

Longevity Industry in Singapore

LANDSCAPE OVERVIEW





Longevity Industry in Singapore

Landscape Overview 2019

Mind Map Longevity Industry in Singapore	3
Executive Summary	6
Chapter I: Singapore Longevity Industry Landscape Overview	25
Chapter II: History of Geroscience in Singapore	35
Chapter III: Current State of Longevity in Singapore	41
Chapter IV: Global Longevity Landscape Overview	51
Chapter V: Media and Conferences	80
Chapter VI: Economics of Longevity In Singapore	90
APPENDIX/ PROFILES	
30 Faces of Longevity in Singapore	103
15 Longevity R&D Centers	137
10 Non-Governmental Organizations	154
15 Longevity Conferences: 2017 - 2019	166
100 Longevity Companies	184
80 Longevity Investors	286
Disclaimer	369

Longevity Industry in Singapore Landscape 2019

Personalized Medicine

Companies - 100
Investors - 80
Non-governmental organisations - 10
Research Centres - 15

AgeTech

Progressive clinics

Research Labs

Preventive Medicine

Progressive wellness

Regenerative Medicine

Companies

Investors

Non-Profits

AGING ANALYTICS AGENCY

DEEP KNOWLEDGE ANALYTICS

LONGEVITY INTERNATIONAL



Drug Discovery

AgeTech

Other

100 Companies

Progressive Wellness

Longevity Industry in Singapore 2019

Stem cells/ Regenerative

Progressive Clinics

Neurological

Diagnostics



AGING ANALYTICS AGENCY

www.aginganalytics.com | info@aginganalytics.com

Aging Analytics Agency is dedicated to the production of industry analytical reports on the topics of Longevity, Personalised and Preventive Medicine. It is the only analytical agency focused exclusively on Ageing, Geroscience and Longevity. Operating for over five years, we began producing in-depth reports on Longevity long before it emerged as an industry. In 2014 we successfully predicted the boom in industry development and financing rounds in 2017, at a time when the vast majority of investors, business analysts, and even geroscientists believed its emergence to be in the next decade. The company also provides strategic consulting in the fields of Longevity, Preventive Medicine and Advanced Biomedicine.



LONGEVITY INTERNATIONAL

www.longevity.international | info@longevity.international

Longevity.International is an online interactive database of longevity scientists, companies, and investors. This platform allows different stakeholders in the longevity industry to connect, network, research and analyze.

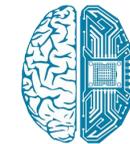
On the next stage this platform will also employ cutting-edge data visualization software and a networking section where various stakeholders within the longevity industry can connect and collaborate, where longevity companies are matched with the right investors, and where scientists can make contributions.



LONGEVITY.CAPITAL

www.longevity.capital | info@longevity.capital

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



DEEP KNOWLEDGE ANALYTICS

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Deep Knowledge Analytics – the analytical arm of Deep Knowledge Ventures, specialising in forecasting on the convergence of technological megatrends, conducting special case studies and producing advanced industry analytical reports on AI, DeepTech, Blockchain and Invest Tech.



Executive Summary

Singaporean Healthspan Expectancy Lags Behind Life Expectancy

In a 2017 article for the *Straits Times*, Dr. Brian Kennedy, former CEO of the Buck Institute for Research on Aging and the new Director of the Center for Healthy Aging at the National University Health System (NUHS), noted that although Singaporean life expectancy is rising, its healthspan expectancy is lagging behind. Dr. Kennedy cited a 2012 global study, which concluded that from 1990 to 2010, lifespan in Singapore grew by 5.4 years for females and 6 years for males. In contrast, healthspan only increased 3.4 and 4.1 years, respectively, during the same period. However, the stress of Singapore's aging population, combined with the government's progressive aim as a global leader in healthcare efficiency may spur Singapore to lead human aging research on a global scale.

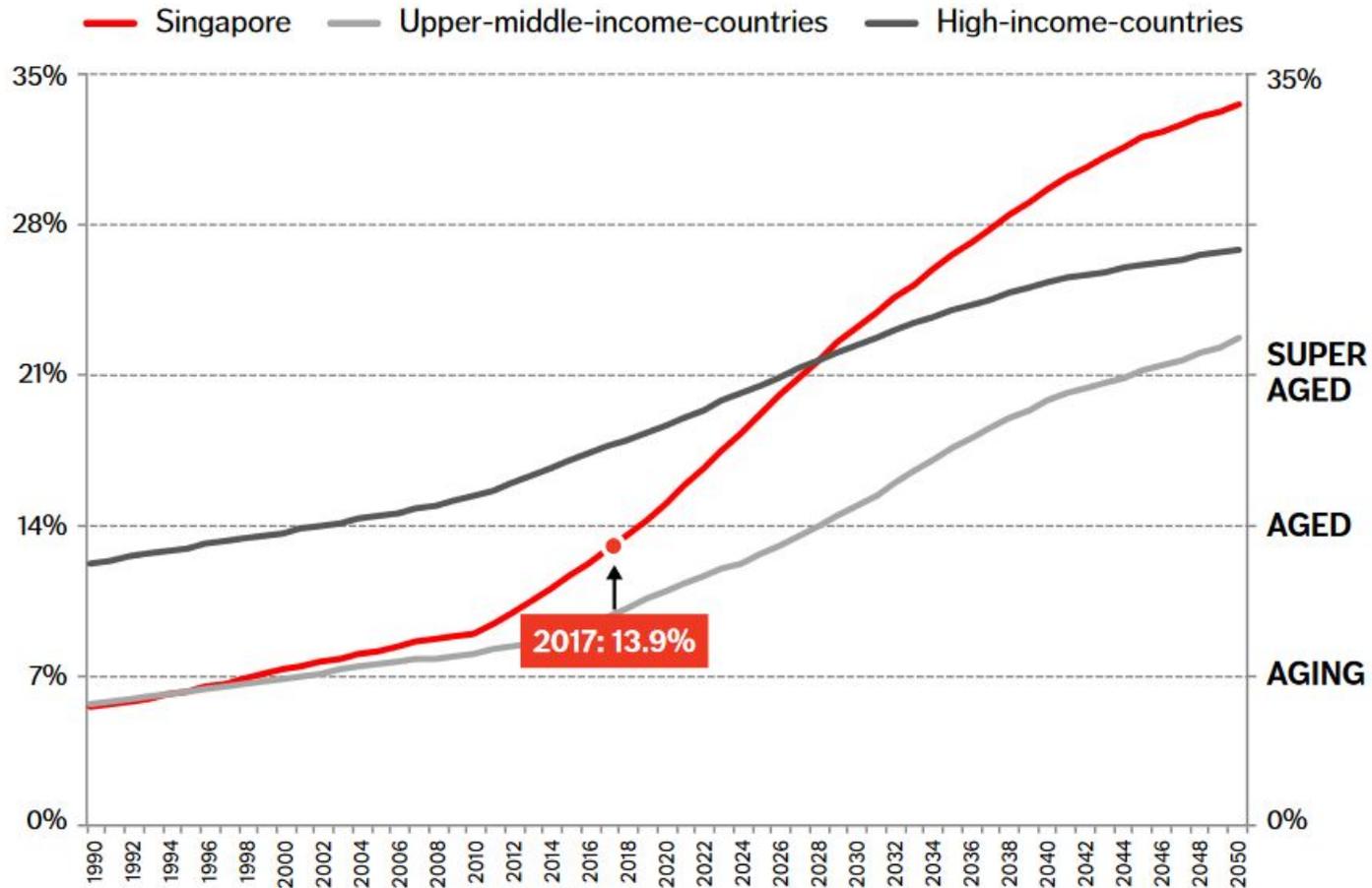
The newly established Center for Healthy Aging puts this commitment into action. The center promotes research into behavioral and lifestyle interventions, such as exercise and fasting, and longevity-extending drugs to delay aging. The studies will determine whether healthspan-extending interventions similarly affects different population demographics and ethnicities. Furthermore, the center will collaborate with the Institute for Aging Research at the Albert Einstein College of Medicine in the US to determine whether the common diabetes drug metformin can extend human healthspan.

Given that nearly 25 percent of Singapore's population will be over the age of 65 by the year 2030, the need for increased governmental commitment to prioritizing healthspan extension research is all the more pressing. A recent report by Marsh and McLennan Asia-Pacific Risk Center, "Elderly health costs to rise tenfold by 2030: Report," estimated that annual elderly healthcare costs will rise 10x by 2030, reaching nearly S\$52,000 (US\$38,000) per capita.

Singapore has already taken a progressive stance on demographic aging through other initiatives, such as implementing social policy changes to increase quality of life for its elderly demographic. These include increased healthcare access, the promotion of intergenerational bonding, and accessible post-secondary education. However, social initiatives are not sufficient. The Singaporean government needs to further cement its commitment to funding research into the clinical validation and translation of healthspan-extending interventions. Indeed, as noted in a recent the *Straits Times* article, "by emphasizing preclinical and clinical studies to slow aging, Singapore can take the lead in combating the medical crisis of this century."

Figure 1. People Age 65 and Older as Percentage of Total Population

A city-state and island country in Southeast Asia, Singapore is one of the fastest aging high-income societies.



Source: United Nations, Department of Economic and Social Affairs, Population Division

Retirement Security in Singapore

According to the Natixis Investment Managers' Global Retirement Index, this year Singapore ranked 28th globally and 3rd in Asia (behind Japan and South Korea) for the strength of their retirement security. The index ranks countries according to 18 different performance indicators that cover key aspects of retirement security, including the material means to live comfortably; access to quality financial services to help preserve savings value and maximize income; access to quality health services; and a clean and safe environment.

Singapore ranked high compared to the other 42 countries surveyed in the retirement financing sub-index, placing second after New Zealand. Although the country ranked first in the previous year, it slipped down a place due to lower scores in government indebtedness, bank non-performing loans, old-age dependency and governance.

The report also highlighted areas in which there is room for improvement for the nation. For example, although Singapore has the seventh-highest life expectancy of all the countries ranked in the report, a large portion of healthcare expenditure is not covered by insurance.

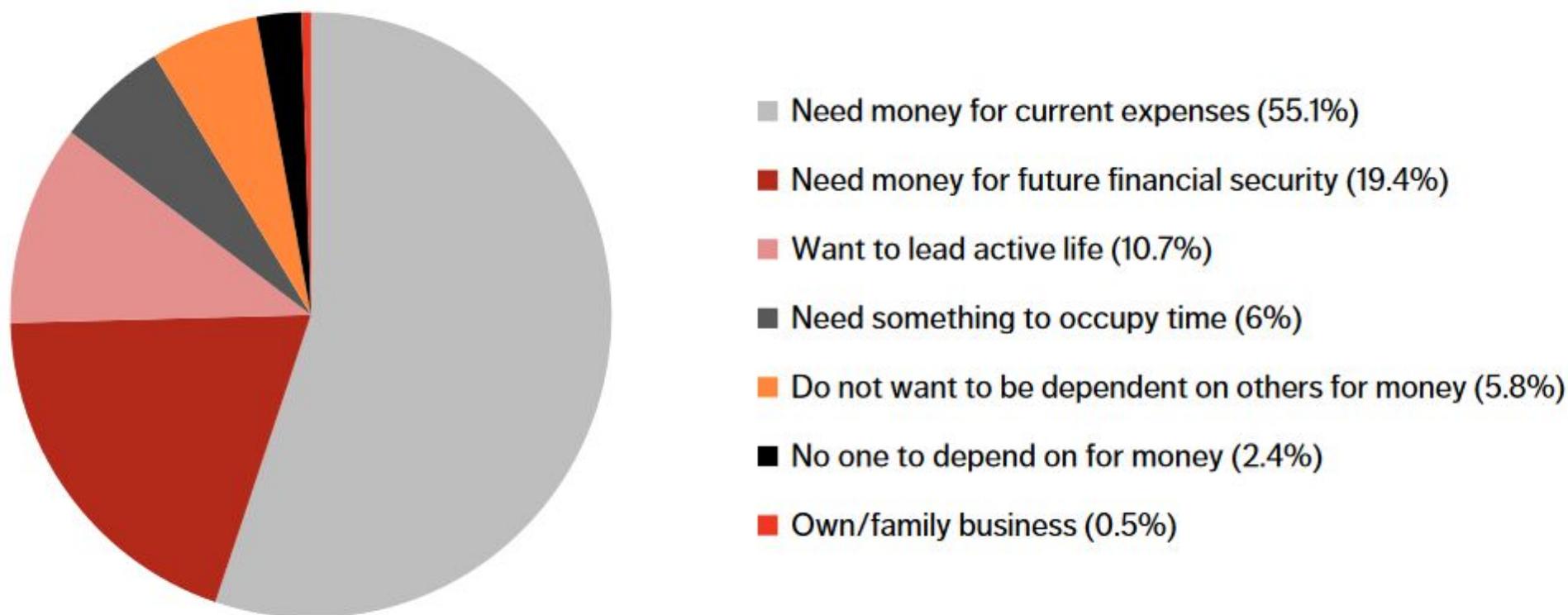
Furthermore, a recent survey titled "Ready for 100? Preparing for longevity in Singapore" conducted by the international research firm Economist Intelligence Unit (EIU) and insurer Prudential reported that the majority of the 1,214 Singaporean residents surveyed expected to continue working at 62, which is the standard retirement age in Singapore.

The report argues that this trend is largely due to the nation's life expectancy of 83.1 years, which is the third longest in the world behind Japan and Switzerland. 75% of respondents indicated that they are not financially prepared to live to 100 years of age.

Meanwhile, the Singapore government's National Population and Talent Division indicates that the number of citizens living to 100 years of age is increasing, from 50 in 1950 to 1,100 in 2015.



Figure 4. Reasons for Working or Returning to Work, Age 55 and Older, 2011



Source: Institute of Policy Studies 2011

What is the Singaporean Ministry of Health Doing to Combat Population Aging?

In a recent the *Straits Times*-AIA roundtable entitled "Managing Singapore's Health with an Aging Population: What more needs to be done?", Singapore's Senior Minister of State for Health, Dr. Amy Khor, noted that in 2015, the ministerial committee for aging had already launched the action plan for successful aging, consisting of a multi-pronged approach that includes:

- Preventive and active aging programs that start at the early age of 40;
- The launch of The Silver Academy, a continuing-education program that offers 900 courses, currently with 21,000 students enrolled;
- Barrier-free access for those with restricted mobility;
- Traffic junctions that provide the elderly with more time to cross the street;
- Silver Generation Ambassadors who visit citizens when they turn 65 to determine their needs, and offer referrals to relevant services where necessary;
- Increased funding by the Health Ministry to healthcare infrastructure like hospitals, nursing homes and day care facilities;
- A program that screens five key age-related conditions for \$5 or less.

Commenting on the progress of these initiatives over the past several years, Dr. Khor stated "I think few places in the world, if any, do this. It is being done [here] systematically, and not on an ad hoc basis," adding that the 2015 action plan is a "living document" and that "we have to build up on it and as we implement programs, we learn and we refine and implement other new programs that may be useful."

Singapore is Rapidly Embracing AgeTech

Singapore has enthusiastically embraced the rising AgeTech sector to improve the quality of life and levels of social engagement of its elderly population. AgeTech, which encompasses any digital technologies that aid the elderly, are being rapidly adopted by medical institutions and nursing homes across the nation.

One illustrative device is the Bond Stick, which is a three-in-one walking stick, alarm sensor and MP3 player. The stick reduces dementia through sensory stimulation, and its auto-fall sensor alerts caregivers to potentially devastating falls.

