Latest Developments in Longevity

A very large portion of mankind is aging,
and the workforce is shrinking.
The G20 in particular are aging faster.
These trends will continue I'm afraid.
It’s not something that you can suddenly stop.

Ángel Gurría, Secretary-General, Organization
for Economic Co-operation and Development

The global challenges and opportunities around aging and Longevity continue to be acknowledged at the government and corporate level. From the G20 summit in Japan, where the looming crisis of the Silver Tsunami was discussed with stark clarity, to the Barclays’ Private Wealth Conference in Geneva, where the keynote was delivered by Sergey Young, Founder of the Longevity Vision Fund, Longevity is on the agenda.

In our previous four articles in the Longevity Series we provided overviews of the political, financial, and scientific domains within the Longevity Industry. In this article we cover recent developments in politics, science, finance, and industry including developments in the emerging areas of Longevity Politics and Longevity Finance. The Longevity community includes scientists, business leaders, entrepreneurs, advocates, and investors who often work in collaboration. Sustained contact between community members ensures mutual visibility between sectors of the industry. This article briefly summarizes recent events and developments in the Longevity industry.

Snapshot of Recent Events

- In June, finance ministers and central bankers from around the world met in Japan to discuss the challenges of a global aging population, and the possibilities for government-coordinated solutions.

- In June, Sergey Young, founder of the $100M Longevity Vision Fund, delivered a keynote presentation on Longevity at Barclays' Private Wealth Conference in Geneva.

- In July, the UK Government published the green paper on its Preventive Medicine National Strategy, indicating that the UK will be the first country to officially implement P4 medicine into its national healthcare system.

- In July, the Ending Age-Related Diseases: Investment Prospects & Advances in Research Conference was hosted by the Life Extension Advocacy Foundation.

- In July, Sergey Young, founder of the $100M Longevity Vision Fund, joined the All-Party Parliamentary Group (APPG) for Longevity in the UK.

- In August, the XPRIZE Foundation announced its Future of Longevity Impact Roadmap.

- In August, a new online service called GENtervention launched to shed light on the general principles behind lifespan extension via genetic manipulation via visualizing associations between gene expression changes in mouse livers.

- Researchers at the Monash Biomedicine Discovery Institute have made progress in the quest to rejuvenate the aging immune system by identifying the factors responsible for the age-related decline of the thymus.

- Researchers at the University of Salerno Medical School Department of Medicine, Surgery, and Dentistry report that a gene known for being present in centenarians has produced results promising for heart health when inserted into mice.

POLITICS

UK Government Green Paper

In July, the UK Government published a green paper on its Preventive Medicine National Strategy, indicating that the UK will be the first country to officially implement P4 medicine into its national healthcare system

This new development extends the UK government's other recent commitments to make National Healthy Longevity a major priority for the country. This is the most recent development in a series of steps that the UK government has made towards the development of a proactive, progressive and technology-driven national Healthy Longevity development strategy. This began in 2017 with the formation of the Aging Industrial Grand Challengewhich prioritized the problem of aging population as one of four key national industrial development challenges for the nation. In 2018, they launched a £98 million Government-led Healthy Aging Industrial Strategy Challenge Fund. In 2019, they launched of the All-Party Parliamentary Group for Longevity.

> The 2020s will be the decade of proactive, predictive, and personalized prevention. This means targeted support, tailored lifestyle advice, personalized care, greater protection against future threats. New technologies such as genomics and AI will help us create a new prevention model that means the NHS will be there for people even before they are born.

This green paper reaffirms the conclusion made in our analytical report, on the UK's leading position as a country that prioritizes the issue of aging population and the opportunity of Healthy Longevity as key national priority items of the nation's government. For example, if a baby inherits a rare disease, we might be able to diagnose it and start treatment while the baby is still

in the womb, so that the baby is born healthy. Using data held by the NHS, and generated by smart devices worn by individuals, we will be able to usher in a new wave of intelligent public health where everyone has access to their health information and health interventions are personalized. In the 2020s, people will not be passive recipients of care. They will be co-creators of their own health. The challenge is to equip people with the skills, knowledge and confidence that they need to help themselves.

G20 Puts Global Aging On The Agenda

The 2019 G20 summit was held June 28-29 in Osaka, Japan. This was the first G20 summit to be hosted by Japan. The world's finance ministers and central bankers met in Fukuoka, Japan on June 8th, 2019 to discuss the challenges of a global aging population and the possibilities for government-coordinated solutions.

