to see how people fare as they age?

If researchers are ultimately successful in translating the outcomes they have seen in model organisms into humans, we will have even bigger questions to confront:

- If you extend the healthspan, do you also extend the lifespan and simply delay the protracted aging process to a later date?
- What happens to healthcare costs and the burden on our health system?
- Would we see people in their 60s starting second careers, and what would that mean for the broader labor force?
- Can insurance companies change your premiums based on whether you take the aging therapy?

We have all witnessed firsthand the breakneck speed of technology innovation in the country over the last 40 years, so we should know better than to be caught unaware. Our responsibility as policymakers is to get smart today on a field of research that could soon lead to transformational change. Our witnesses today represent the leading edge of geroscience and I know they will be faithful guides on our path to understanding this topic at a deeper level.

I thank them for joining us today and I yield to Ranking Member Obernolte.