At the 9th annual Aging Asia Innovation Forum, a recent conference showcasing AgeTech devices, Singapore's Senior Minister of State for Health Dr. Amy Khor noted that "rethinking aged care and supporting our aged population is not a task that can be accomplished overnight. To succeed in these efforts, the public, private and people sectors will have to work in partnership to re-imagine new possibilities and solutions."

The market for products and services targeted for Singaporeans aged 50 and over is projected to triple from SGD 33 billion (USD 24 billion) in 2015 to SGD 91 billion (USD 66 billion) in 2025.

Interestingly, pioneering companies at the forefront of Singapore's AgeTech market are almost entirely technology startups, with very limited private sector interest from larger corporations other than Singapore's multinational healthcare technology companies. Wong Poh Kam, Director of the National University of Singapore's Entrepreneurship Center, commented that "the awareness of big corporations towards aging population might be lower than you expected [in Singapore], compared with other advanced economies like Japan."

Bridging the Divide Between Singapore's Elderly and Digital Literacy

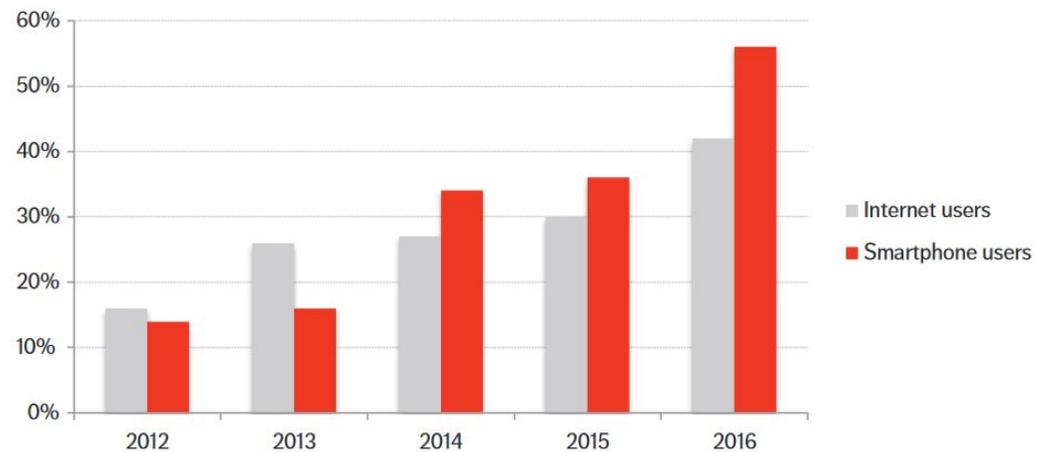
Singapore is a global leader in its Information Communications Technology (ICT) infrastructure, and was ranked #1 globally in the most recent World Economic Forum's Global Networked Readiness Index. It is no surprise, then, that the Singaporean government has been working for several years to promote technological engagement among its elderly population and to proactively develop its AgeTech industry through funding and partnerships with relevant stakeholders. However, interest in Singapore's burgeoning AgeTech scene has been relatively limited to health technology startups.

In recent years, adults 65+ in Singapore have been adapting to the internet and smartphones, with internet usage increasing from around 16% in 2012 to over 40% and smartphone usage to over 50% in 2016. Thus, in just four years internet usage among the elderly had tripled, and smartphone usage had quadrupled.

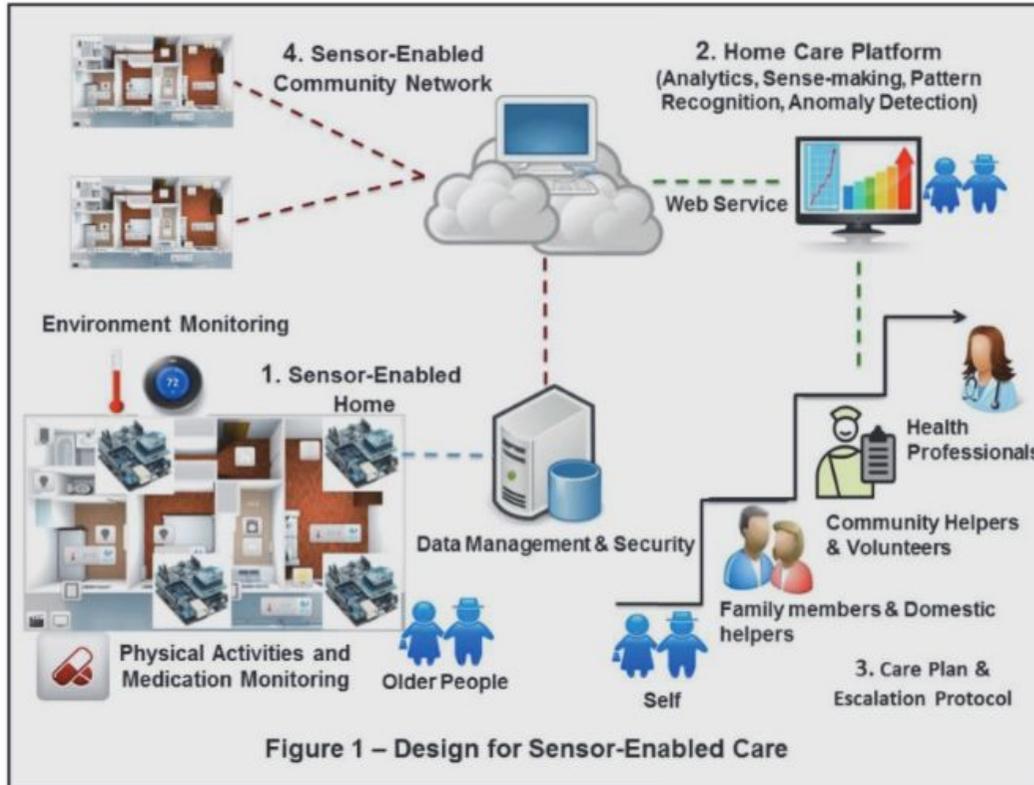
One way the government proactively bridged the divide between the elderly and digital technology is through the Silver Infocomm Junctions, launched by the government agency Infocomm and Media Development Authority in 2007 to establish "a network of community-based digital learning hubs for people aged 50 and older". The program provides personalized training in digital literacy at the relatively low cost of 8-10 SGD (6-7.6 USD) per hour.

The successful program educated the elderly in computer literacy and the internet, and also taught more advanced processes such as managing banking transactions online, sharing large files and editing photos. The organization has carried out more than 80,000 training sessions by the end of 2015.

Figure 5. Digital Technology Usage Age 60 Years and Older, 2013-2016



Sources: Annual Surveys on Infocomm Usage in Households and by Individuals 2014, 2015, and 2016



The Singaporean Government is Actively Promoting the Development of a Robust AgeTech Sector

To accelerate the development of Singapore’s digital technologies, in 2014 the government launched its Smart Nation Plan, which envisions the future Singapore as a place where "people live meaningful and fulfilled lives, enabled seamlessly by technology, offering exciting opportunities for all." Thus far, the government has allocated SGD 4.8 billion (USD 3.5 billion) in funding to build the nation's digital infrastructure, digital analytics and digital citizenship and cybersecurity programs. The government also specifically emphasized the need to improve digital literacy among its elderly citizens in the plan, and allocated funding to a subset of the plan titled SHINESeniors (Smart Homes and Intelligent Neighbors to Enable Seniors), an R&D program actuated through Industry-university partnerships.

The program aims to "develop an integrated home system that enables aging in place, consisting of non-intrusive sensors that detect motions and monitor medical conditions, as well as function buttons that facilitate communication with care providers."

In addition to funding, the government is also supporting the program by facilitating partnerships with care providers, and testing the technology in 100 public housing apartments free of charge in June 2018, with plans to expand to 300.



SHINESeniors: Smart Homes and Intelligent Neighbors to Enable Seniors



Legend

Fixed   Semi-Fixed

-  Gateway
-  Passive Infra-Red
-  Bed
-  Door Contact
-  Water Usage
-  Medication Box

The Singaporean Government is Actively Promoting the Development of a Robust AgeTech Sector

Given the apathy from private sectors in growing Singapore's AgeTech landscape, the government is also providing seed funding for startups looking to improve the quality of life of the elderly through digital technologies, in hopes of propelling the industry landscape into action. The program, the Modern Aging incubator, launched in 2015 with the aim of "identifying, developing, and scaling up startups that focus on products and services to meet the needs of older adults. "Every year Modern Aging selects 10 companies to enter its 10-week program, where startups are mentored, provided with seed funding of up to SGD 50,000 (USD 36,300) and given the opportunity to pitch investment deals to an audience of investors and corporations. As of 2015, the incubator has awarded SGD 225,000 (USD 163,350) to the top 5 companies in their program.

The screenshot shows the 'ACCELERATOR' page of the Modern Aging Singapore website. The navigation bar includes 'HOME', 'ACCELERATOR', 'PHOTO CONTEST', 'EVENTS', 'BLOG', and 'JOIN THE ECOSYSTEM'. The main content area features a timeline with four key dates and events:

Date	Event
30 JUNE 2018	Deadline for submission of business ideas
JULY 2018	Selection of teams
AUGUST 2018	Business Development program
DECEMBER 2018	Modern Aging finale

High Turnover Rate for Eldercare Workers in Singapore

Singapore intends to grow the size of its long-term care workforce by as much as 45 by 2020 to meet increasing needs. By 2030, one in three Singapore citizens is projected to require one or more forms of eldercare services, with one in four Singaporeans over the age of 65.

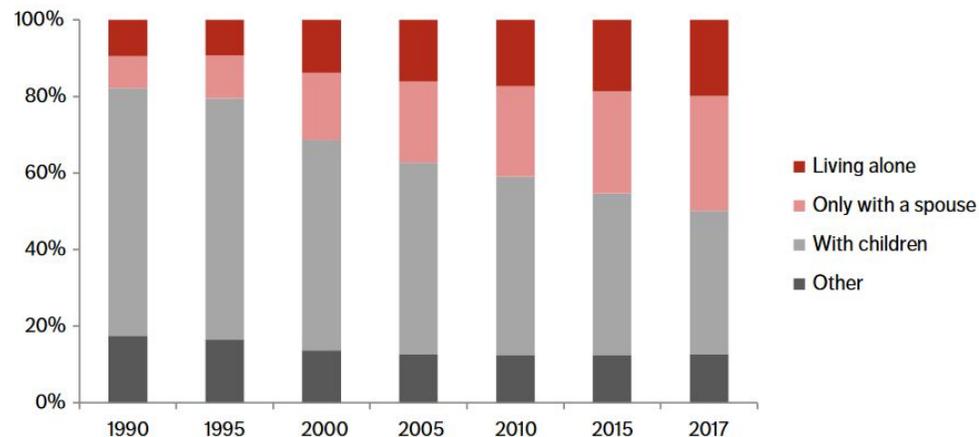
However, a report published in July 2018 by the Lien Foundation found a disturbingly high turnover rate for eldercare workers in Singapore, with workers staying on average only 3.4 years at a given workplace. The high turnover may be partly due to significantly lower wages compared to their counterparts in other countries affected by population aging.

The report surveyed 20 elder care industry players in Singapore, polled more than 250 eldercare workers, and paired the findings with similar surveys conducted in other Asia-Pacific economies affected by a rapidly aging population, including Australia, Hong Kong, Japan and South Korea. Singapore was found to rank the lowest among the surveyed countries in wages for long-term care workers.

For instance, while the average wage of a local nursing aide in Singapore is \$1,350 per month, it is \$3,750 in Hong Kong and \$3,290 in Australia.

Although the Ministry of Health plans to add another 3,700 long-term care workers by the year 2020 (in addition to the 8,300 it has as of March 2017), it needs to ensure competitive salaries to meet the oncoming need for a sufficiently large eldercare workforce as the Singapore population ages.

Figure 3. Living Arrangement, Percentage of Households Headed by People Age 65 and Older



Source: Department of Statistics Singapore

Tackling Population Aging in the Near Future

When combining Singapore's aging population with its low fertility rate, it becomes quickly apparent that the nation is headed for a population crisis that will result in a smaller labor force and declining economic productivity.

In the short term, this will lead to worker shortages, forcing companies to pay higher salaries to compete for talent, which in turn creates a very uncompetitive economic landscape that may result in companies leaving to conduct business elsewhere.

While increased governmental investment into preventive medicine and healthspan extension can help curb these potential issues in the long-run, the government also needs to continue ramping up near-future solutions to its aging population problem, such as by investing in AgeTech and continuing education to equip its elderly demographics with the tools necessary to remain productive members of the workforce.

One indication that the government is heading in this direction is that last year they raised the national retirement age from 65 to 67. Another initiative that helps maintain the elderly as productive workers is the Special Employment Credit, which provides subsidies to companies that hire workers above the age of 50. Companies can also apply for the Age Management Grant and the Job Redesign Grant, which provide funds to aid workplace redesigns to make them more friendly to seniors.

Additionally, Singapore is transitioning from an economy dominated by skills and manual labor towards one that makes greater use of the nation's smaller but highly skilled and educated workforce – that is, the transition from labor-intensive industries toward capital-intensive industries. This reflects a larger trend in automation, in which an increasing number of labor-intensive jobs are being automated in Singapore.

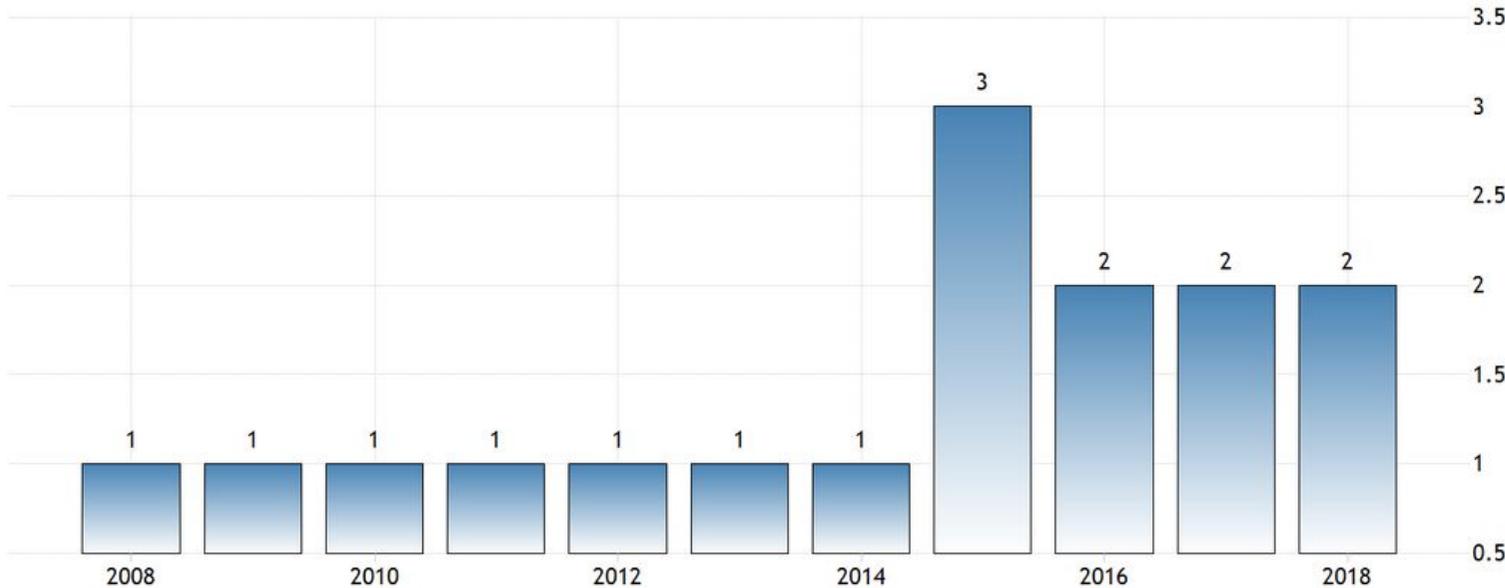


Singapore: an Attractive Region to Conduct Business

Singapore has established itself as a very attractive region to do business, ranking second in the World Bank's Doing Business Index in 2017, and sixth globally in ease of starting a business.