What we are saying is, 'if the issue of aging starts to
Show its impact before you become wealthy, you really
won't be able to take effective measures against it'

Taro Aso, Japanese Finance Minister

Haruhiko Kuroda, governor of the Bank of Japan, and Taro Aso, Japan's deputy prime minister and finance minister, attended the G20 meeting in Fukuoka. Taro Aso, the meeting's host, encapsulated the problem of the silver tsunami - the global aging workforce and its economic impact - in a single sentence which applies as much to nations as it does to individuals. (Image Reuters)

Japan in particular is experiencing the brunt of the Silver Tsunami, with longer life-expectancy and sliding birth rates. This is particularly serious in wealthy nations, and has resulted in a rapid expansion of the elderly population in Spain, Italy, and South Korea, according to the Organization for Economic Co-operation and Development (OECD). With its fast-shrinking workforce, Japan finds itself scrambling to find ways to cover the cost of its national pension. It has left many elderly fearing cuts to their benefits, while young people worrying that a pension may not exist by the time they retire. Meanwhile, a shrinking labor force means Japanese firms are unable to fill job openings, with the national unemployment rate standing at 2.4%.

Prior to the meeting, the Global Coalition on Aging published a report entitled The Impact of Innovation Across Technology, Healthcare and Urban Design for Super-Aged Society. The report covers healthcare, finance, urban design, lifelong education, and age-friendly communities, all areas that Aging Analytics Agency has identified as key targets for government interventions in National Longevity Development Plans Landscape Overview 2019. Aging Analytics Agency is encouraged by the continuing recognition of the global demographic crisis as a political priority, and the drive to seek effective solutions, but would like to urge policy makers to consider the untapped opportunity of a potential global Longevity economy.

To download the Aging Analytics Agency's National Longevity Development Plans Global Overview 2019 (First Edition), which ranked the strength, relevance and proactivity of various Government-led Longevity initiatives around the world click here.

RECENT EVENTS

Ending Age-Related Diseases 2019

On July 11th, 2019 the Ending Age-Related Diseases: Investment Prospects & Advances in Research, conference took place in New York City. This was the second conference held by the Life Extension Advocacy Foundation. The event, which was sold out, will be held in a larger venue next year to accommodate more people.

The event featured noted researchers, investors, and entrepreneurs all involved in the present development of means to treat aging as a medical condition. LEAF has gained a prestigious reputation in recent years for its shouldering some of the burden of international conference organizing and hosting. SENS Research Foundation Chief Scientific Officer Aubrey de Grey helped orchestrate the SENS conference series, its recent incarnation Undoing Aging, and the Rejuvenation Biotechnologies industry conference series.

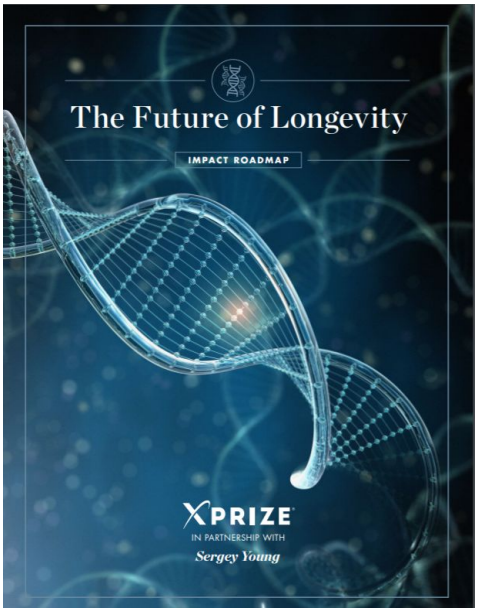
LEAF has become one of the world's most important forces in spearheading the crusade to bring aging to an end. Their advocacy work continues to gain prominence, and with their series of New York conferences, they are now bringing the most cutting-edge scientific advances to a general audience. These fantastic events are an invaluable US counterpart to the ones that SENS Research Foundation runs in Berlin, and They are making a great contribution to the anti-aging crusade.

Aubrey de Grey, CSO, SENS Research Foundation

XPRIZE Sets its Sights on Aging

The XPRIZE Foundation is a nonprofit known for running competitions to incentivize advances in technologies that help solve the grand challenges that restrict humanity's progress. These grand challenges range from suborbital space flight, to genomics, to AI, to ocean mapping. In August, the XPRIZE Foundation announced its Future of Longevity Impact Roadmap. This constitutes an essential stage in the design of the Longevity XPRIZE due to launch next year.

In February investor and XPRIZE Innovation Board Member Sergey Young unveiled the $100 million Longevity Vision Fund, which will pump money into biotech and other Longevity startups around the world.



The XPRIZE's publication of their impact roadmap will form the basis of the future XPRIZE Longevity. It lists and describes the challenges identified at The Future of Longevity Impact Roadmap Lab. In the foreword Aubrey de Grey, who participated in discussions stated that "aging is a perfect topic for an XPRIZE."

