Longevity Impact Forum Program Themes

Opening session

Zurich (June 27, 2019).
The opening session will introduce the goals of the forum, to showcase promising emerging longevity technologies and develop evaluation and verification (rating) criteria for their effectiveness, safety, cost-effectiveness and other impacts.

1. Realizing the promise of longevity research and development: Social and economic perspectives of emerging longevity technologies

The sessions with this theme will discuss the social and economic implications of emerging longevity technologies and therapies, including their impact on health, insurance and pension systems, political, defense and other societal frameworks. The sessions will place a special focus on the regulatory, advocacy and investment policy issues of longevity R&D and treatments. Thus, among the discussion topics will be longevity technologies and therapies within major policy and regulatory frameworks (including WHO, SDG, WTO, FDA, EMA, and others). The need for evidence based evaluation systems (incl. rankings and ratings) of longevity studies, researchers, treatments and technologies will be explored. Among others, issues of technology transfer, clinical translation and intellectual property protection will be considered.

First session

2. Geroprotective medications

The sessions with this theme will discuss a broad range of geroprotective (or "anti-aging") pharmaceutical medications aimed to therapeutically intervene into degenerative aging processes to improve healthy longevity. The classes of treatments to be discussed will include, but are not limited to: Genetic and epigenetic modulators, either for the entire organism or for individual tissues. The sessions will also consider diverse energy metabolic modulators, including various means to improve mitochondrial function and cellular respiration, and drug-

modifiable ageing-related metabolic signaling pathways. The sessions will explore means to eliminate macromolecular and cellular damage, senolytics and senomorphics, proteostatic, immunotherapeutic and immunomodulating drugs, and other types of geroprotective (anti-aging) medications. A special consideration will be sought for evidence-based efficacy and safety criteria of geroprotective drugs.

Session #2

3. Improving evidence base for aging and longevity R&D. Rating of technologies.

Technologies and therapies aiming to treat the degenerative aging process and extend healthy longevity are in urgent need of scientific evidence based criteria for their effectiveness, safety, and therapeutic promise. The sessions with this theme will explore the development of such evidence based criteria, including ratings and rankings of emerging longevity technologies and therapies, both those already on the market and those still under research and development. Beside the plenary presentations, small discussion and brainstorming group sessions will be held.

Session #3

4. Healthy Lifestyle services for Healthy Longevity

This theme will concern the broad area of healthy lifestyle and improving living environments for healthy longevity. Among others, it will consider such issues as healthy longevity nutrition, including neutraceuticals and dietary supplements, physical exercise regimens and constraints for healthy longevity, physical therapies, sleep enhancement, wellness, spa and other recreation facilities, environmental protections for healthy longevity. A special consideration will be given to efficacy and safety dosages and criteria of lifestyle interventions for the elderly population.

Session #4

5. Regenerative medicine for healthy longevity

Regenerative medicine is likely to be a necessary component in any system endeavoring to address degenerative ageing processes and a host of accompanying diseases. If perfected, this could become an effective preventative aid for virtually all age-related diseases, and there are already proofs of principle for a variety of therapies, which include metabolic, degenerative and even infectious diseases. A special focus will be placed on regenerative medicines using gene therapy and cell therapy. Besides cell transplantation and genetic engineering, regenerative medicine by epigenetic and pharmacological means will be considered, as well as tissue engineering, transplantation and in vivo regeneration. A special consideration will be given to efficacy, safety and cost-effectiveness evaluation criteria for regenerative medicine.

Session #5

6. Cost effectiveness of aging and longevity R&D and 4P Medicine

In view of the rapid population aging, the emerging longevity therapies and technologies carry a great promise to enhance the cost-effectiveness of healthcare systems, improve the economic productivity of the elderly, and the general societal well being. How can this promise of cost-effectiveness be quantitatively evaluated, for the longevity field as a whole and for particular emerging longevity technologies and therapies? What is the expected value of investment in longevity research? The sessions with this theme will explore such quantitative cost-effectiveness models and other health economics issues related to longevity industry, in order to inform investment policies, research and public health policy. A special focus will be placed on the use of informatics/AI methods for developing cost-effectiveness models and ratings for longevity technologies. Beside the main sessions, small brainstorming sessions will be held among participants

Session #6

7. Precision diagnostics of aging – Early detection of aging-related diseases

Any attempt to treat degenerative aging processes will necessarily require reliable means for their diagnosis, early detection and prediction. Therefore, the sessions with this theme will discuss diverse means for early detection and diagnosis of aging processes, aging-related diseases and multimorbidity, including epigenetic, genetic and metabolic testing of aging and aging-related diseases, biological and functional indicators of old-age frailty, including assays and sensor systems. Of special interest will be predictive systemic computational modeling of aging and longevity, including bio-regulation, homeostasis and homeodynamics, integrating various levels of biological organization or "omics" (proteomics, genomics, physiomics, etc.). Tangentially, the sessions will consider the broad topic area often referred to as "digital health" in relation to healthy longevity, including E-Health, M-Health, Augmented Reality, Wearables, Big Data and AI.

Session #7

7. Integration and road-mapping for the longevity field

The longevity field is often characterized by fragmentation and segmentation. There is a need for stronger synergies among different approaches, their systemic and holistic overview and roadmap for their integral development. The sessions with this theme will consider various approaches to integration, synthesis and road-mapping within the field of longevity R&D and treatment. A special focus will be placed on developing evaluation (ranking) instruments that may provide a holistic as well as differentiated overview of the field. That is to say, these evaluation instruments would seek to show the relative merits of particular approaches and technologies, yet not neglect or ignore competing approaches, but rather provide each approach with a presentation and evaluation platform. Such a democratic presentation (evaluation) platform would help select the most promising approaches for support and funding, but at the same time indicate potential directions for improvement, synergy and cross-fertilization among the different approaches. Beside the main sessions, small work groups and brainstorm sessions will be held.

Session #8

9. Emerging technologies for healthy longevity

This topic area will consider issues commonly referred to as “emerging technologies” with specific reference to healthy longevity. The topics will include diverse means of resuscitation and tissue preservation, robotics and assistive technologies, neural interfaces and stimulation, nanomedicine, advanced information technologies and AI (possibly overlapping with the earlier themes). The purpose of those sessions will be to highlight the promise of emerging technologies for the longevity field, and emphasize the need for an evaluation (rating) system for such technologies that exhibit varying degrees of evidence completeness.

Final of the Forum.
Conclusions.