This is one of the reasons that Singapore is home to more than 60 multinational healthtech companies, either in the form of headquarters or R&D centers. This makes it the third largest region in Asia after China and India for healthtech startups, accounting to 11% of all such companies in 2017.

EASE OF DOING BUSINESS IN SINGAPORE



SOURCE: TRADINGECONOMICS.COM | WORLD BANK

Top 10 Economies	2018 Ranking	2017 Ranking
New Zealand	1	1
Singapore	2	2
Denmark	3	3
Korea, Rep	4	5
Hong Kong SAR, China	5	4
United States	6	8
United Kingdom	7	7
Norway	8	6
Georgia	9	16
Sweden	10	9

Singapore Has Established its Reputation for Proactive, Interventionist, Meritocratic Social Policies & Governance

Singapore has established a strong reputation for its capacity to enact proactive and effective top-down social and policy innovations through cross-sector collaboration. The nation has a highly interventionist government that focuses on long-term strategy, ranking #1 globally for "government effectiveness" and "regulatory quality" according to the 2016 World Bank's Worldwide Governance Indicators.

Singapore is also adept at adopting the best proven practices developed by other countries. For instance, in the 1990s it mimicked Japan's age-friendly housing policies. Likewise, Singapore also adopted Japan's policy of increasing the retirement age to keep people in the workforce for longer.

By establishing the Tripartite Committee on Employability of Older Workers, Singapore further passed legislation promoting the re-employment of older workers. The committee brings together representatives of employer associations, governments and labor unions to re-employ elderly workers past the statutory retirement age.

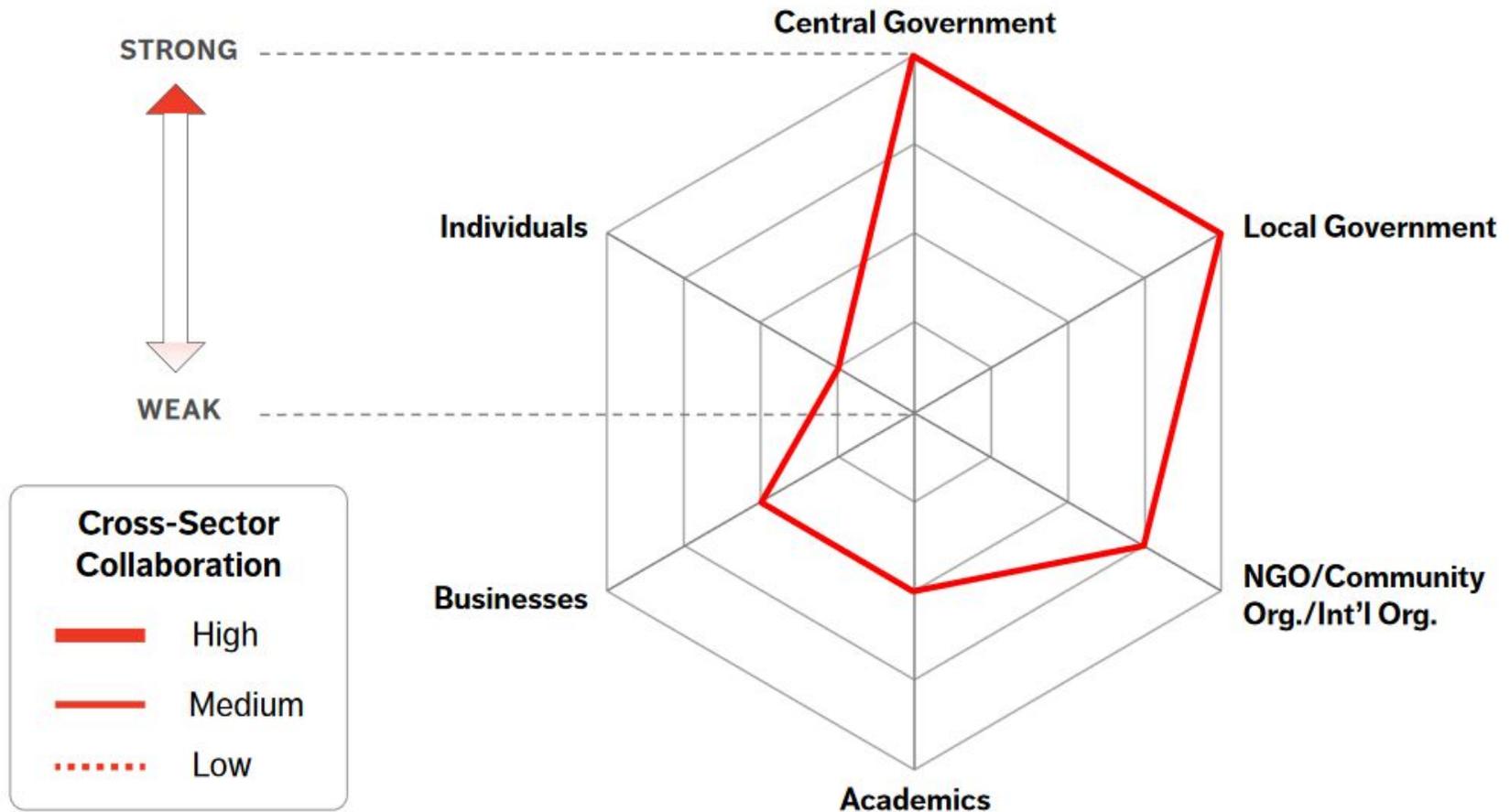
These properties underlie Singapore's potential to proactively combat population aging through a combination of social and initiatives and prioritized healthspan extension measures.

“Aging issues have long been under the radar of the Singaporean government, who has been constantly introducing pre-empting programs.”

- TAN ERN SER, Associate Professor of Sociology at National University of Singapore



Figure 2. Driving Forces of Innovation and Cross-Sector Collaboration



As a city-state, Singapore has only one level of government, so “Central Government” and “Local Government” are considered together to represent the government’s overall performance

Retirement System Reform in Singapore

In 2011 Singapore introduced its Retirement and Re-employment Act, its largest step toward retirement system reform in its history. Part of this legislation required employers to re-employ workers past the age of 62 and before the age of 65.

Prior to this, in 2008, it released guidance titled Tripartite Advisory on the Re-employment of Older Workers on best practices for negotiation re-employment contracts between older workers and employers, and expanded these guidelines into the 2011 Tripartite Guidelines on the Re-Employment of Older Employees in 2011.

Since being enacted, close to 98% of workers above the age of 62 have been effectively re-employed, and Singapore's labor force participation rate as of 2016 grew 30% in the space of just five years.

Nonetheless, work remains to be done. Commenting on the effectiveness of Singapore's re-employment efforts, Amos Garcia of the Milken Institute Asia Center, based in Singapore, has stated that “when re-employed, older workers are usually put at a different job position, which are oftentimes paid less, or require low skills, due to skill gaps and ageism”.

“TriCom creates opportunities for the government perspectives, such as cost concerns by employers and payment fairness concerns by employees (which) help it to make effective decisions.”

- Walter Theseira, Associate Professor of Economics at Singapore University of Social Science

Dissecting What Population Aging Means for Singapore's Labor Participation Ratio

For the first time in Singapore's history, the number of people over 65 is above those aged 15 or younger.

By 2050, the number of Singaporeans aged 65 and over will be 3.08 million out of a total 6.58 million – nearly half of the entire population – compared to just 722,000 aged 15 and under.

According to current estimates, average life expectancy will increase to 85.6 for women and 89.3 for men born between 2045 and 2050. This means that by 2050 Singapore's dependency ratio will be nearly 1:1, with one adult supporting either a child or elderly person, a reduction of exactly one half compared to today.

This will place an incredible burden on the economy with the workforce shrinking, leading to a further decline in economic efficiency and productivity, and skyrocketing costs for elderly care.

Further work is also required to foster more inclusive and engaging social lives for the nation's elderly to combat the negative psychological effects of population aging. Suicide rates in elderly Singaporean citizens rose dramatically last year, with 129 people above the age of 60 in a total of 361 who committed suicide. Whereas suicide rates dropped in all other demographics, it rose in the elderly population compared to the previous year.

The Ministry of Social and Family Development recently reported that the number of families receiving long-term financial aid from the government is increasing, up 24% since 2013, partly as a result of shrinking family sizes and the effects of population aging.

In addition to the Ministry of Health, other government divisions are also striving to make Singapore one of the most progressive countries with regards to solving the aging population problem in the years to come.

One such agency is the National Population and Talent Division, which runs a group called Population.sg that *"brings together people with diverse backgrounds to discuss and write about population matters in Singapore, focusing on demographic challenges in Singapore and what needs to be done to create a strong Singaporean core with good opportunities and high-quality living for Singaporeans."*

“The SkillsFuture program is a game changer and creates a platform that facilitates engagement of various stakeholders. As a result, the whole society is thinking about lifelong learning right now.”

- CHRISTOPHER GEE, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore

“Since we cannot double the care capacity within a short term to meet the increasing demand driven by the aging population, the capacity building needs to be complemented with innovation.”

- JULIAN KOO, Co-Founder of Jaga-Me

“The incubation program has created a network that brings stakeholders, such as service providers and young entrepreneurs, together to exchange ideas and promote better understandings of aging issues.”

- WONG POH KAM, Director of Entrepreneurship Centre, National University of Singapore



Chapter I: Singapore Longevity Industry Landscape Overview

1. 1st Base
2. Advent Access
3. AITbiotech
4. AlemHealth
5. Angsana Molecular & Diagnostics Laboratory
6. AsiaMedic
7. ASLAN Pharmaceuticals
8. Attune Technologies
9. AUM Biosciences
10. Axil Scientific
11. AYOXXA Biosystems
12. Becton Dickinson
13. Bio3D Technologies
14. Biofourmis
15. BioMind
16. Biotec Pharmacon
17. BowHead Health
18. CELLRESEARCH CORPORATION
19. CENNERV PHARMACEUTICALS
20. Chugai Pharmaceutical
21. Clearbridge Biomedics
22. Clinicea
23. ConnectedHealth
24. Cordlife Services (S) Pte Ltd
25. Cornea Biosciences
26. Cover2Protect
27. DocDoc
28. Doctor Anywhere
29. Drop Technologies
30. Engine Biosciences
31. FairMedOnline
32. Fullerton Healthcare Corporation
33. GlaxoSmithKline
34. Goldencare Group
35. HC Surgical Specialist
36. Healint
37. Health Management International
38. HealthSTATS
39. HistoIndex
40. Hocoma
41. Holmusk
42. HOYA Surgical Optics
43. Hummingbird Bioscience
44. i-DNA Biotechnology
45. I3 Precision
46. Innovfusion
47. iNova
48. Institute of Mental Health
49. InvitroCue
50. iX Biopharma
51. Jaga-Me
52. Jubilant Pharma
53. Juvo Labs
54. Klinify
55. Lab Me Analytics
56. Leben Care Technologies Pte Ltd
57. Leica Microsystems
58. Lifescan Imaging
59. Lion TCR
60. Lucence Diagnostics
61. Lundbeck
62. MERCK PTE LTD
63. MerLion Pharma
64. MiRXES
65. Moleac
66. myhCue
67. Nova Satra
68. Novena Heart Centre
69. Orange Valley
70. Osteopore
71. Palico BioTech
72. PAN-MALAYAN PHARMACEUTICALS
73. PATHNOVA LABORATORIES PTE
74. PrIME Biologics
75. PSC Biotech
76. QIAGEN Singapore
77. QT Vascular
78. Quinxell
79. RadLink-Asia
80. Roche Singapore
81. Scigen
82. Senescence
83. Sentec Pte Ltd
84. SG Meditech
85. Singapore Medical Group (SMG)
86. Singapore Medical Innovative Technology
87. Singhealth
88. SHINESeniors
89. Smart Thermograph PTE LTD
90. Speedoc
91. Stem Med
92. STEMCELL Technologies
93. Steril Medical *
94. Straits Biotech
95. Supercraft3D
96. Taiho Pharma *
97. Tessa Therapeutics
98. Tricog Health Pte Ltd.
99. UCARE.AI
100. Vela Diagnostics

1. Accuron MedTech
2. Accuron Technologies
3. Adamas Finance Asia
4. Apax Partners
5. Aravis Ventures
6. Aurelia Private Equity
7. Aviva Ventures
8. Baidu Ventures
9. BioMedPartners
10. BioVeda Capital
11. BioVeda China Fund
12. Blume Ventures
13. btov Partners
14. Business Model Competition
15. Cenova Ventures
16. Creathor Ventures
17. Daiwa Corporate Investment
18. Dark Horse Investment
19. Data Collective
20. DHVC (Digital Horizon Capital)
21. EDBI
22. Eden Strategy Institute
23. Enabling Future
24. Genting Berhad
25. Get2Volume
26. Global Health Investment Fund (GHIF)
27. Great Eastern Holdings
28. GREE Ventures
29. Heliconia Capital Management
30. High-Tech Gründerfonds
31. HR Ventures
32. Inventus Capital Partners
33. JAFCO Asia
34. JFDI.Asia
35. Jungle Ventures
36. KfW
37. KGI Venture Capital
38. Lacuna
39. Luye Medical Group Co., Ltd
40. Microsoft Accelerator Bangalore
41. Milestone Capital China
42. Morningside Group
43. MVP Capital
44. National Research Foundation
45. Nest
46. Nest.Bio Ventures
47. Norwest Venture Partners
48. Novartis Venture Fund
49. NRW.BANK
50. Openspace Ventures
51. Ping An
52. Qualcomm Ventures
53. Red Dot Ventures
54. SEED MG
55. Shin Ryoku Trust
56. SparkLabs Global Ventures
57. SpesNet Pte. Ltd.
58. Spring SEEDS Capital
59. Start Up Peru
60. Start-Up Chile
61. StartUp Health
62. Startupbootcamp
63. Taya Ventures
64. Temasek Holdings
65. Tianda Pharmaceuticals
66. UTEC- University of Tokyo Edge Capital
67. Vectr Ventures
68. Venturecraft Group
69. Vickers Venture Partners
70. Walden International
71. Wavemaker Partners
72. Wellington Partners
73. Westlake Venture Partners
74. WI Harper Group
75. Womena
76. WuXi AppTec
77. Xeraya Capital
78. Y Combinator
79. Zuellig Pharma China
80. Zürcher Kantonal Bank