The leaders of the XPRIZE Foundation, which administer the prize, have been considering a Longevity-focused research prize for many years, but often found the design and metrics for success elusive. But this is changing. In February investor and XPRIZE Innovation Board Member Sergey Young unveiled the $100 million Longevity Vision Fund, which will pump money into biotech and other Longevity startups around the world. At Peak State Ventures, Young and his colleagues invest in fields well outside of Longevity, including property and education. But Young has established a foothold in the Longevity space, leading to him becoming development sponsor of Longevity XPRIZE, and a Longevity Partner at Bold Capital Partners. On Friday, February 1, 2019 Young presented on Opportunities in Longevity Biotechnology at the Longevity Leaders Conference in London, 4th of February, where he announced the fund.

We must confront and change the old perception of aging,
shifting focus to living a life of purpose in our later years.
I am passionate about the idea of living longer and healthier
and want to help people to extend their lifespan. Longevity
companies help to move products into the market that we all
benefit from, resulting in breakthroughs in the longevity space.
I am happy to be part of the Longevity Leaders Conference and
share my views on working in the longevity industry

Sergey Young, Founder of the $100 Million Longevity
Vision Fund and XPRIZE Innovation Board Member

Challenge identification is a key aspect of XPRIZE competition design. To that end, on April 29th and 30th, the XPRIZE Foundation hosted an event at its headquarters in Culver City, California that could go a long way to meeting that challenge: the Future of Longevity Impact Roadmap Lab. The purpose of the event was to gather subject matter experts to brainstorm a potential Longevity-research prize. XPRIZE has turned its focus towards solving the critical problem of age-related diseases on society and extending the healthy human lifespan for all.

Experts and thought leaders convened at the Future of Longevity Impact Roadmap Lab to lead the charge in breakthrough identification, by participating in a series of sessions to help achieve a set of objectives worthy of the Longevity XPRIZE, launched next year. After an extensive discussion between a diverse range of visionaries including researchers and advocates including Steve Horvath, Greg Fahy, Aubrey de Grey, Jim Strole, Max More, Zoltan Istvan, Sergey Young, and XPRIZE founder Peter Diamandis, the following preferred future was identified:

A world in which the biological aging process will be dramatically delayed through widely available interventions that extend human lifespan and healthspan. Aging-related illness will be extremely rare, physical and cognitive deterioration due to aging will be greatly reduced, and humanity will embrace the ability to remain healthy and youthful for a much longer time throughout their physically, mentally, and emotionally healthy lives. This statement is our societal aspiration. This overarching stated goal serves as a lodestar for identifying the following objectives and grand challenges which must be met to merit the prize. They range from the nearly market-ready to the super-disruptive advance biotechnologies decades from now.

1. Aging, Shared: A shared database to collect real-time aging data that will be collected from individuals, to track their vital signs and lifestyle choices and activities.

2. Aging, Quantified: A set of widely agreed-upon biomarkers for biological age that will be accepted by the community of Longevity and aging researchers and utilized as a benchmark in any R&D effort in the field.

3. Caloric Restriction for All: Replicating the beneficial effects of caloric restriction, whether a treatment, diet regime or biomedical device, without the negative effects.

4. Preparing for Aging: A method or tool that can detect at least three aging-related diseases and conditions and will provide an earlier and more accurate diagnosis than any of the other commonly used methods employed today.

5. The Age-Reversed Animal: An animal model whose normal biological age is reversed by an intervention, and shows a cycle of rejuvenation can be repeated at least once.

6. Aging, Delayed: Postponing the emergence of at least three aging-related diseases or conditions with the same treatment, not one disease at a time, but instead by targeting more upstream factors related to aging.

7. Homeostasis Restored: A solution that will analyze people's capacity to uptake nutrients, as well as the bioavailability of critical biomolecules in their body, and provide actionable advice on how to restore youthful levels.

8. Aging, Understood: A theory of aging that ties all the different mechanisms of aging together and explains the relationship between them in a quantifiable way, while also predicting how any change of the involved factors can affect the aging process.

9. Exercise Made Easy: A treatment or biomedical device that can replicate the beneficial effects of exercise, without the user having to exert the body.

10. Aging, Arrested: A treatment for completely stopping the body's aging process for at least one year; The treatment will likely be demonstrated on mammals first, and could later be translated to human beings.

11. In Silico Aging: A model of the human body that is detailed and accurate enough to replace some experimentation on mammalian models and even human beings with in-vitro experimentation and clinical trial simulation.

12. Aging, Circumvented: A method to move the brain—with or without the entire head—of one person to the body of another, or to a non-human vessel, for over a year, while maintaining conscious thought or (in the case of cryonics) demonstrating that consciousness can be recovered after a time.

