

IPG2019 Program

Wednesday, September 4

Time	Session/Lecture info
08:15-16:00	Day 1: Geroscience — Addressing the root causes of aging-related diseases
08:15-08:45	Registration and gathering
08:45-09:00	Opening remarks
09:00-11:00	Principles of Geroscience Chair: Ron Kohanski
09:00-09:30	S. Jay Olshansky , School of Public Health at the University of Illinois at Chicago <i>From Lifespan to Healthspan</i> <i>Life extension without health extension would be harmful should it come to pass -- unfortunately our current medical model of treating one disease at a time is heading us all in that direction. The solution is to attack the underlying risk factor for all fatal and disabling diseases -- the biological process of aging; yielding a new form of primary prevention in the 21st century.</i>
09:30-10:00	Steve Austad , Department of Biology at the University of Alabama at Birmingham <i>The surprising impact of sex on geroscience research</i> <i>Considerable success has already attended geroscientific research in laboratory mice. This talk will update that success and will also consider an emerging pattern which is that sex differences in response to senescence-retarding interventions seem to be common.</i>
10:00-10:30	Nir Barzilai , Institute for Aging Research at the Albert Einstein College of Medicine <i>Improving health span of elderly: Not a science fiction anymore.</i> <i>Differences in biological and chronological aging is exemplified in centenarians who have extended life span, contracted morbidity and functional genotypes in known pathways of aging. We have made progress in launching a large clinical study that aims to prove aging can be targeted but also get FDA approval, so biotech and pharma will develop better drugs and their combination to realize our potential health span.</i>

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- 10:30-11:00 **Ronald Kohanski**, Division of Aging Biology at the National Institute on Aging, NIH
Concepts and Perspectives in Geroscience
Outline concepts for the hallmarks of aging, provide examples of the intersection between these hallmarks and other risk factors for morbidity, and conclude with suggestions about leveraging these findings in the development of anti-aging therapies that emerge from Geroscience.
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- 11:00-11:30 **Break**
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- 11:30-13:00 **Cellular and Molecular Biology of Aging, Basic and Translational Aspects**
Chair: Haim Cohen
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- 11:30-12:00 **David Sinclair**, Genetics Department at Harvard Medical School, Boston
Preventing and reversing Waddington drift during aging
Increasing evidence points to aging a loss of information that is recoverable. I will present new approaches to modulating aging in the forward and reverse directions
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- 12:00-12:20 **Haim Cohen**, Bar Ilan University
"Keep your energy": SIRT6 and frailty
Mice over-expressing SIRT6 (MOSES mice) have extended lifespan along with significant improvement of their healthspan. Old age related frailty typically manifesting as a syndrome of a constellation of weakness, slowness, reduced activity, low energy and unintended weight loss. Here we will describe the mechanisms underlying SIRT6 positive effects on healthy aging primarily by providing the required energy at old age and slowing aging related frailty.
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- 12:20-12:40 **Valery Krizhanovsky**, Weizmann Institute of Science
Senescent cells as drivers of aging and age-related diseases
Cellular senescence is one of the hallmarks of aging. Senescent cells accumulate with age and contribute to organismal aging and age-related pathologies. We revealed that immune surveillance of senescent cells plays a critical role in restricting this accumulation. Pharmacological elimination of senescent cells might prevent the deleterious consequences of their accumulation.
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- 13:00-14:30 **Lunch and Poster Session**
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- 14:30-16:00 **Genetics, Epigenetics, Diagnostic and therapeutic aspects**
Chair: Gil Atzmon
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Time	Session/Lecture info
14:30-15:00	<p>Steve Horvath, Human genetics, School of Public Health. University of California at Los Angeles</p> <p><i>Epigenetic aging clocks for mammals and human clinical trials</i></p> <p><i>Recent epigenetic aging clocks are highly predictive of human lifespan and health span. These epigenetic biomarkers are ready for human clinical trials of anti-aging interventions. Analogous epigenetic clocks can be defined for other mammalian species including mice, dogs, bats, and marine mammals.</i></p>
15:00-15:20	<p>Gil Atzmon, Haifa University</p> <p><i>Survival of the fittest</i></p> <p><i>Epigenetic changes associated with aging could serve as markers for healthy life span, and may represent one of the central mechanisms of gene regulation by which many aging process are buffered, and therefore facilitate healthy lifespan.</i></p>
15:20-15:40	<p>Liran Shlush, Weizmann Institute of Science</p> <p><i>Early diagnosis and treatment of AML</i></p> <p><i>Acute Myeloid Leukemia (AML) is a deadly disease. Recent studies suggest that AML can be predicted many years before its current diagnosis. New therapies focused on the early stages of AML are under development.</i></p>
15:40-16:00	<p>Ido Wolf, Tel Aviv University</p> <p><i>The hormone klotho: a novel connection between aging and cancer</i></p> <p><i>The hormone klotho is a potent regulator of aging-related characteristics and low levels of it are associated with frailty and shortened survival. We have identified klotho as a potent tumor suppressor and recent studies from our lab indicate it as a regulator of mitochondrial activity. These observations indicate klotho as novel link between aging and cancer.</i></p>