15 Conferences 2017-2019

NAME	DATE	WEBSITE
3rd International Conference on Biomedical Signal and Bioinformatics	16 - 18 November 2018	icbsb.org
4th International Conference on Advances in Biology and Chemistry (ICABC 2017)	21 - 23 August 2017	icabc.org
Single Cells: Technology to Biology	24 - 26 February 2019	cell-symposia.com
RNA Biology Symposium 2018 in Singapore	13 -14 September 2018	rnasociety.org
Molecular mechanisms of developmental and regenerative biology	11 -13 November 2018	meetings.embo.org
First International Conference on Biometrics Science and Engineering	4 - 6 August 2017	icbse.org
The Longevity Summit	27 September 2018	events.economist.com
Ageing and Resilience in the 21st Century	11 - 13 October 2017	webapps.duke-nus.edu.sg
Biologics and Biosimilars Congress: Asia	27 - 28 November 2018	global-engage.com
International Conference on Medical and Biosciences	20 - 21 December 2018	researchworld.org
International Conference on Food Microbiology and Food Safety	2 - 3 January 2019	theires.org
International Conference on Medical, Biological and Pharmaceutical Sciences	20 - 21 April 2019	iastem.org
20th International Conference on Genetics and Genomic	10 - 11 September 2018	waset.org
Ageing, Longevity and Health – New Frontiers and Perspectives	17 October 2018	webapps.duke-nus.edu.sg
5th NUS Academic Psychiatry Conference 2019	21-22 January 2019	nusmedicine.nus.edu.sg

15 Conferences 2017-2019



The Longevity Summit



3rd International Conference on Biomedical Signal and Bioinformatics



Single Cells: Technology to Biology



International Conference on Medical, Biological and Pharmaceutical Sciences



First International Conference on Biometrics Science and Engineering



20th International Conference on Genetics and Genomic



Molecular mechanisms of developmental and regenerative biology



4th International Conference on Advances in Biology and Chemistry



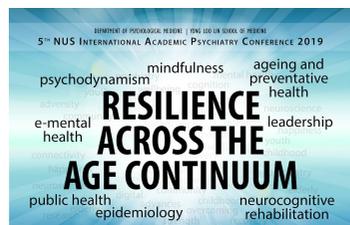
International Conference on Food Microbiology and Food Safety



Ageing and Resilience in the 21st Century



Ageing, Longevity and Health – New Frontiers and Perspectives



5th NUS Academic Psychiatry Conference 2019



Biologics and Biosimilars Congress: Asia



RNA Biology Symposium 2018 in Singapore



International Conference on Medical and Biosciences



30 Faces of Longevity Industry in Singapore

1. Finian Tan
2. Danny Soon
3. Gary Khoo
4. Bussarawan (Puk) Teerawichitchainan
5. Chong Hock Sia
6. Christiani Jeyakumar Henry
7. Colin Stewart
8. Birgit Lane
9. Brian Kennedy
10. Hwee-Pink Tan
11. Janice Chia
12. Jeffrey Lu
13. Carl Firth
14. Judith Swain
15. Kanwaljit Soin
16. Kenneth Noonan
17. Lim Chwee Teck
18. Lim Xinhong
19. Lok Shee-Mei
20. Melis Tay
21. Neo Kah Yean
22. Ng Huck Hui
23. Paolo Rampichini
24. Paul Si
25. Penny Wan
26. Vishal Doshi
27. Wallace Torres
28. Wanjin Hong
29. Wilf Blackburn
30. Yu Cai

30 Longevity influencers



Finian Tan



Danny Soon



Gary Khoo



Bussarawan (Puk)
Teerawichitchainan



Chong Hock Sia



Christiani
Jeyakumar Henry



Colin Stewart



Birgit Lane



Brian Kennedy



Hwee-Pink Tan



Janice Chia



Jeffrey Lu



Carl Firth



Judith Swain



Kanwaljit Soin

30 Longevity influencers



Kenneth Noonan



Lim Chwee Teck



Lim Xinhong



Lok Shee-Mei



Melis Tay



Neo Kah Yean



Ng Huck Hui



Paolo Rampichini



Paul Si



Penny Wan



Vishal Doshi



Wallace I. Torres



Wanjin Hong



Wilf Blackburn

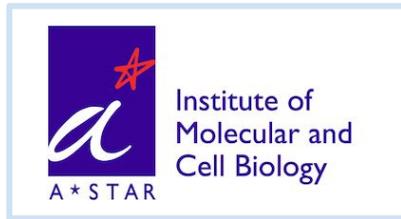


Yu Cai

15 Longevity R&D Centers



Institute of Bioengineering and Nanotechnology



Institute of Molecular and Cell Biology



Singapore Institute for Clinical Sciences



Experimental Therapeutics Centre



Singapore Bioimaging Consortium



Genome Institute of Singapore



Institute of Medical Biology



Institute of Structural Biology



Mechanobiology Institute



Cancer Singapore Institute



Waseda Bioscience Research Institute



Clinical Nutrition Research Centre



National Neuroscience Institute



Life Sciences Institute



Biomedical Institute for Global Health Research and Technology

10 Non-Governmental Organizations



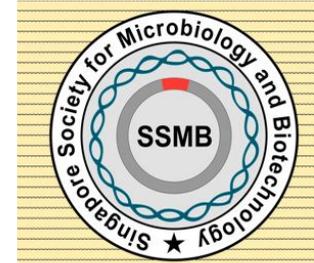
Singapore Society for Biochemistry and Molecular Biology



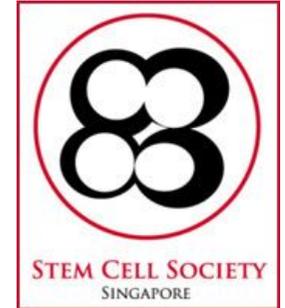
Singapore Institute of Biology



Biomedical Engineering Society



Singapore Society for Microbiology and Biotechnology



Stem Cell Society



Singapore Consortium or Synthetic Biology



Biotech Connection Singapore



Association for Medical and Bioinformatics



Singapore Neuroscience Association



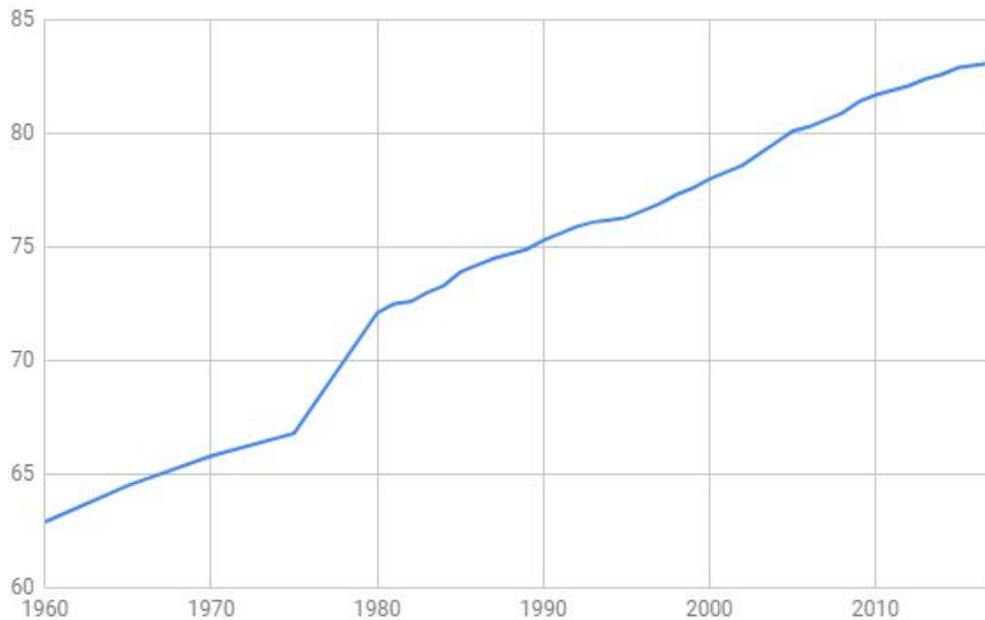
Temasek Life Sciences Laboratory



Chapter II: History of Geroscience in Singapore

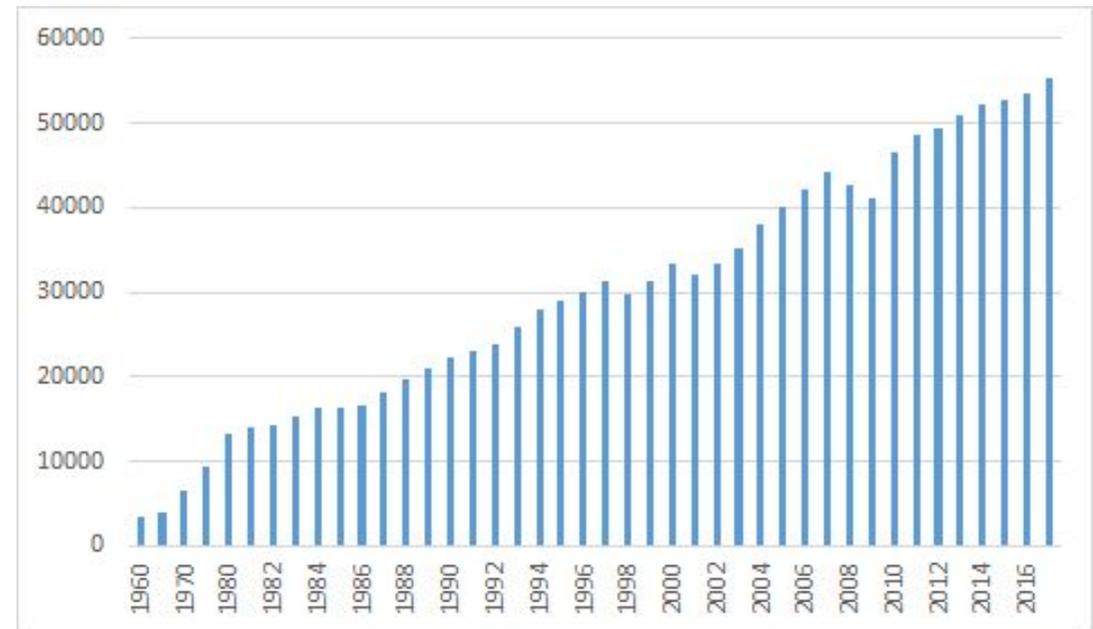
On 9th August 1965 Singapore became an independent republic. Since then it has been planning for their people's long-term prosperity. As its standard of living has grown with better education, diet, healthcare and work opportunities, so has the lifespan of its residents. Based on the data and analytics, Singaporeans today live longer than most other nationalities. They are ranked third in the world for overall life expectancy, after Japan and Switzerland. By 2030, it is expected that one out of four people will be aged 65 years and above. Singaporeans life expectancy is expected to rise to 100 years in coming years. Looking back in time, in 1950 just 50 people were 100 years old while in 2015 the number grew up to 1,100, this rate continues to rising up to date.

Life expectancy (years) in Singapore



Source: singstat.gov

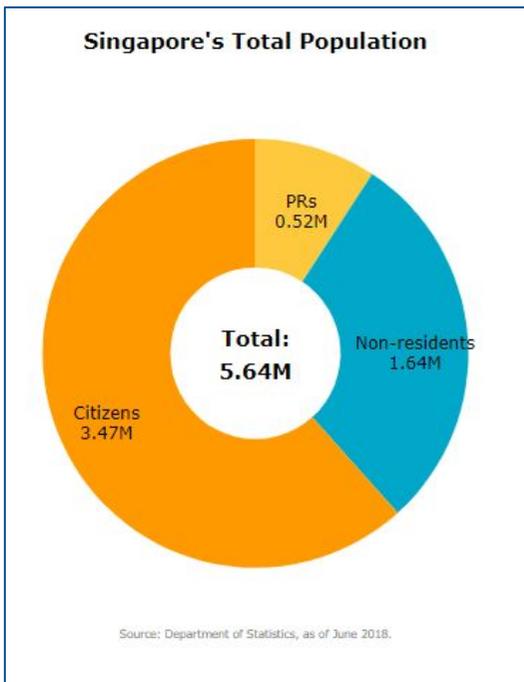
GDP per capita (constant 2010 US\$) in Singapore



Source: data.worldbank.org

Between 1965 and 2015, Singapore’s population grew from 1.9 million to 5.5 million. The number of citizens aged 65 and above doubled from 220,000 in 2000 to 440,000 today, and is expected to increase to 900,000 by 2030. In 2014 the total population in Singapore grew by 1.3 per cent – its slowest pace since 2005, while total fertility rate continued to fall despite the Government’s incentives and encouragement. The median age of the citizen population has gone up to 40.7 years in 2015, from 40.4 years in 2014, 38.6 years in 2010 and 36.6 years in 2005.

Major steps to keep healthcare affordable were taken from the 1980s onwards, with the introduction of schemes such as Medisave (1983), Medishield (1984), and Medifund (1993). In addition to general treatment, the Government also expanded on the number of existing specialist centres. These include the Singapore National Eye Centre (1990), the Singapore Heart Centre (1994), the National Dental Centre (1997), and the National Cancer Centre Singapore (1999).



Total population growth in 2018 was 0.5% (compared to 0.1% in 2017). In the last decade, Singapore resident population has grown older with more elderly and fewer younger people. As at end-June, the proportion of residents aged 65 years and above has increased from 8.7% to 13.7% in 2018. Nowadays there are few working-age adults to support the resident aged 65 years and above as indicated by the falling resident old-age support ratio from 7.6 in 2008 to 4.8 in 2018. The resident growth has remained stable since 2012 while the total births generally fell after 1988. On the other hand the Resident Total Fertility Rate (TFR) fell from the peak of 1.96 births per female in 1988 to 1.16 births per female in 2017.

Total number of deaths had been generally rising as the population aged. Over the years, the resident infant mortality rate had been trending downwards before hovering around 2 infant deaths per 1,000 births in the last decade. In the last decade, resident life expectancy at birth increased from 81 years in 2007 to 83 years in 2017.

Source:

1 straitstimes.com

2 singstat.gov.sg

3 population.sg

Singaporeans aged 65 and above are currently making up to 9.63% of the population, by the year 2030 they are expected to make up 19% of the population as a result of improvements in sanitation, medical technology, and public health awareness. In Singapore the Life expectancy has risen to 83.1 years in 2017 which is third highest in the world.

Cancer, heart and hypertensive diseases are among the top causes of death in Singapore. Singaporeans have also benefited from medical advances in diagnostic testing and cancer treatments At 40.9 cases per 100,000 in 2012, while tuberculosis remains a disease under control in the country. The rising numbers of the infectious lung disease among immigrants in Singapore is a cause of concern as well as early detection as a critical in stopping its spread in the local community.

Singapore doctors started using an advanced molecular diagnostic test such as multiplex polymerase chain reaction (PCR) that allows early detection of mycobacterium tuberculosis infection. Patients with malignancies or cancers affecting the blood, lymph nodes and bone marrow have benefited from the use of a new chemotherapy agent, Rituximab.

Even though Singaporeans are living longer, they are running the risk to spend the last decade of their lives in poor health and disability, this is According to the Global Burden of Disease Study in 2010. The study stated that Singaporean men can expect to enjoy 68.1 years of good health and the last 10.7 years coping with poor health while women expects to be 70 years of good health plus 13.3 years with some sort of disability.

Statistically between 2003 and 2013, Singapore's total life expectancy rose by 3.3 years for the decade compared with 2.8 years between 1990 and 2002.

“One reason why Singaporeans are living longer is better chronic disease management. Primary and community-based healthcare providers have taken a bigger role in managing chronic diseases such as diabetes, heart disease and high blood pressure”, says Dr Nguyen Minh Ha, Consultant, Department of Geriatric Medicine at Singapore General Hospital (SGH), a member of the SingHealth group.