Aging Analytics Agency supports investment in the full spectrum of technologies that comprise the Longevity industry, from short-term palliative solutions such as AgeTech which can be implemented within months, to radical life-extending rejuvenation biotechnologies which may not add a single year of healthy life for decades.

The list of desired breakthroughs identified by the XPRIZE Foundation for achieving radical Longevity resembles the range of technologies included by the Agency in its analytic models. Aging Shared, Aging Quantified, Prepare for Aging and the In Silico Aging domains represent a

recognition on the part of the XPRIZE Foundation of the fact that the pursuit of precision - data aggregation and management - are key accelerants to future progress.

- The possibility of Caloric Restriction and Caloric Restriction mimetics represents one of the best-known fruits of the geroscience sector.

- Aging Understood represents a final victory of biogerontology, the oldest and most established form of geroscience, but this is not a technology in itself as it consists only of theoretical work.

- Age-Reversed / Delayed / Arrested would mean developing the steadily growing sector of regenerative medicine for aging.

- Aging Circumvented, with its reliance on cryonics and advanced surgery, is a pursuit sufficiently independent of the others, and falls outside of Aging Analytics Agency's analytical framework and Deep Knowledge Ventures' portfolio.

As described and illustrated in previous articles, Aging Analytics Agency also takes a divide-and-conquer approach to Longevity Industry analysis, benchmarking and forecasting. While such an analysis may seem daunting and many of the benefits lie more than a decade in the future, the need for such an analysis it is an encouraging sign of how far the industry has matured since a decade ago when progress could be understood linearly in terms of basic geroscience research.

UK APPG for Longevity Launched

This year saw the creation of the [All Party Parliamentary Group for Longevity]. The APPG, for which Aging Analytics Agency has served as the primary source of analytics this year, is helping to shape the UK's strategy on extending national Healthy Longevity.

The formation of the APPG for Longevity signals the UK's commitment to prioritizing Healthy Longevity as a key component of the country's national agenda. The APPG was formed on April 30th, 2019. On that occasion Dmitry Kaminskiy and Eric Kihlstrom convened with parliamentarians, policy directors and researchers at the UK Parliament to discuss key goals for the group's strategic agenda for the coming year. The APPG for Longevity is the first dedicated parliamentary group to make the maintenance and extension of Healthy Longevity, innovations in preventive medicine and healthcare, and financial reform for pension systems its mission.

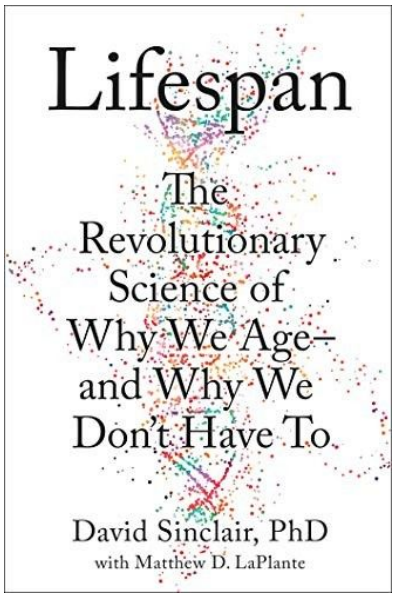
The APPG for Longevity's current objective echoes Theresa May's stated commitment to adding 5 extra years on the UK's national HALE by 2035. This goal has been retained by the Boris Johnson government along with the ministerial position of Health Secretary Matt Hancock, who has had his position as Health Secretary renewed. The Agency however has been advising that a much more relevant timeline would be 2025, which would better reflect the real current rate and state of scientific and technological innovation.

According to the Agency's industry analysis, biomedical technologies and therapies necessary to meet this goal are already in place, and what is now needed is big data analytics to develop optimal panels of biomarkers of aging and to determine what preventive medicine technologies are effective. Progress hereafter is less of a biotechnology problem (which requires us to wait on biotech breakthroughs), and more of a data mining, analysis and management problem. This, in turn, makes it a government problem to some extent, as only government-led initiatives would be capable of providing the necessary infrastructure for such a project on a national level. Government should therefore be wary of limiting its ambitions for progress on account of factors over which it does in fact have control, such as data infrastructures.

GEROSCIENCE R&D NEWS

Lifespan: Why We Age—and Why We Don't Have To

In previous reports, such as the Longevity Industry Landscape Overview series, Aging Analytics Agency has been listing and profiling all major publications from around the world which may prove influential in the Longevity community.

