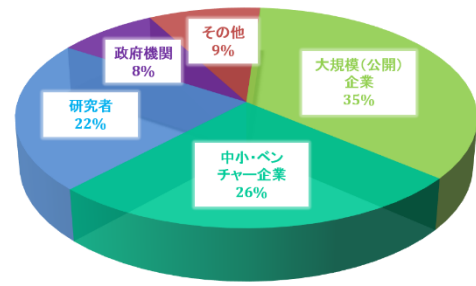


# 2018 World Alliance Forum in San Francisco



On November 15th and 16th, 2018, thought leaders, influencers, and distinguished scientists from the US, Japan, and beyond, including a Nobel Laureate, gathered for the World Alliance Forum's conference titled "Healthcare Game Changers: Innovations in Science, Policy and Business for Healthy Aging." This is the fifth annual conference co-organized by the Alliance Forum Foundation and the government of Japan to further the commercialization of new technologies to advance healthcare and create an ecosystem where these new technologies thrive. The conference provided a sobering look at the current state of healthcare today and offered ideas of how to change course. To change course, all hands must be on deck and silos need to be broken. It will take efforts from scientists, governments, businesses/investors and the community at large to address the super-aging populations which are arising in Japan and the US and

2018 WAFSF Attendee Background



From left: Dr. Regis Kelly (QB3), Dr. Miyoung Chun (World Without Alzheimer's), Dr. Eric Verdin (Buck Institute for Research on Aging), and Dr. Frank M. Longo (Stanford University)

Europe which is often referred to as the "silver tsunami". Dr. Miyoung Chun, Co-Founder of the World Without Alzheimer's, noted that the super aging populations will lead to an economic crisis. Evidencing this "silver tsunami," Dr. Chun noted that the incidence of Alzheimer's cases will increase from 2 million in 2020 to 13 million in 2050 with the cost escalating from \$400B to above one trillion dollars in the United States. Dr. Regis Kelly, Director of QB3, provided data from South Korea showing that the number of workers supporting those drawing pensions will significantly decline from 5.8 to 1 in 1990 to 2.1 to 1 in 2025.

## Causes of Aging and Potential Treatments

In his keynote speech Dr. Regis Kelly spoke of aging as a breakdown of the ability of the body to repair itself. Similarly, Dr. Eric Verdin, CEO & President, Buck Institute for Research on Aging, also stated that aging is a failure of maintenance and repair. The key is how to activate such repair. The repair process requires four steps: detecting, removing and replacing the damage and then connecting the replaced cells and tissues to the undamaged ones. The biological processes involved in these steps are protein synthesis, immune response, stem cell proliferation and extracellular matrix support. Both in academia and in the private sector, scientists are working on better understanding and addressing the errant processes that lead to aging such as inflammation, cellular stress, and the failure of damaged cells to cease dividing.

As noted during the two-day conference, researches have known for some time that calorie restriction has led to increased longevity. The "young blood" studies were also discussed. In these experiments, conducted at Stanford University, old mice were given the blood plasma of young mice and showed physical and cognitive improvement. A clinical trial is currently underway, supported by Grifols, based on these learnings. The proposed treatment involves removing the "aging factors" in the blood. The company

Alkahest, is taking another approach based on the “young blood” studies. As reported by its Chief Executive Officer, Dr. Karoly Nikolich, the company has identified specific proteins that increase in aging and age-related diseases and vice versa. Based on these understandings Alkahest has developed a pipeline of drugs to treat age related diseases.

UCLA’s Professor Dr. Dale Bredesen, has taken a different approach and he shared the results of his protocol for the treatment of Alzheimer’s. It is a highly personalized approach involving the assessment of 45 factors including contributors such as inflammation, pathogens, and insulin resistance.

### Robotics/AI and Regenerative Medicine

Many other innovative companies also presented their technologies and approaches to improve health outcomes. These included drug compounds in development that will enable the body to reproduce neurons and photoreceptors. Innovations in diagnosis of dementia and mechanisms to improve patients’ adherence to their treatment regimens were discussed. Particularly uplifting were the advances made in robotics that were presented by Dr. Yoshiyuki Sankai, President & CEO of Cyberdyne, Inc. He showed the joy of injured or paralyzed children and adults after using robotic technology that allowed them to walk.

### Prevention

Recognizing that the solution does not lie solely with technology, prevention was looked at including impacts of physical exercise, diet, sleep and cognitive exercise. The conclusion drawn was that physical exercise has the greatest impact with the impact of cognitive exercise being somewhat in question. Nutrition was important as well. Nobel Laureate Dr. Richard Roberts gave a compelling and highly charged keynote about the role of genetically modified food and its importance to ensure not only a sufficient quantity of food sources but also sufficient quality. In addition, the importance of community and a “feeling of high purpose” was identified as being an important indication for lowering the incidence of Alzheimer’s.



From left: Mr. Jim Sergi (CSSI LifeSciences), Dr. William Dow (UC Berkeley), Dr. John G. Haaga (National Institute on Aging), Dr. Larissa Lapteva (FDA), Dr. Yasuyuki Sahara (Ministry of Health, Labour and Welfare, Japan)

### Roadmap toward Healthy Aging

At the concluding sessions, speakers challenged the status quo. They recognized that today society really only provides sick care. We need to move from an organ based, reactive, one size fits all system to a proactive, preventative, personalized and system based (as opposed to organ based) approach. Society/governments need to incentivize development of biomarkers and new endpoints which typically are not funded privately. We also need better imaging tools. Japan’s new regulatory regime for regenerative medicine is a good example of how government has taken a bold step to support innovation and accelerate the development of therapies that are likely to address age related disease. In addition, we need to foster the sharing of noncompetitive information on biomarkers, and we need to break down the tendency to work in disease silos and share information and collaborate across diseases to avoid duplication of efforts. After all, said the researchers, there are common mechanisms at work across diseases related to aging. Collaboration and innovation in science, business and government will be essential as we are only just beginning to understand the biology of Alzheimer’s and other age related disease.