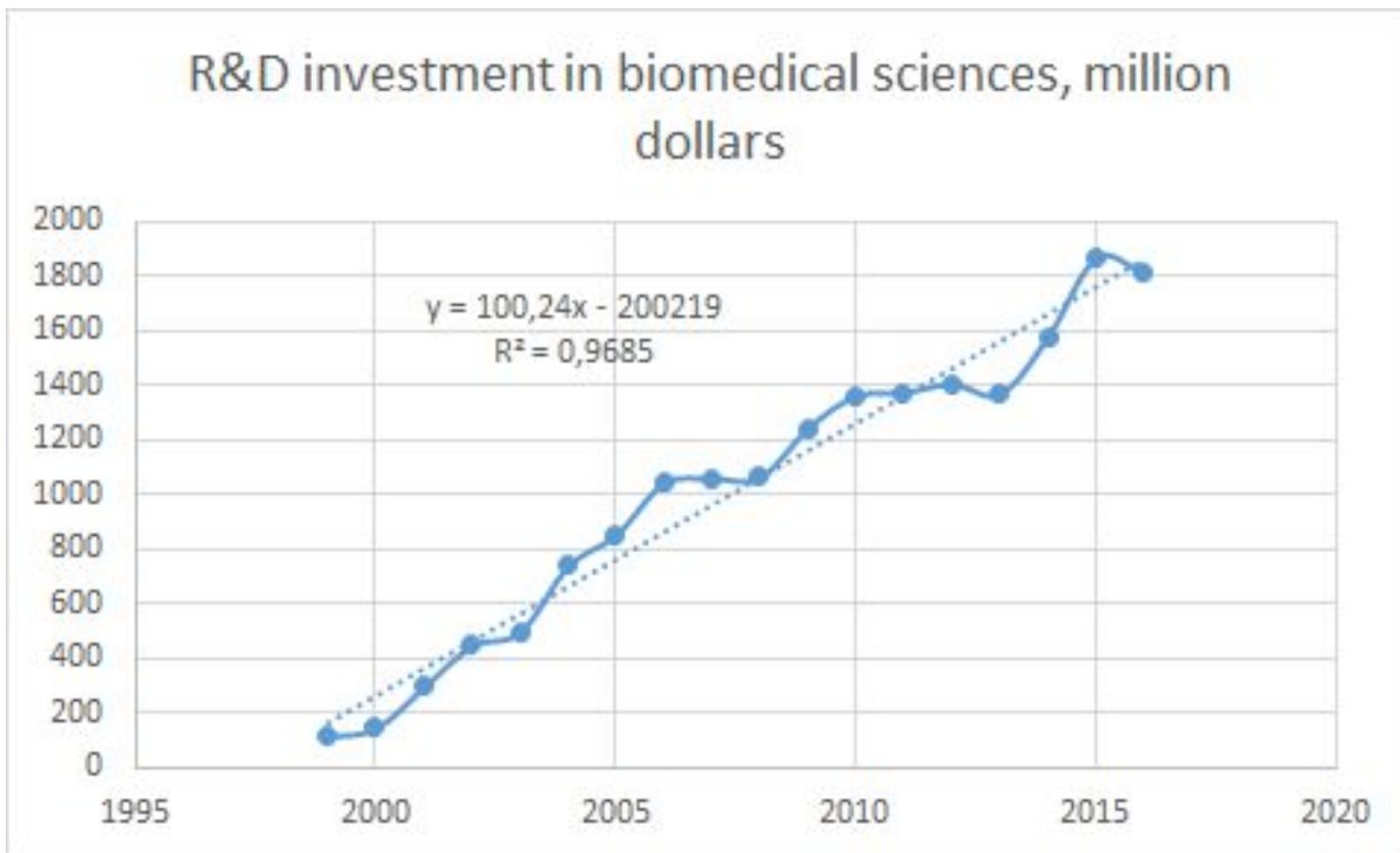
While other countries are struggling with aging issue, Scientists from the Agency for Science, Technology and Research (A*Star) and the National University of Singapore have identified a type of immune cell that does not show signs of ageing. Such signs could be, for instance, the presence of certain genes or the shortening of structures on chromosomes usually associated with ageing as presented by the strait Times. The articles explained even more by stating that there is not, for example, any of the shortening of structures on chromosomes usually associated with ageing. The study is part of the larger ongoing Singapore Longitudinal Ageing Study 2, which began in 2009 and involves 3,200 men and women aged 55 and above.

The SG90 Longevity Study is a 10-year study by A*Star and the National University Health System (NUHS) involving about 1,500 Singaporeans aged 90 and above.

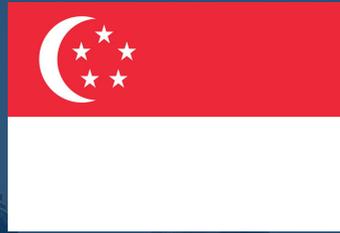
A study by the Centre for Ageing Research and Education published in 2016 that Singaporeans with secondary education or above had higher total life expectancy and active life expectancy at the age of 60 than those with primary education or below, as data show presented from a longitudinal survey of 4,990 Singaporeans aged 60 and above.

Biochemist and ageing expert Brian Kennedy, director of the Centre for Healthy Ageing at NUHS, cited a 2012 global study which showed that, from 1990 to 2010, Singaporeans' lifespans grew by 5.4 for women and and six years for men, but healthspans grew by 3.4 and 4.1 years, respectively. Professor Kennedy said that "the fact that healthy life expectancy is rising is a good sign. Still, the gap between healthspan and lifespan has to be stemmed or even decreased. He suggests more research be done to delay ageing, which would delay the onset of chronic diseases such as diabetes and Alzheimer's, extend healthy life expectancy, and curb rising healthcare costs".

From January 2018 An Institute of Policy Studies, states that "the ageing population would exert a drag on the growth of Singapore's gross domestic product per capita of 1.5 percentage points annually until 2060, assuming a stagnant fertility rate and stable immigration" Professional services firm Marsh & McLennan Companies projects health expenditure on the elderly in Singapore to rise tenfold over the next 15 years to more than US\$49 billion (S\$65 billion) annually. This means that an average of US\$37,427 will be spent on each elderly person by 2030 as a rise from US\$8,196 in 2015 that seems to be the highest in the Asia-Pacific region.



R&D volume in the industry is constantly and relatively steadily increasing. For the period 2011 to 2015, the Singapore government has committed a total of S\$16.1 billion on R&D expenditures. Singapore has already various ageing-related research initiatives, many of which involve multiple research players including A*STAR, NUHS, and other universities and hospitals.



Chapter III: Current State of Longevity in Singapore

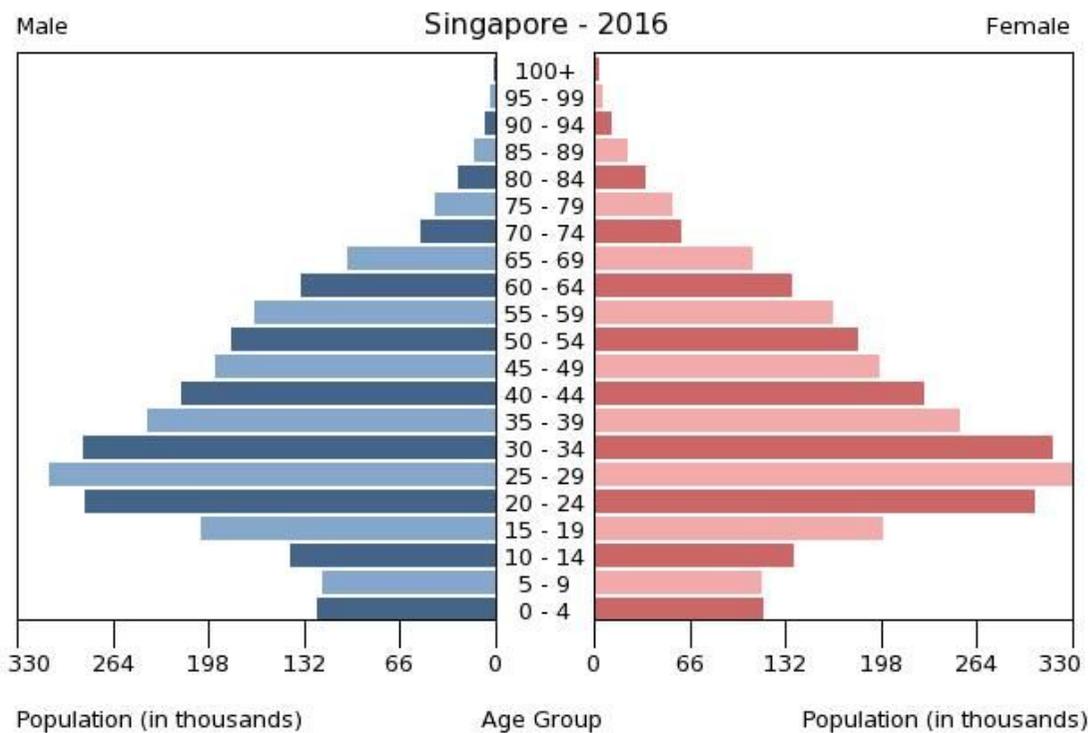
Singapore is one of the biggest nation's leading at long life expectancy by its people leaving longer than many years before. It is expected that, by 2030 one in four Singaporeans will be aged 65 years and above due to advance in medical technology and healthy way of leaving. This age is also expected to raise up 100 years of age as time goes on.

The population of singapore, a sovereign city-**state** and island country in Southeast Asia is estimated to be 5.6 million people with the fastest aging population around the world. The number of people aged above 65 years is growing day by day and estimated to reach about 900,000 by 2030 as stated in the article: Prudential, Ready for 100 preparing for longevity in Singapore. This number is expected to rise even more up to 100 years of living due to Medical technology advancement and living system that its people are following. Its population focuses on good and healthy food as well as exercising and practicing healthy way of living. Even though mostly of its people living in cities are affected due to different habits and reality on their residential areas that affects their aging processes. This might be due to working system of most of the Singaporeans as well as different common diseases such as diabetes and heart diseases that some people mostly elderly people need to address more with bigger efforts on how to prevent then and cure for good.

Singaporean workplaces are youth oriented. To help extend people's working lives, the government has mandated that employees cannot be forced to retire before the age of 62. However, Singapore did even better in terms of healthy life expectancy at birth. This represents the number of years a person can expect to live in "full health" by taking into account years lived in less than full health due to disease and/or injury.

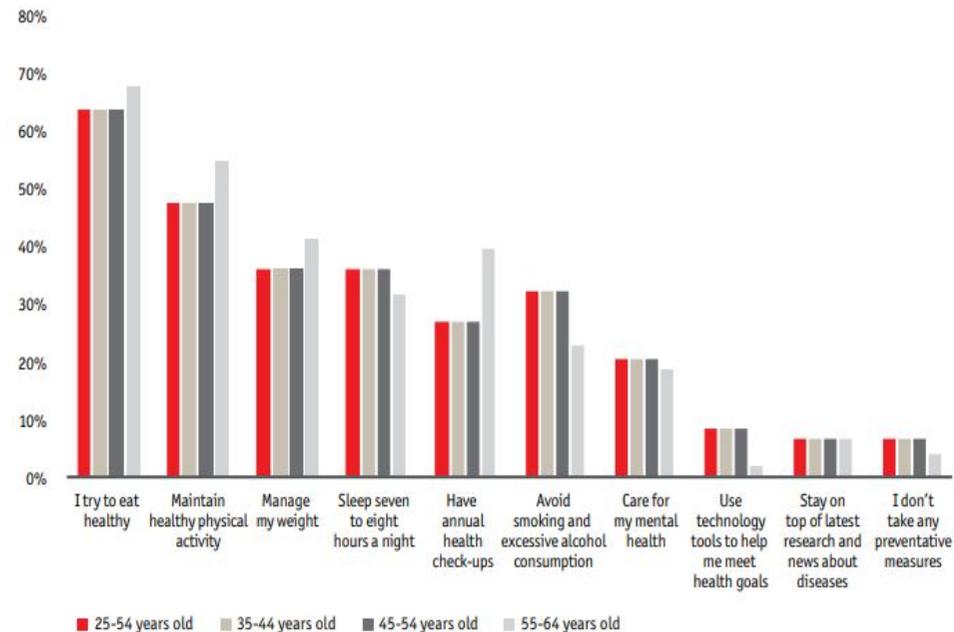
In this respect, Singapore has an average healthy life expectancy of 73.9 years, putting it second to Japan (74.9 years). Women in Singapore can expect to live about six years longer than men there, with an average life expectancy at birth of 86.1 years (compared to 80 years for men). The global average life expectancy at birth across all genders is 71.4 years according to the report, and the healthy life expectancy of the average person globally is 63.1 years.

Technology also provides a new set of opportunities for the ageing population to become more productive. Innovations such as Artificial Intelligence and automation are only as useful as they integrate into the jobs and functions they are intended to support.



Source: cia.gov

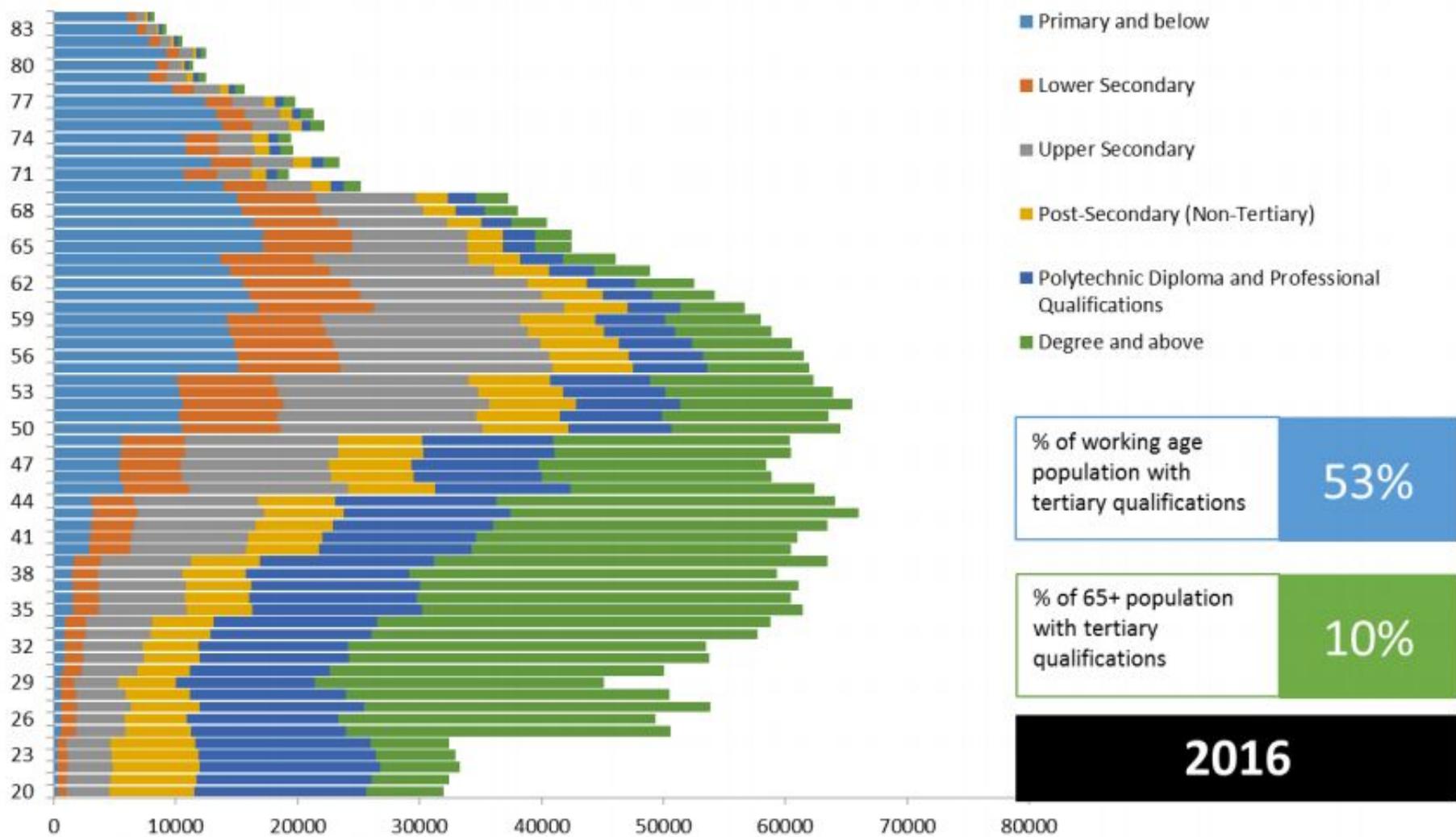
What preventative measures do you take to avoid future age-related diseases? Select all that apply. (% respondents)



Excludes respondents aged 65-74 years and don't know responses as these are 2% or less of the total respondents.