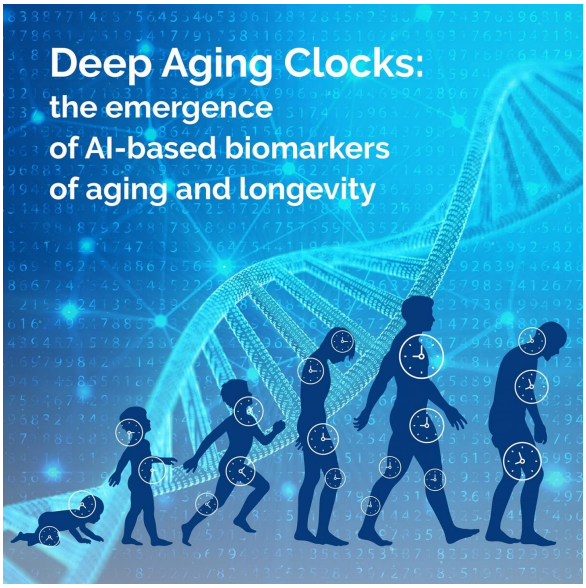


David Sinclair, PhD is one of the world's leading scientific authorities on Longevity, aging and how to slow its effects. He is Co-Founder of Life Biosciences, a Longevity company that came out of stealth mode earlier this year. A professor in the Department of Genetics at Harvard Medical School and co-Director of the Paul F. Glenn Center for the Biological Mechanisms of Aging, David obtained his Ph.D. in Molecular Genetics at the University of New South Wales, Sydney in 1995 and worked as a postdoctoral researcher at MIT where, among other things, he co-discovered the cause of aging for yeast. His forthcoming book, Lifespan: The Revolutionary Science of Why We Age — and Why We Don't Have To will be available in bookstores on September 10th. According to the author, the prospect of living to 200+ is a very possible reality. The key lies in activating newly discovered vitality genes, derived from an ancient genetic survival mechanism that is both a cause of aging and the key to reversing it.

Deep Aging Clocks

Biomarkers - reliable predictors of biological age - are an integral part of Aging Analytics Agency's strategic agenda, both as a metric for technological progress at a strategic planning level and as an essential component in the operation of P4 medicine. Since 2016, the use of

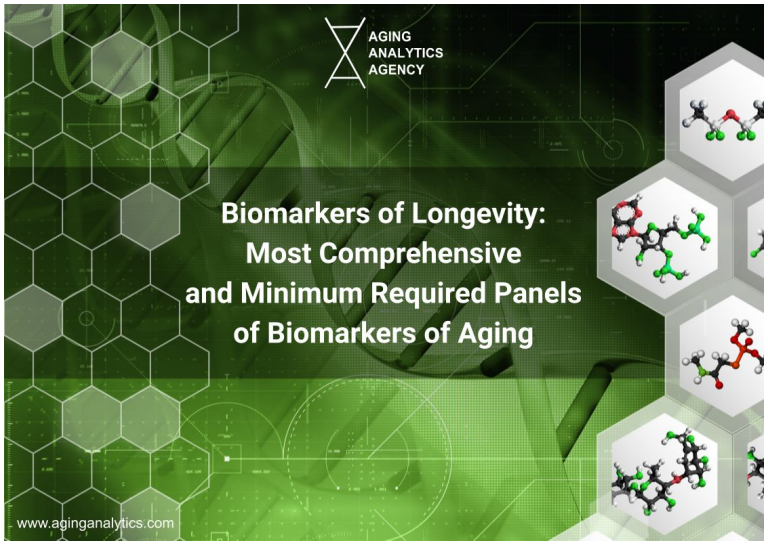
deep learning techniques to find biomarkers has been gaining popularity in the aging research community. Advances in artificial intelligence, combined with the availability of large datasets, have led to a boom in the field, increasing the variety of biomarkers that could be considered candidates as potential age predictors.



A new paper was published last month entitled Deep Aging Clocks: The Emergence of AI-Based Biomarkers of Aging and Longevity in Cell Trends in Pharmacological Sciences. In this paper, Polina Mamoshina, Senior Scientist at Insilico Medicine, and Alex Zhavoronkov, the Founder of Insilico Medicine summarize current findings on the main types of deep aging clocks and their broad range of applications in the pharmaceutical industry.

> Humans are very good at guessing each other's age using images, videos, voice, and even smell. Deep neural networks can do it better and we can now interpret what factors are most important. Very often when someone looks older than their chronological age, they are sick. A trained doctor can guess the health status of a patient just by looking at him or her. At Insilico we developed a broad range of deep biomarkers of aging that can be used by the pharmaceutical and insurance companies, as well as by the longevity biotechnology community. In this paper we describe the recent progress in this emerging field and outline a range of non-obvious applications.
>
> Alex Zhavoronkov, Founder and CEO, Insilico Medicine

Aging Analytic Agency's strategic interest in biomarkers extends not only to the identification of the most precise and comprehensive panel of aging biomarkers possible, but also to the search for a subset of biomarkers which have immediate utility, i.e. a sufficiently precise and comprehensive minimum viable panel. This is the subject of an upcoming Aging Analytics report titled Biomarkers of Longevity: Most Comprehensive and Minimum Required Panels of Biomarkers of Aging.