Thursday, September 5

Time	Session/Lecture info
09:00-17:30	Day 2: Geroscience — Applications and implications
09:00-10:00	System biology and immunology of aging Chair: Shai Shen-Orr
09:00-09:20	Uri Alon , Weizmann Institute of Science <i>Senescent cells and the dynamics of ageing</i> <i>Senescent cell accumulation is casual for ageing, but it is unclear whether they passively accumulate or rapidly turn-over. We show that they rapidly turnover in mice, and turnover slows with age, contributing to the wide variation between individuals in rates of ageing, morbidity and mortality.</i>
09:20-09:40	Shai Shen-Orr , Technion ? Israel Institute of Technology <i>Exposed to Life - Getting at the Immunological Clock</i> <i>High resolution longitudinal monitoring of the immune system of older adults identifies a systematic pattern of change allowing to define an immune-age metric, different from chronological age, which shows clear functional immunological implications and clinical value, beyond well-established risk factors and better than other biological age metrics.</i>
09:40-10:00	Michal Schwartz , Weizmann Institute of Science <i>Prospect of Immunotherapy for age-related dementia and Alzheimer's disease</i> <i>Our studies have identified the key role of adaptive and innate systemic immunity in brain homeostasis and repair, through a continuous cross-talk via the brain choroid plexus epithelium. In Alzheimer's disease and aging, boosting systemic adaptive immunity initiates a cascade of events that occurs in three different compartments leading to recruitment of innate immune cells to the brain and, in turn, to disease modification and cognitive improvement.</i>
10:00-10:30	Break
10:30-13:00	Longevity through interaction with the environment Chair: Gabi Barbash

Time	Session/Lecture info
10:30-11:00	<p>Pinchas (Hassy) Cohen, Davis School of Gerontology, University of Southern California</p> <p>Systems Biology of the Mitochondria — A Discovery Pathway for Aging-Related Pathologies</p> <p><i>We identified multiple open-reading-frames (ORFs) within the mitochondrial genome that encode putative peptides we call Mitochondrial-Derived-Peptides (MDPs) which represent a sub-class of a growing group of novel micro-peptides (from both mtDNA and nuclear chromosomes) which serve as signals related to cell and organismal protection and energy expenditure. We described multiple peptides including humanin, SHLPs, and MOTS-c. A modified RNAseq bioinformatic approach that we labeled mito-transcriptomics, allowed us to define changes in expression of specific ORFs/MDPs, in certain diseases and we also developed a modified GWAS bioinformatic technique (MiWAS) that identifies SNPs within MDPs that associate with diseases of aging including diabetes and Alzheimer's in an ethno-specific fashion. Several MDPs are in various stages of preclinical and clinical development for diseases of aging.</i></p>
11:00-11:30	<p>Rafa de Cabo, Translational Gerontology Branch. US National Institute on Aging</p> <p>Longitudinal trajectories of aging phenotypes in mice vs. humans; what can we learn?</p> <p><i>Even though mice are routinely used for studying aging and aging-related diseases, no comprehensive longitudinal assessment to date has been conducted. I will discuss data emerging from the Study of Longitudinal Aging in Mice (SLAM), where inbred and outbred mice of both sexes were longitudinally evaluated for physiological, metabolic, and functional health throughout their lifespan.</i></p>
11:30-12:00	<p>Valter Longo, Davis School of Gerontology, University of Southern California</p> <p>Fasting mimicking diets, regeneration and healthspan</p> <p><i>Dr. Longo will discuss his work indicating that cycles of a diet that mimics fasting can extend longevity and prevent disease in mice and reduce disease markers in humans. He will also discuss how this approach can be used to treat diseases.</i></p>
12:00-12:30	<p>Amanda Salis, The University of Sydney, Australia</p> <p>Increasing lifespan and health span through dietary treatment of obesity</p> <p><i>It is often assumed that the healthiest way to lose excess weight is via moderate restriction of energy intake, resulting in 'slow and steady' weight loss. This talk presents new evidence that severe energy restriction ? usually resulting in fast weight loss ? may be a healthy option for weight loss, with due consideration for effects on bone mineral density.</i></p>
13:00-14:30	Lunch
14:30-15:45	<p>Emerging geroscience innovations – from basic research to therapies</p> <p>Chair: Ilia Stambler</p>