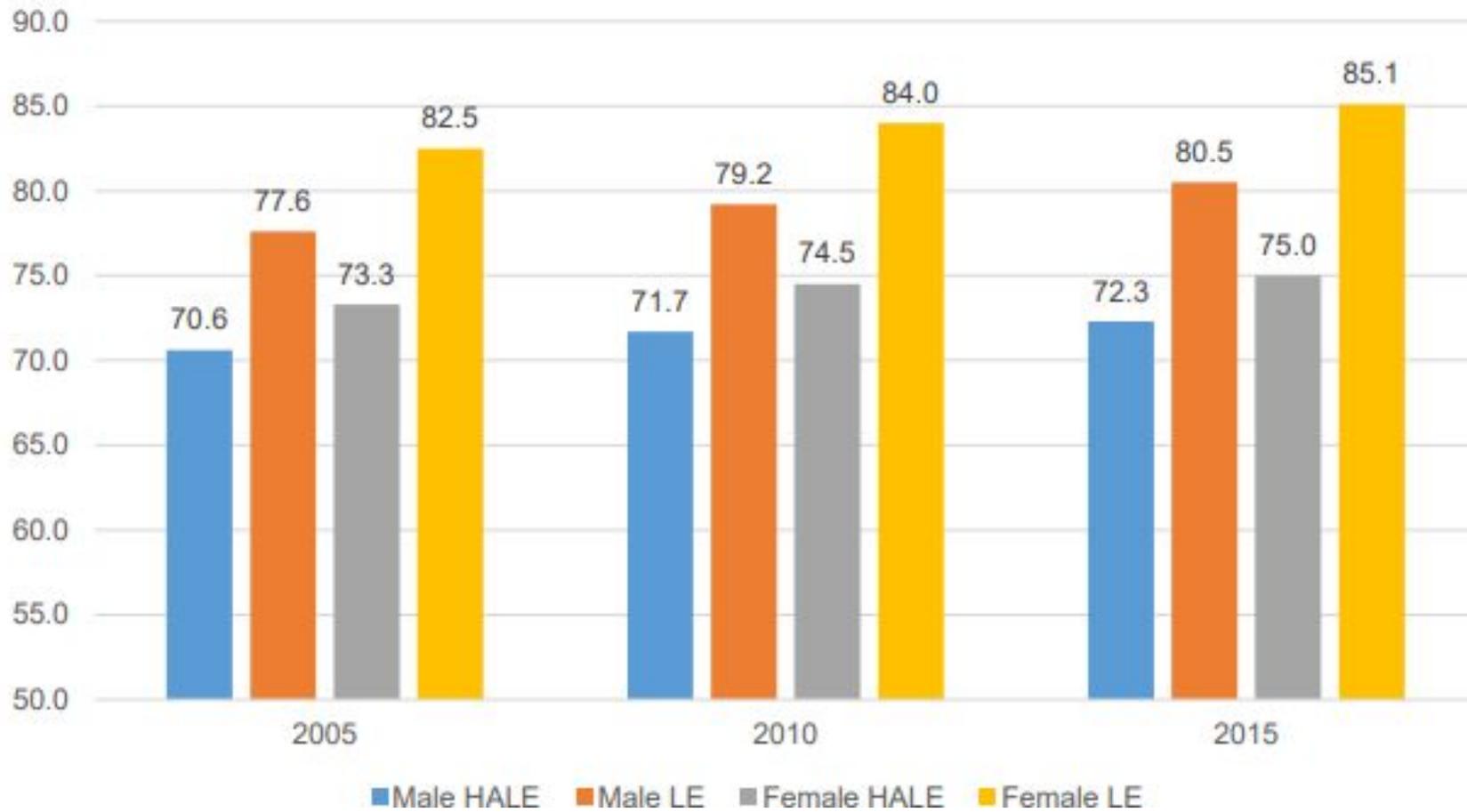
Source: straitstimes.com

Statistics of longevity (2016), distribution by education





Resident Male and Female Health-Adjusted Life Expectancy



Source:

lkyspp.nus.edu.sg

pdf

In this section you will find 7 different ways that the government of Singapore has developed to help seniors entering their silver years. The Singapore official government website presented the following schemes:

1. Medisave

Medisave is a national medical savings scheme which helps individuals put aside part of their income into their Medisave Accounts. This can be used to pay for their future personal or immediate family member's hospitalisation and certain outpatient expenses incurred at any hospital in Singapore.

2. Enhancement for Active Seniors (EASE)

Through EASE, seniors can enjoy subsidies of up to 95% to install improvement items such as grab bars and slip-resistant bathroom floors to make it more elder-friendly.

3. ComCare Long Term Assistance (also known as Public Assistance)

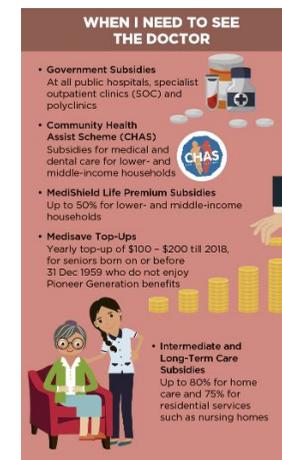
Seniors can receive up to \$1,180 in cash assistance (depending on household size) for those who are permanently unable to work due to old age, illnesses or unfavourable family circumstances. Those who qualify may also receive additional aid to help those with recurring hygiene essentials or consumables such as adult diapers and nutritional milk supplements. Additional medical assistance will also be available.

4. Silver Support Scheme

From end-Jul 2016, the government will give payouts of \$300 – \$750 (depending on type of HDB flat they live in) every three months for the bottom 20% of seniors who had low incomes through life and little or no family support. This is on top of the monthly cash assistance provided by the ComCare Long Term Assistance Scheme to cover their daily living expenses.

Source:

gov.sg



5) Pioneer Generation Package

Especially for our pioneers – Singaporeans born on or before 31 December 1949, and obtained citizenship on or before 31 December 1986 can enjoy the benefits of the Pioneer Generation Package!

Benefits include special subsidies for MediShield Life premiums, annual Medisave top-ups (up to \$800 a year for life) and an additional 50% off subsidised services and medication at polyclinics and Specialist Outpatient Clinics (SOC) in public hospitals.

ADDITIONAL HELP FOR SENIORS WITH LITTLE SUPPORT

- **ComCare Long Term Assistance/ Public Assistance**
Cash for those permanently unable to work due to old age, illnesses or unfavourable family circumstances
- **Medifund**
Help for medical bills
- **Additional MediShield Life Premium Support**
Help those unable to afford premiums even after subsidies

Silver Support Scheme New

From end-Jul 2016, payouts of \$300 - \$750 every 3 months for bottom 20% of seniors who had low incomes through life and little or no family support

Specially for Our Pioneers

Singaporeans born on or before 31 Dec 1949, and obtained citizenship on or before 31 Dec 1986, also receive:

- Special subsidies at CHAS GP and dental clinics
- Additional 50% off subsidised services and medications at polyclinics and SOC in public hospitals
- Special subsidies for MediShield Life premiums
- Annual Medisave top-ups
- Cash of \$1,200 a year for those under the Disability Assistance Scheme

pioneer generation

INCREASING ADDITIONAL INCOME DURING RETIREMENT

- **Enhanced CPF Savings**
Additional 1% interest on the first \$30,000 of CPF savings for those aged 55 and above
- **More Workfare Benefits**
From 1 Jan 2017, eligible low-wage workers will receive higher Workfare Income Supplement (WIS) payouts to be paid monthly
- **Silver Housing Bonus**
Additional income when moving to a smaller flat
- **Lease Buyback Scheme**
4-room or smaller flat owners can sell part of their flat lease to HDB
- **2-Room Flexi Scheme**
Owners spend less cash or CPF by choosing a shorter flat lease

WHEN I NEED HELP WITH LIVING EXPENSES

- **GST Voucher**
Help for lower- and middle-income households through:
 - **Cash**
For immediate needs, such as grocery bills
 - **CPF Medisave**
Top-up for medical needs
 - **U-Save**
Rebate to offset utilities bills every quarter
- **Senior Citizen Concession Card**
Enjoy lower fares on buses and trains

6) Lease Buyback Scheme (LBS)

Seniors who live in a 4-room or smaller flat will be able to use this scheme as an additional monetisation option. Through the scheme, you can sell part of your flat’s lease to HDB to receive a stream of income in your retirement years, while continuing to live in it.

You can choose to retain the length of lease based on the age of the youngest owner. The proceeds from selling part of your flat’s lease will be used to top up your CPF Retirement Account (RA), which earns you up to 5% interest

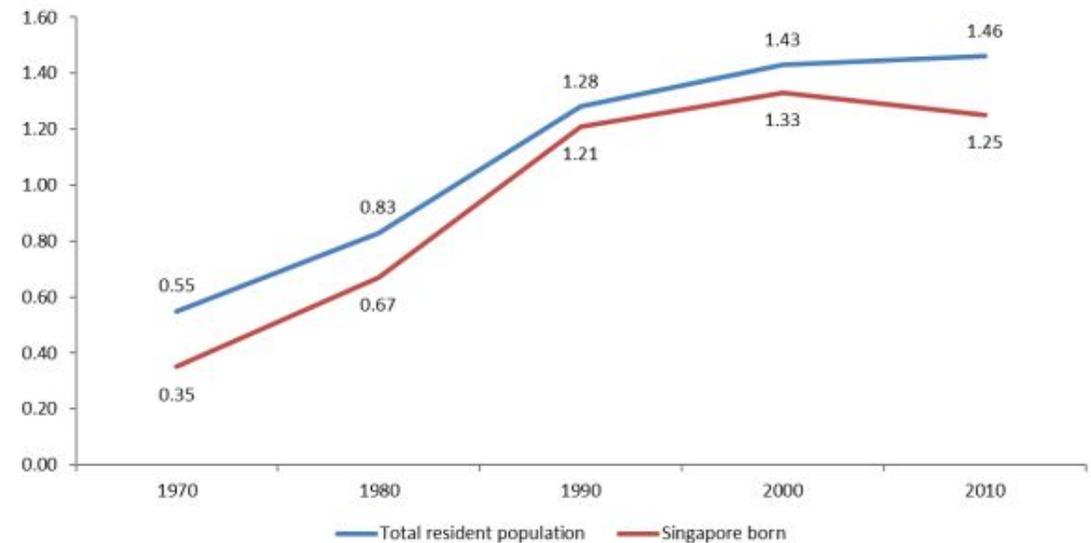
7) Senior Citizen Concession Card

Senior citizens can enjoy lower rates on buses and trains with the launch of the Off-Peak Pass (OPP) on 5 July 2015. This gives senior citizen cardholders one more option when purchasing their travel pass, on top of the Hybrid Concession Pass. Now seniors can be even more active in pursuing their hobbies, visiting friends and loved ones, or even volunteering for their favourite causes.

Whilst official government policy continues to be one of openness to immigration (especially of skilled labour) with an average annual intake of 30,000 new permanent residents, there is recognition that a well-calibrated immigration policy is only one measure to mitigate the economic effects of population ageing.

As Prime Minister Lee said in his 2012 New Year's message: *"A vibrant economy needs enough workers and talent, yet we run into physical and social constraints if we admit too many foreign workers too quickly. Diversity enriches our society, but only provided new arrivals adopt our values and culture."*

Fig. 7. Economic Support Ratio: by place of birth (1970-2010)



Source: Institute of Policy Studies estimates, using Population Census data published by Singapore Department of Statistics

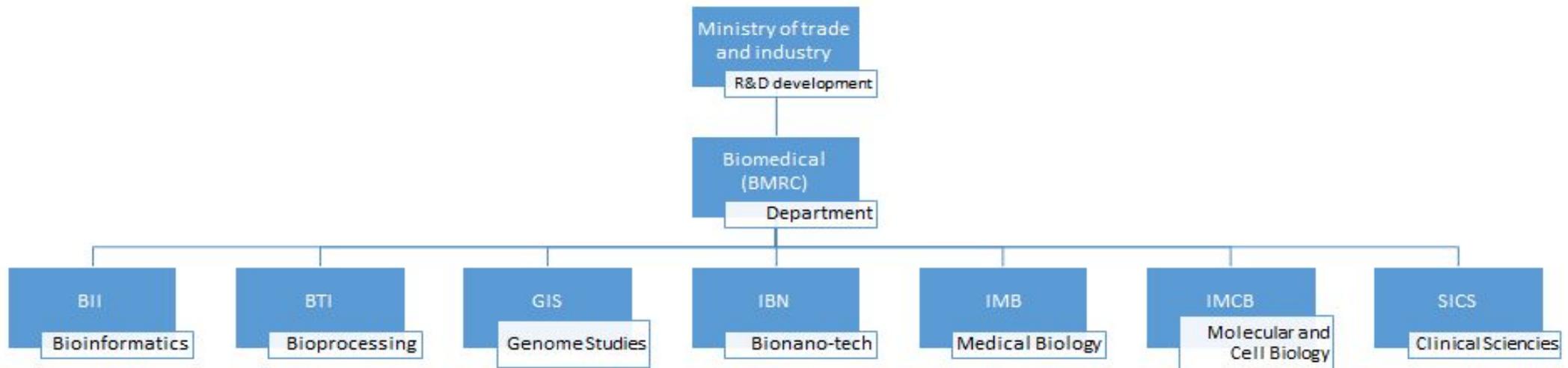
Immigration cannot, however, permanently offset the reversal of the first demographic dividend from population ageing. Immigrants also grow old, and an ever-larger intake of immigrants would be needed to prevent the total resident population ESR from declining in the future.

As of June 2017, permanent resident and non-permanent resident foreigners comprised 39% of Singapore's total population of 5.6 million (Department of Statistics, 2017), up from 14% in 1990. With Singapore's TFR at ultra-low levels since 2003, the unwinding of the first demographic dividend amongst the local-born population is already in evidence. The Economic Support Ratio (ESR) amongst the Singaporean-born population peaked in the 2000s.

The Agency for Science, Technology and Research (A*STAR) is a statutory board under the Ministry of Trade and Industry of Singapore. The agency supports R&D that is aligned to areas of competitive advantage and national needs for Singapore. These span the four technology domains of Advanced Manufacturing and Engineering (AME), Health and Biomedical Sciences (HBMS), Urban Solutions and Sustainability (USS), and Services and Digital Economy (SDE) set out under the nation's five-year R&D plan (RIE2020).