This report documents many of the biomarkers of aging and identifies from among them those which, by the metrics described, belong to a category we have named Minimum Required. It is Aging Analytics Agency's expectation that the report may serve as a starting point for discussion on how best to utilize the knowledge we already have to maximum effect as soon as possible.

Progress in Thymus Rejuvenation

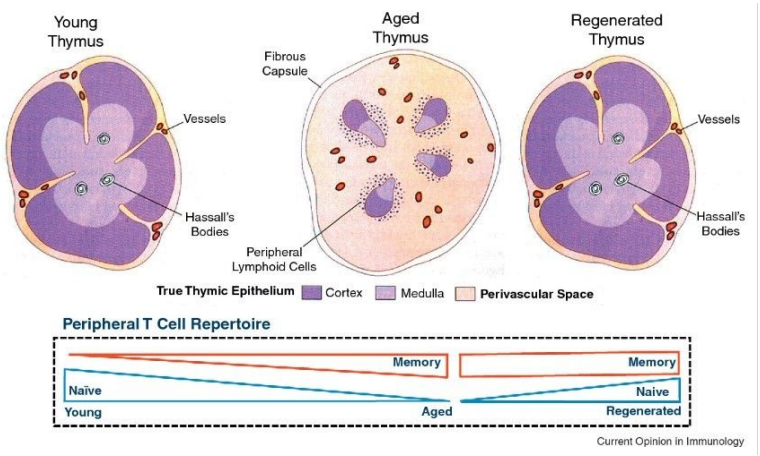
Since biology is relatively horizontal, even the amateur sections of the Longevity community can stay informed scientifically. This produces an abundance of well written easy-to-understand science and biotech news. One of the most common news topics over the past fifteen years has been the application of regenerative medicine to aging in order to repair aged tissues and organs and restore function. Regenerative medicine was initially pioneered in the early 2000s by visionaries such as Aubrey de Grey and popularized in the media ever since. Regenerative medicine is a primary division of Aging Analytic Agency's analytical framework

One of the more promising avenues for research into regenerative medicine for aging is the rejuvenation of the thymus. The thymus is an important organ which produces thymocytes in the bone marrow, which then become new T-cells, which are then "trained" in the lymph nodes to

become the defensive agents of the adaptive immune system. However, as we get older, the thymus increasingly turns to fat and starts to shrink, causing to produce fewer T-cells. This process is known as thymic involution. It begins shortly after puberty, and in late life does the shrinkage eventually becomes bad enough to cause health problems. The restoration of its function would therefore act to reverse the aging of the immune system.

Last week, researchers from the Monash Biomedicine Discovery Institute published a study in the journal Cell showing progress in the quest to rejuvenate the aging immune system by identifying the factors responsible for the age-related decline of the thymus. This new study sheds light on what drives the loss of thymus function in old age and the resulting failure of immune cell production. The new study lays the foundation for developing therapies that may help the thymus to recover its ability to produce T cells and combat infections and diseases.

The researchers show that BMP4 and activin are growth and differentiation factors that are key to the self-renewal and differentiation of thymic epithelial stem cells and that a change in their levels due to aging causes the loss of these epithelial cells. This loss results in the decline of T cell production in the thymus, ultimately leaving us open to infection and disease. This study is a world first and finally identifies the core reason why we experience the loss of thymic epithelial stem cells and the molecules and mechanisms that drive this process. The researchers' next step will be to find ways to reverse this decline and effectively turn the thymus back on again so that T cell production resumes. The researchers believe that age-related changes in the thymus can be reversed, and they are now investigating to see if a therapy to regenerate thymic epithelial stem cells can be created.



Early glimpse of thymus regeneration. As we age, the thymus turns to fat and shrinks, causing its ability to produce new T cells to fall, reducing T cell production and leaving us open to infection. Researchers are now researching are now investigating to see if they can restore the thymus function by regenerating thymic epithelial stem cells.