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- 14:30-14:45 **David Sinclair**, Life Biosciences
Promises and challenges of translating aging research
We are at turning point in medicine, one that will allow us to dramatically improve human healthspans. The past 20 years of research into aging has seen great strides in our understanding of why we age and how to delay it, preventing most age-associated diseases. I will discuss challenges and potential to turn these discoveries into lifesaving medicines and the impact on society.
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- 14:45-15:00 **Natalie Yivgi Ohana**, Minovia Therapeutics
Mitochondrial Augmentation Therapy for rare mitochondrial diseases: a gateway for age-related diseases
In my talk I will compare mitochondrial diseases with aging in general and age-related diseases in particular. I will describe the role of mitochondria in the aging process and the importance of healthy mitochondria in the prevention of age-related diseases. Finally I will discuss our new cell therapy approach to treat mitochondrial diseases.
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- 15:00-15:15 **Tal Dvir**, Tel Aviv University
Advanced technologies in regenerative medicine
Describe cutting-edge technologies for engineering tissues and organs, including 3D printing, personalized hydrogels and electronics-engineered tissues interfaces for regenerating the diseased heart, brain, eye and an injured spinal cord.
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- 15:15-15:30 **Yael Benvenisti**, Mediterranean Towers Ventures
Creating evidence based products for the aging population
The activity, themes and trends of the main Age Tech research centers in Israel. Early detection of Alzheimer's disease as an example to demonstrate barriers in the process of creating evidence-based products for the aging population.
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- 15:45-16:15 **Break**
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- 16:15-17:30 **The preparedness of the Israeli society for the population aging – panel discussion**
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- 16:15-16:30 **Nir Barzilai**, American Federation for Aging Research
If you don't have pain when you wake up in the morning-you are dead!: How can we practically change human health span?
Biology of aging can be targeted and the drive for diseases can be modulated. Realizing this, preventing 'aging' needs to become an indication for the regulatory forces in every country. Some may be done directly with those institute but others need a change in laws and regulation. The way forward is by explaining the longevity dividends that every (individual) and country will have by targeting aging.
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- 16:30-16:40 **Ilia Stambler, Vetek (Seniority) – the Movement for Longevity and Quality of Life**
Public initiatives in support of geroscience
The geroscience approach to advance aging research and healthcare is poised to significantly improve healthy longevity and solve urgent challenges of the aging population. Public support is a necessary condition for the successful adoption and implementation of the geroscience approach. Several successful public initiatives, in Israel and internationally, in support of geroscience will be presented, and directions for future activities will be indicated.
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- 16:40-17:30 **Panel discussion -- The preparedness of the Israeli society for the population aging**
- Moderator:** Chen Liberman, TV Channel 10.
- Participants:**
- Sharon Yagur-Kroll, PhD**
 Director of Biomedical Research, Israel Ministry of Science and Technology
- Dr. Hagit Schwimmer, PhD**
 Director of Life Science Department, Israel-Europe Research & Innovation Directorate (ISERD), Israel Innovation Authority
- Iris Rasooly MD MPH**
 Head, Community Geriatric Services, Geriatric Division, Israel Ministry of Health
- Yitzhak Brick, PhD**
 Chairman, Israeli Gerontological Society
 Lecturer on policy at Haifa University, Department of Gerontology
 Chief Advisor, Israel National Masterplan on Aging
- Nir Barzilai, MD**
 The founding director of the Institute for Aging Research, the Nathan Shock Center of Excellence in the Basic Biology of Aging and the Paul F. Glenn Center for the Biology of Human Aging Research at Albert Einstein College of Medicine of Yeshiva University, New York
- Ilia Stambler, PhD**
 Chief Science Officer, Vetek (Seniority) ? the Movement for Longevity and Quality of Life (Israel), Director of Research and Development, Shmuel Harofe Geriatric Medical Center
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Last Updated: 10 July
2019