A*STAR was established in 1991 with the primary mission to advance the economy and improve lives by growing the knowledge-intensive biomedical, research, scientific and engineering fields. The Biomedical Research Council (BMRC) oversees research entities that serve to support key industry clusters in Biomedical Sciences, such as pharmaceuticals, medical technology, biotechnology and healthcare services.

The BMRC Research Institutes focus on building up core biomedical capabilities in the areas of bioprocessing; chemical synthesis; genomics and proteomics; molecular and cell biology; bioengineering and nanotechnology and computational biology.





Finian Tan

Chairman and Founder, Vickers Venture Partners

The number of Singapore-based venture capital firms investing in overseas (e.g. US, EU and UK) Longevity companies is not large, but foremost among them is Vickers Venture Partners, which in August 2018 led a \$438 million investment round at a \$12 billion valuation in prominent US-based Longevity company Samumed, a life science company specializing in small molecule drugs that selectively activate or inhibit the *Wnt* pathway toward treatment of oncological and degenerative diseases. This follows their initial investment in Samumed in 2012.

Speaking to *StraitsTimes*, Tan stated that Vickers invested in Samumed due to its highly optimal risk-reward profile, "because the discovery here is not the drug, but the biological pathway that regulates stem cell differentiation and how it can be manipulated to spur the regeneration of hair for a bald person, or retina for a blind person, or cartilage for someone with osteoarthritis. Is this a platform play? Signalling is the cause of all cellular growth and death. You can't patent the pathway, but you can patent the drugs that work on the pathway, and there's no one entering the clinic that's doing what we do."

Notably, Finian was an early investor into Chinese IT giant Baidu, gaining a stake in the company even larger than the 22% stake held by Baidu co-founder, Robin Li. Vickers also has plans to make key investments in other progressive industries and sectors, and was recently reported to be preparing to launch a \$500 million fund that will target investments in artificial intelligence, nanotechnology and biotech.

While the overall landscape of Singaporean venture funds investing in overseas Longevity companies is still small, Vickers Venture Partners is certainly leading the pack, having invested in one of the largest-valuated US Longevity companies early in the evolution of the industry, at a time when the vast majority of investors and business analysts were still skeptical of the Longevity industry's core viability and long-term profitability.



VICKERS
VENTURE
PARTNERS

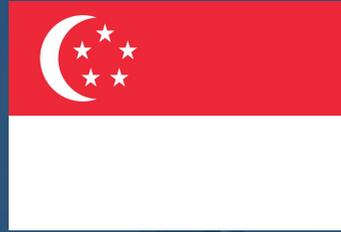
Source:

1 pillars.g2investmentgroup.com

pdf

2 straitstimes.com

3 bloomberg.com



Chapter IV: Global Longevity Landscape Overview

Longevity Industry Landscape Overview Volume II: The Business of Longevity



Markets, Trends, Sectors

Longevity Industry Landscape Overview Volume II: The Business of Longevity

“Aging is the ultimate evil. To invest in Anti-Aging technologies is the most ethical business, and to donate to longevity research is the most effective form of altruism” – Dmitry Kaminskiy, Managing Partner of Deep Knowledge Life Sciences.

This report details the present state of precision, personalized, preventive medicine (referred to hereafter as ‘P3’), how it works in conjunction with emerging preventative medical technologies, and the prospects for the next five years. *Volume 1: The Science of Longevity*, set the landscape of geroscience against the backdrop of the ‘silver tsunami’ of global demographic aging. It summarised the history and current state of development in geroscience, examined whether existing proposed solutions measure up to the impending problems, and profiled 650 distinct entities related to geroscience.

This present volume, entitled *“The Business of Longevity”*, outlines the commercial side of this emerging industry. It describes the novel financial system that will form the necessary framework of the industry, and introduces *AgeTech*, and other novel technologies that have the elderly as their prime beneficiaries. These technologies have yet to reach fruition, but are expected to grow rapidly in the next several years as the elderly remain more active than ever before.

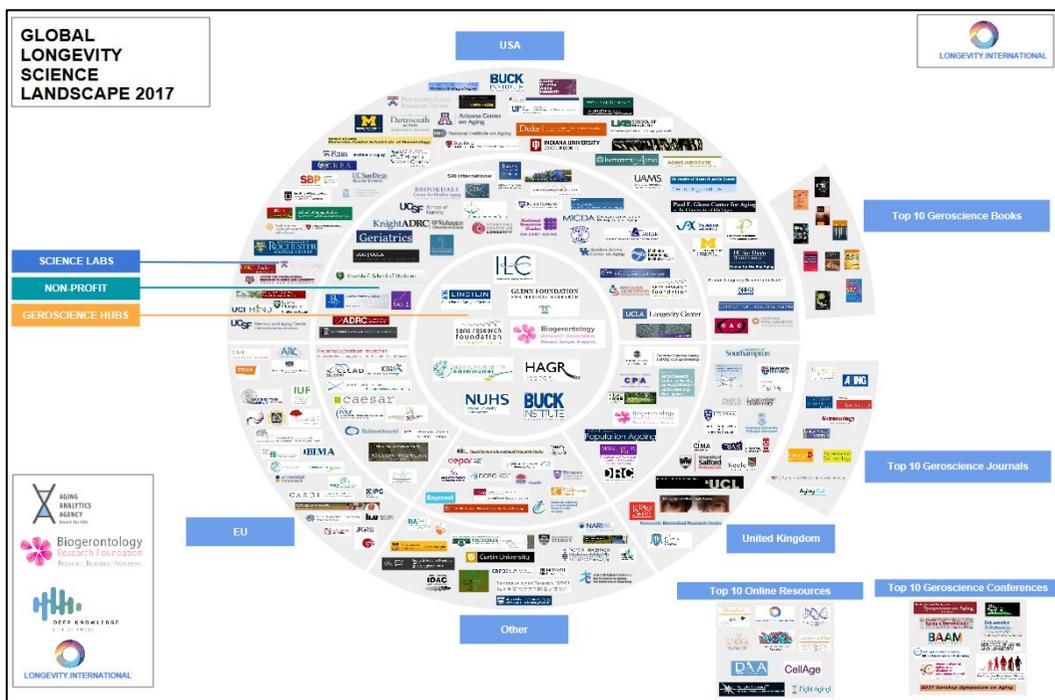
This volume, like the last, contains infographics. Mindful of the large size and complexity of the industry, we created specialized mind maps in order to do for longevity industry what Mendeleev, with his Periodic Table of Elements, did for chemistry, so that specialists and non-specialists alike could stand united before a unified vision of the industry landscape.



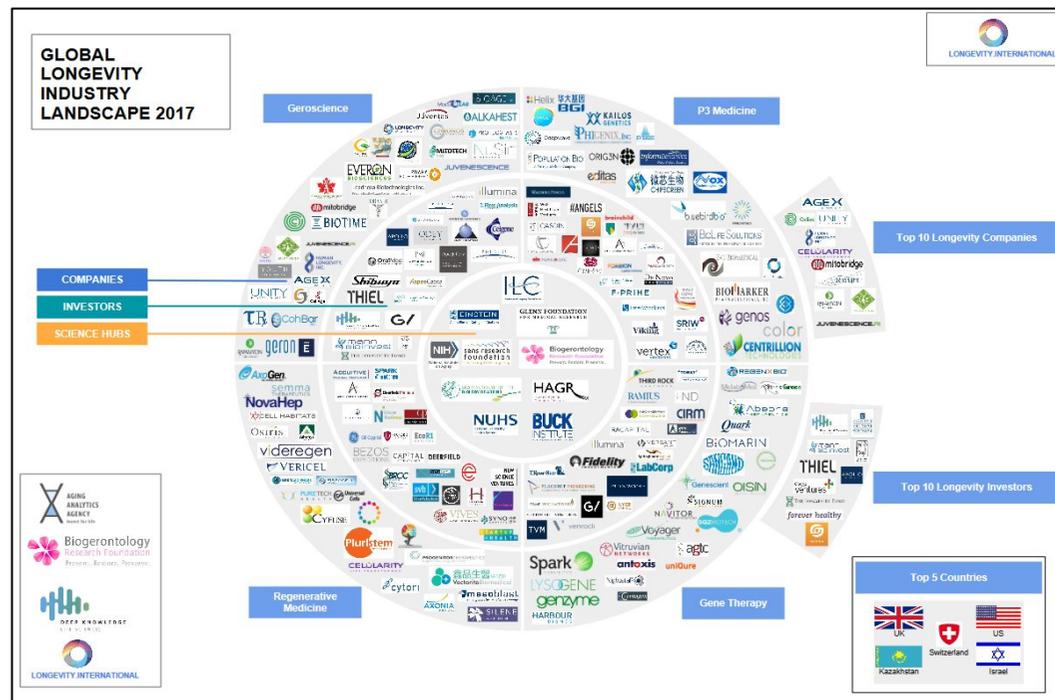
Longevity Industry Landscape Overview Volume II: The Business of Longevity

This volume II, similar to Volume I, includes lists of profiles of companies and investors which we believe play a pivotal role at this juncture. Although these lists are based on dataset analysis and tangible metrics, they are projections and as such, are not exhaustive.

The Science of Longevity Global Landscape



The Business of Longevity Global Landscape



This volume II, similar to Volume I, includes lists of profiles of companies and investors which we believe play a pivotal role at this juncture. Although these lists are based on dataset analysis and tangible metrics, they are projections and as such, are not exhaustive.

The report begins with a summary of its main findings and conclusions, and a broad outline of the major sub sectors making up the Longevity industry, as well as the major trends dominating the growth of the industry today, in the form of a concise **executive summary**.

Chapter I outlines the history of the industry, from its beginnings in geroscience to the identification of the root causes (or biological hallmarks) of aging, to the recent emergence of actual, scientifically-validated therapies that target the root causes of aging in order to extend healthspan and delay the onset of age-related disease.

Chapter II describes the current state of the Longevity industry today, and charts the major subsectors, trends and industry players operating today, in order to deliver a comprehensive outline of the current Longevity industry landscape.

Chapter III details the major roadblocks and systemic gaps facing the current BioTech, BioPharma and Healthcare industries today, and why those fundamental gaps create an environment ripe for stagnation in the face of demographic aging, showing how fundamental inconsistencies exist between how healthcare systems operate today, and how they should operate given the oncoming Silver Tsunami.

Chapter IV outlines the near-future of the industry, analyzing the current trends and forecasting them forward over the next 3-5 years in order to demonstrate where the Longevity sphere is headed and what the shape of the landscape will be over the next several years.

Chapter V outlines the makeup of the ideal P3 medicine clinic, charting the constituent therapies and technologies that comprise the optimal P3 medicine pipeline, and establishes a framework for evaluating the “readiness” of technologies, providing tangible metrics to measure how close technologies are to practical application. The chapter also formulates an optimal framework for cyclical personalised experimentation whereby geroprotective interventions can be formulated, personalised, and tested so as to fit the specific health parameters of each patient.

Chapter VI details the coming paradigm shift from treatment to prevention, and how this will impact industry, government and society, showing what is wrong with the medical paradigm used by government healthcare systems, and how they can be reformulated in order to avoid stagnation in the face of the oncoming Silver Tsunami.

Chapter VII of the report considers the creation of a Novel Financial System to simultaneously avoid economic stagnation in the face of demographic aging, while creating an infrastructure whereby governments and financial institutions can reap gains from maximizing not just population lifespan, but healthspan as well. Given the significant impact that societal ageing and Longevity have upon economies, pension funds and insurance companies have the potential to tie financial performance to quantitative measures of healthy longevity like HALY (health-adjusted life years) and QALY (quality adjusted life years) in order to help economies thrive due to an increase in its citizens healthy longevity.

The report's **appendices** provide one-page profiles on the top 100 Longevity companies and 100 investors making up the industry landscape today. We estimate that in the next editions of these reports, the industry will have grown to include up to 200-300 Longevity companies and up to 1000 investors.

These appendices also introduce the reader to brief summaries of our previous reports, as well [Longevity.International](#), an online platform that will house these reports, and also serve as a virtual ecosystem for uniting and incentivizing the many fragmented stakeholders of the longevity industry, including scientists, entrepreneurs, investors, policy makers, regulators and government officials to unite in the common goal of healthspan extension and aversion of the looping demographic aging and Silver Tsunami crisis. The platform will use knowledge crowdsourcing of top tier experts to unite scientists with entrepreneurs, entrepreneurs with investors, and investors with policy-makers and regulators, where all stakeholders can aggregate and integrate intelligence and expertise from each other using modern IT technologies for these types of knowledge platforms, and all stakeholders can be rewarded for their services.

Longevity Industry Landscape Overview

Volume I: The Science of Longevity

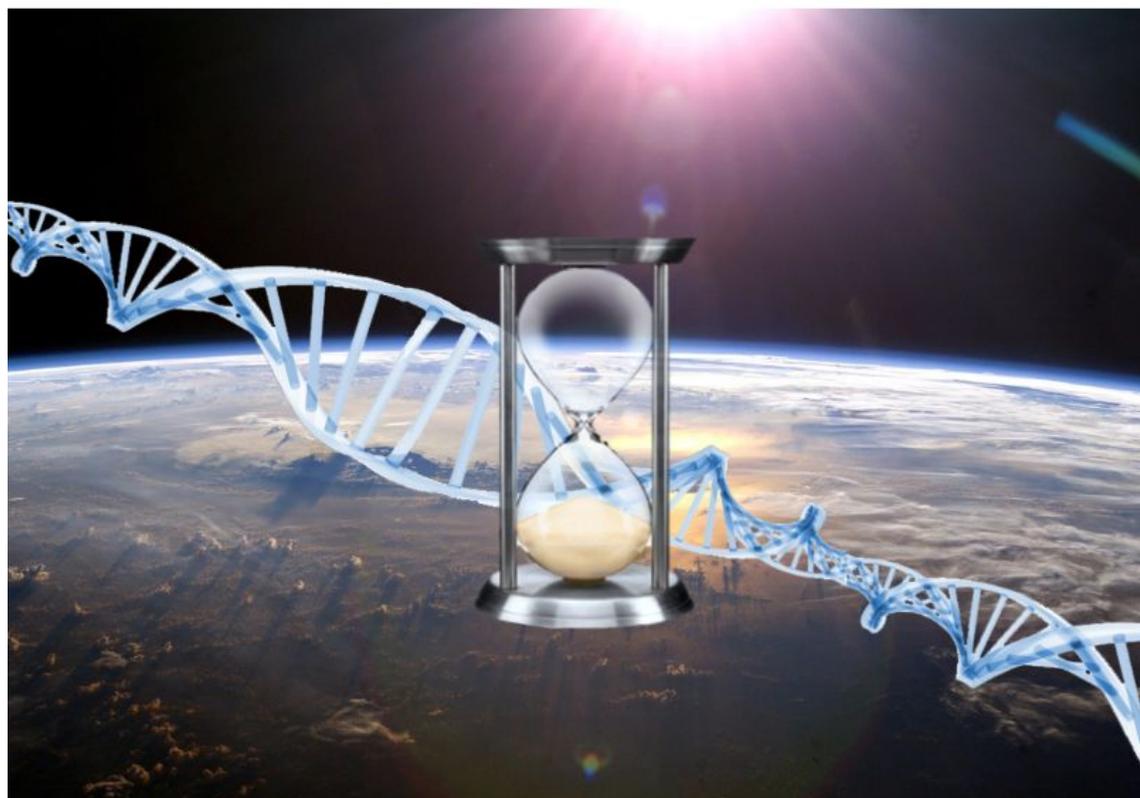
Volume I: The Science of Longevity, set the landscape of geroscience against the backdrop of the 'silver tsunami' of global demographic aging, detailing the present state of precision, predictive and preventive medicine (referred to hereafter as 'P3'), how it works in conjunction with emerging preventative medical technologies, and the prospects for the next five years. It summarised the history and current state of development in geroscience, examined whether existing proposed solutions measure up to the impending problems.