Centenarian Gene Rejuvenates Blood Vessels - New Hope Against Heart Disease

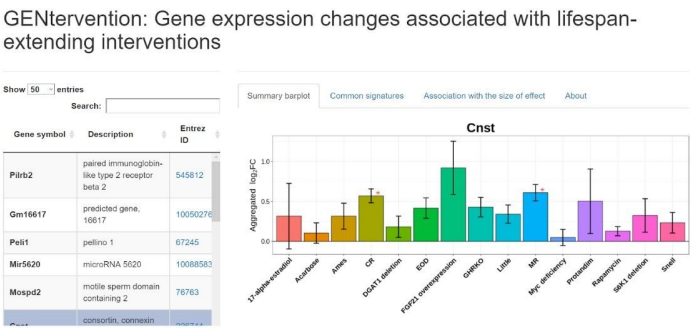
A gene known for being especially present in people aged 100 and over has been shown to have effects promising for heart health when inserted into mice. A collaborative study from the University of Salerno Medical School Department of Medicine, Surgery, and Dentistry along with the IRCCS Neuromed and IRCCS MultiMedica, suggests that a Longevity gene therapy model which they discovered previously may offer the possibility of combating cardiovascular disease by revitalizing blood vessels to younger states. The findings may lead to a breakthrough in preserving heart health as we age, enabling gene therapies which allow those who are not carriers of the Longevity gene to live longer.

The gene first caught the attention of scientists, who then began studying it due to its prevalence in humans centenarians. The specific protein, BPIFB4, which is encoded by the gene was also identified. In this study the gene was inserted into the DNA of mice that were engineered to develop atherosclerosis and cardiovascular disease due to being fed high fat diets.

The results were extremely encouraging.
We observed an improvement in the functionality
of the endothelium (the inner surface of blood vessels),
a reduction of atherosclerotic plaques in the arteries
and a decrease in the inflammatory state.

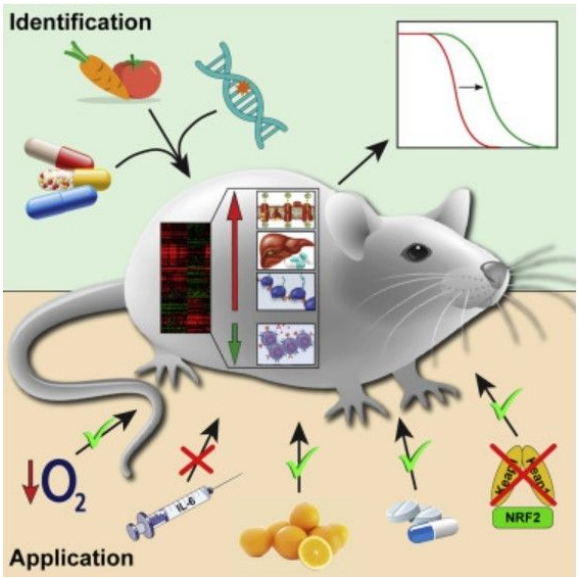
Annibale Alessnadro Puca, MD, PhD, Università degli
Studi di Salerno, Department of Medicine and Surgery

The cardiovascular systems of the animals given the gene were discovered to be renewed to more youthful vigor. Next the team experimented on human blood vessels by placing the BPIFP4 protein directly into the vessels which yielded the same rejuvenating results. Following the success of the previous experiments the team moved onto human studies and found that healthier blood vessels were associated with higher levels of the Longevity gene's protein in the blood, a promising sign for the gene's future utility in humans.



GENtervention Database Launched

An online service that visualizes associations between gene expression changes in mouse livers, that take place in response to a range of interventions already known to slow aging in mice, has been launched online last week. It is hope that this will shed light on the general principles of lifespan extension via genetic manipulation.



Data was drawn from 17 interventions, pharmacological, dietary, and genetic in nature. And used to create the GENtervention database online service. Since many or even all these interventions work through a similar collection of stress response and cellular maintenance mechanisms, such as macroautophagy, proteasomal function, and so forth, there are many commonalities in the gene expression profiles. As such, there is an opportunity for a tool that visualizes patterns in the responses that accompany interventions. The data for GENtervention was taken from responses to diverse interventions.

FINANCE

Interest in the topic of Longevity from prominent financial institutions including private wealth banks, asset management firms, pension funds, insurance and reinsurance companies, etc. on the topic of Longevity is perhaps one of the most exciting recent developments in the global Longevity industry. Public evidence of these interests and activities were under the radar, and not at all obvious, a mere 2-3 years ago, and the entire concept of a Longevity Financial Industry was not yet a major, or indeed even minor, talking point among industry professionals. Aging Analytics Agency first predicted the rise of a Longevity Financial Industry in a specific chapter devoted to the topic in its 2017 Global Longevity Industry Landscape Overview Volume II: The Business of Longevity.

Since that time, and in 2018 in particular, a very large wave of public interest in the topic of Longevity, and the beginnings of the rise of a true Longevity Financial Industry emerged. Now, in 2019, Longevity has officially become recurring topic of analytical market reports from leading finance/analytical institutions such as CitiBank, Frost and Sullivan, UBS Group, Julius Baer, Barclays and many others. And many developments in 2018 set the stage and paved the way towards this newfound status.

We can expect this trend to not only continue but accelerate in the future, with an increasing number of investment and financial institutions holding similarly themed events for their professional networks and high net-worth clients. The financial factors in the future of human longevity are gaining increasing recognition at a government level also, to the extent that Sergey Young has been invited into the ranks of the UK's All-Party Parliamentary Group (APPG) for Longevity, where he will be on the Financial Advisory Board.

At one of the group's more recent meetings on 9th July 2019, Young, together with fellow Financial Advisory Board Members, considered the 2035 goal. In his speech at the APPG, Sergey Young addressed the need for an affordable and accessible program that is able to engage the participation of every citizen in the UK. Affordability and accessibility have been the two longtime pillars of Young's moonshot goal of bringing Longevity to one billion people. With Big Tech companies such as Google, IBM, Microsoft, and Apple rapidly replacing regular healthcare providers, and Apple already having reached a 1.4 billion active installed base of devices, Sergey sees investing in Longevity-related technology as a gateway to achieving his mission and being able to reach the target numbers. To do this, he set up the $100M US-based Longevity Vision Fund in order to invest in Longevity breakthroughs that have the potential to be scalable and affordable for the mass population.

Whereas the majority of industry developments in the US are driven by private enterprise and venture capital, a great deal of activity in the UK is propelled by government involvement. In the US, the largest focus is on scientific developments (biomedicine, biotech, etc.), whereas the UK places a great priority and emphasis on the economic implications of aging and Longevity for government, financial and healthcare sectors.

Sergey Young, Founder, Longevity Vision Fund

Sergey Young, Founder of the $100 million Longevity Vision Fund, delivered the keynote presentation 7 Signs of a Longevity Revolution at Barclays' Accelerating Evolution private wealth conference in Geneva in July 2019.

With Sergey's experience supporting Longevity on both sides of the Atlantic, he notes that the role of government initiative in the UK is much more important. He said, highlighting the direct involvement of UK's Minister of Health with the APPG for Longevity. During his speech at the APPG for Longevity, Sergey Young also discussed his hopes of turning the UK's Longevity program into a global-scale effort. According to Young, UK could be exemplary in its national Longevity efforts, and be should be open to collaboration with other countries, leading to an

international inflow of talent, investment, and creating vast economic opportunity arising from a healthier, more productive retirement-aged population.

The United Kingdom is of special interest to Aging Analytics Agency also, due to its detailed industrial strategy which explicitly seeks to address the “Aging Society” as a major challenge. It is therefore a subject of multiple updated case studies per year. It is with a similar vision in mind that Aging Analytics Agency has recommended an APPG division that would focus on the establishment of industrial and technological bridges between the UK and other Longevity-progressive regions such as Israel, Singapore, Switzerland and the USA.

CONCLUSIONS

Aging Analytics Agency is encouraged that many of the strands of industry growth and progress outlined in its various analytical reports continue to develop apace. A few years ago the period between the SENS or Rejuvenation Biotechnology conferences would have been a dry spell for the Longevity community. Nowadays thanks to additional advocacy groups, the community activity is non-stop. A pleasant surprise over the past three years or two has been an increasing awareness of the challenge of aging and elderly at a political level, which going by this summer’s events has grown even more acute in 2019. The science also shows no signs of slowing down, with progress in thymus rejuvenation showing exceptional promise. The digitization of research deemed as a crucial accelerant by Aging Analytics Agency, has a further instance in GENtervention, likely to first of many enhancements expected to expedite the progress of research over the next decade.

In our next article we will provide a deeper dive into some of the leading players and participants of the global Longevity sphere. We will identify individuals and institutions to keep an eye on in the coming months across the entire scope of the global Longevity scene, from scientists to companies, investors, non-profits, labs, R&D hubs, NGOs, government-related departments, ministries and bodies, and much more.

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Aging Analytics Agency is the world's premier provider of industry analytics on the topics of Longevity, Precision Preventive Medicine and Economics of aging, and the convergence of technologies such as AI and Digital Health and their impact on healthcare. The company provides strategic consulting services in fields related to Longevity, and currently serves as the primary source of analytics for the specialized hybrid hedge fund Longevity.Capital, as well as the UK All-Party Parliamentary Group for Longevity. @AgingAnalytics

Longevity.Capital is a specialized Longevity-Focused Hedge Fund with enhanced liquidity that uses hybrid investment technologies to combine the profitability of venture funds with the liquidity of hedge funds, significantly de-risking the interests of LPs and providing the best and most promising Longevity companies with relevant amounts of investment.