The consortium's first report tied together the progress threads of the constituent industries into a coherent narrative, mapping the intersection of biomedical gerontology, regenerative medicine, precision medicine, artificial intelligence, offering a brief history and snapshot of each. It also categorized, systematized and individually profiled 650 longevity-focused entities, including research hubs, non-profit organizations, leading scientists, conferences, databases, books and journals.

LONGEVITY INDUSTRY LANDSCAPE OVERVIEW 2017

Volume I: The Science of Longevity

Geroscience, Policy, and Economics
The Paradigm Shift: from Treatment to Prevention





Finally, this report places heavy emphasis on the topic of stagnation, and how the P3 model for medicine, illustrated here in the form of a specification for so-called “ideal model of P3 medicine clinic”, should be used to break that stagnation. Such a clinic would be focused on prevention rather than treatment and on maximizing the use of AI in diagnostic monitoring. It would involve precise monitoring of patient health and the use of blockchain technology to store data safely and securely.

In producing this specification we consulted industry experts who described the technologies that would likely feature in such a clinic, as well as the challenges of combining them.

Bearing in mind that these challenges would largely revolve around the configuration of IT systems rather than bricks and mortar, we turned to aerospace engineers and team leaders of software companies for insight into how they are implementing and structuring the architecture of their complex software and hardware, IT and engineering solutions. We also examined the TRL (“technology readiness level”), the method common in the aerospace industry for assessing technological maturity, for possible adoption by the longevity industry.

No ‘soft landing’ for the demographic aging crisis?

Later chapter will offer more detailed analysis of AgeTech and novel financial system, and how they will impact the demographics of aging and repair the centuries-old economic system that are about to be submerged by the silver tsunami.

For example, until recently pension funds are seen by most Westerners as a given, but they did not exist at all until 150 years ago, and their use only became widespread 50 years ago. Now they are acquiring significant deficits, while healthcare systems and insurance companies suffer similar burdens imposed by aging populations. Their business models were designed in an age when life expectancy was low and the financial markets were more stable.

Future chapters will also explore the possibility of a partial neutralization of the so-called “longevity risk” (the major risk factor for pension funds financial model) through a combination of approaches on the intersection of preventive medicine and financial derivatives based on novel business models and investment strategies more appropriate for 21st century.



Longevity Industry Landscape Overview Volume II: The Business of Longevity

In most developed countries, however, this increase in life expectancy has already occurred, and in major cities worldwide, life expectancy is already predicted to surpass 100 years. Then again, some bolder experts believe that people currently aged between 30 and 40 (the most active contributors to GDP and primary beneficiaries of existing pension funds) could have a life expectancy of 120 years. The economic burdens of an aging population will therefore become much starker 5 to 10 years from now as the shadow of the silver tsunami grows.

Furthermore, there is no evidence of any country beginning to reverse the trend. In Japan or Italy, we even see governments accruing further debt and delaying solutions just until next upcoming elections. As such, in this document, we argue that it is only via massive investment in the Longevity industry and advanced biomedicine research enhanced by the development of the novel financial system, this this problem could be solved.

Geroscience will therefore come to be regarded as the most important of sciences due to its central utility in this regard, and longevity industry will become the world's largest and most economically impactful industry, the AgeTech market will become one of the biggest markets, and novel financial system will become the one and only system affordable to developed countries.

We also plan to produce several case studies later this year, and additional case studies over the course of the next few years. Volume 4 in particular will include an in-depth study of novel financial system, and in Volume 5 we will provide regional studies on the UK, Europe and Japan.

The upcoming third volume will contain case studies regarding efforts to devise biomarkers of aging, proposed methods for quantifying progress (by devising metrics for the success of therapeutic interventions), geroprotective drugs including preventative, upstream interventions in metabolism, and gene therapies, AI and Blockchain technologies for the processing and securing of medical patient and research data, further elaboration on the concept of the P3 clinic, regenerative medicine (i.e. the repair and restoration of tissues and organs, in this case aged tissues and organs), the importance of stem cells in achieving this repair, and prospective regulatory methods, which would provide the oversight necessary to inspire confidence in this fledgling industry.



Maintaining the “Health & Longevity” of the Longevity Industry

No realistic summary of the longevity industry and its future would be worthwhile without at some point identifying the best possible road ahead.

We recommend a much greater level of involvement of the geroscience community in the evaluation of these emerging biotechnologies and pharmaceuticals industry start-ups, in order to avoid the rapid growth of a Longevity Industry bubble and a resultant stigma on future longevity-related ventures formed after its collapse.

Since investment in the biotechnology and life science sectors require a greater deal of technical expertise than other sectors to successfully assess the viability and achievability of new ventures, the potential for big fails and an ensuing bubble are greater.

In the case of traditional venture startup industries, such as the IT sector, it is common to see a 90% failure rate. In the case of the BioTech industry, the failure rate for clinical trials is roughly 96%, and in the geroscience sector in particular, clinical trial failure rates approach 99% due to the complexity of the field, which will continue unless novel methods of assessment and due diligence are formulated and applied.

In a similar vein, there is greater potential for over-promising or over-hyped ventures to receive large investments in place of ventures that are more realistic, don't over-promise or over-hype their solutions. This trend also contributes to an economic climate that is more susceptible to growth rates beyond achievability and financial success, which, in turn, further exacerbates the potential for a bubble to form and burst.

A similar potential problem we foresee is the insufficient harmonization of funding throughout the sector. It would be unfortunate if several biomedical gerontology ventures were to pursue and receive a disproportionate amount of funding at the expense of other ventures with equally promising research. Furthermore, this scenario could be detrimental to the industry as a whole. The safest way forward is to hedge our collective bets to harmonize as best as we can the overall distribution of funding in order to minimise the risk of a few well-funded failed ventures poisoning the industry.



In particular, it is important to avoid allegations of cutting corners, which have dogged the industry on various past occasions, ranging from the death of Jesse Gelsinger, which brought about an FDA clampdown on human trials for a generation, to the false advertising scandals that blackened the name of the health technology company Theranos.

The best way forward in the face of this issue is to maximize the amount of due diligence applied by the geroscience community to emerging ventures, decrease the investment opportunities for over-hyped ventures and ventures that are not sufficiently backed by proven and verified science (e.g. basic science, preclinical results, etc.) and increase investment opportunities for ventures that are backed by solid science and solid preclinical results but refuse to over-hype, over-promise, or exploit currently trendy areas of research independent of an evaluation of the real scientific and clinical potential of their chosen research direction with respect to other existing and emerging research directions in biomedical gerontology.

An additional potential problem is the pursuit of research directions that have not been sufficiently evaluated in terms of safety in preclinical studies. This is another area of potential concern that would benefit from increased input and pre-implementation vetting by the larger geroscience community in order to decrease investment opportunities for clinical trials evaluating products and therapies that:

- (a) have not been sufficiently evaluated in terms of safety in the preclinical setting,
- (b) are aiming to proceed with overly-large scale Phase I clinical trials without verifying safety on a smaller human cohort first, or
- (c) that are based upon inherently risky therapeutic modalities.

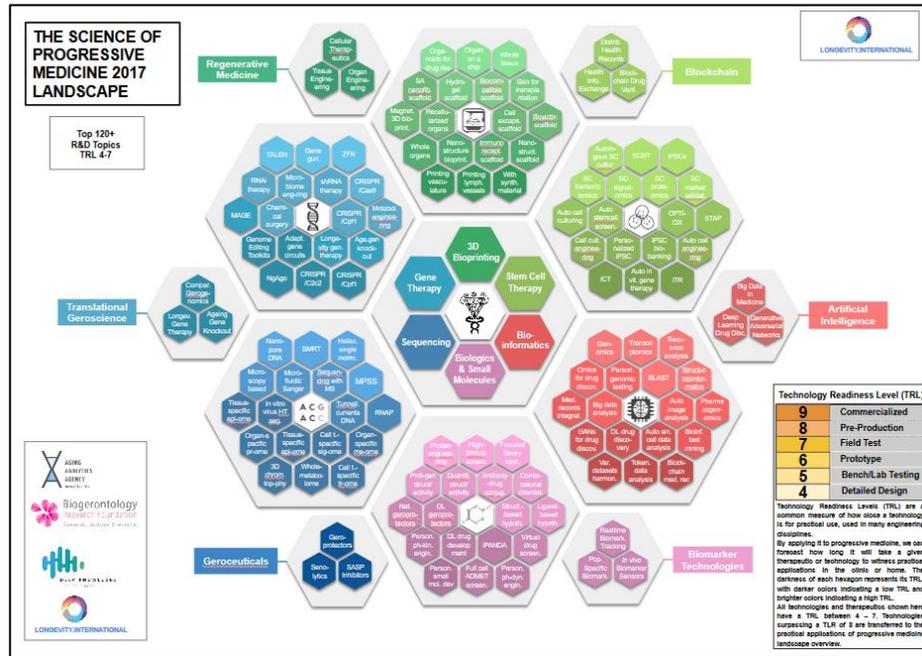
In light of these concerns, it is imperative that we consolidate the geroscience community and explore options relating to the formation of a suitable platform or framework developments in the industry. It is time for the geroscience community themselves, not just investors and politicians, to foster a Longevity industry with a clear view of the true opportunities and risks.

Longevity Industry Landscape Overview Volume II: The Business of Longevity

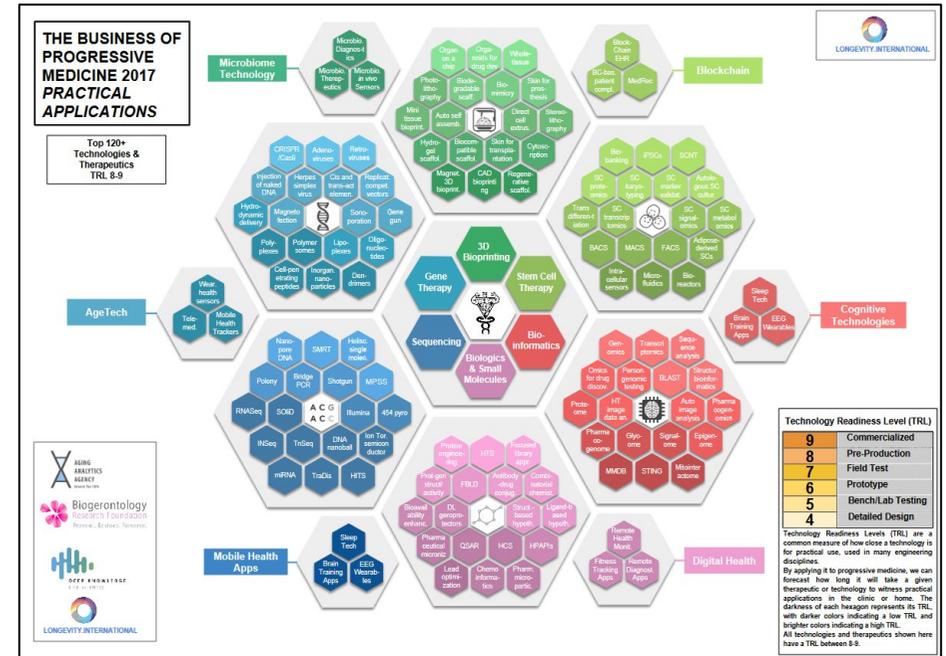
Framework for Assessing and Forecasting Emerging Technologies and Scientific R&D

Due to the multifaceted nature of geroscience, it's necessary to establish definitions for terms in the geroscience and longevity industries. It is also important to create a framework for establishing consensus in forecasting developments in P3 medicine, and to that end we have made use of mind maps featuring TRLs. We plan to establish workshops with members of the scientific and entrepreneurial communities to create case studies to develop TRLs to improve metrics and predictions.

The Science of Progressive Medicine TRL



The Business of Progressive Medicine TRL

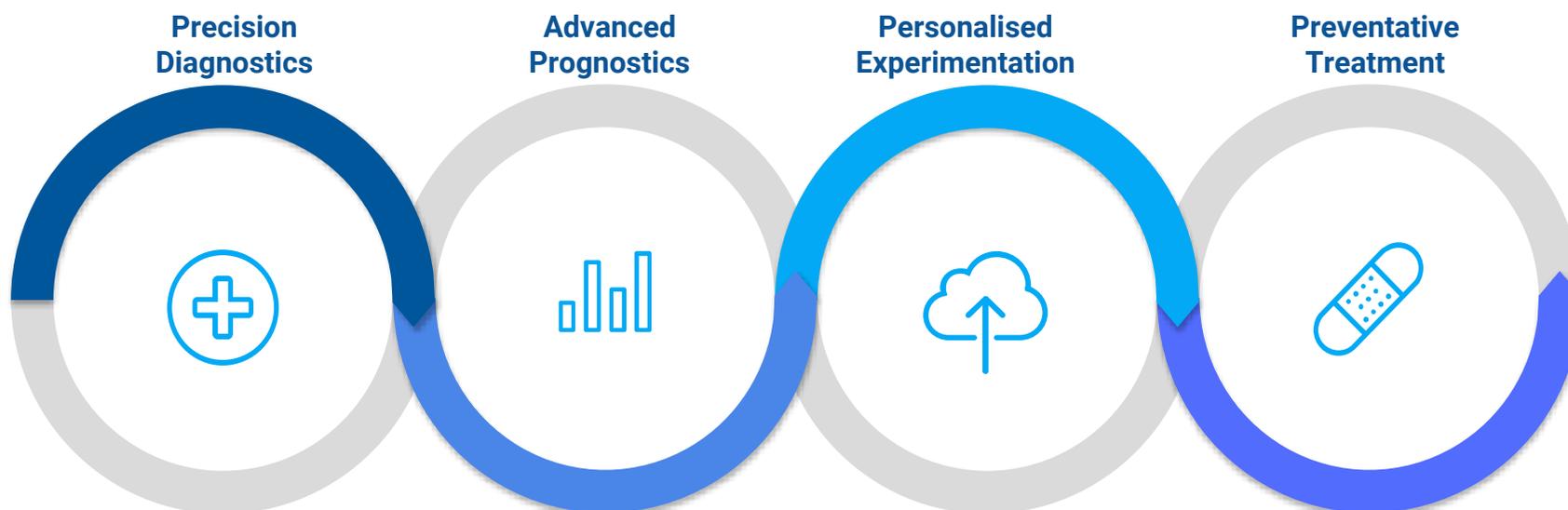


One major problem is the lack of a single consensus panel of biomarkers of aging. A consensus panel would encourage an acceleration of advances in drug discovery and preventive medicine, and at the same time provide tangible metrics for next generation P3 medicine clinics. We are confident that the exponential growth of technologies like wearables, mobile apps, diagnostic and prognostic services, coupled with the exponential growth in AI, will help create effective biomarkers of aging, promoting substantial growth of the Longevity industry in the next 3-5 years.

Longevity Industry Landscape Overview Volume II: The Business of Longevity

Chapter V covers the optimal P3 medicine clinic, which would combine geroscience, integrative health, digital medicine, precision medicine and 'personalised clinical trials' to address the root causes of ageing. The process of pipeline of P3 medicine clinic starts with advanced diagnostics (assembling of digital avatar, mathematical combination of all assembled parameters from different types of diagnostics – blood, tissue samples, genetics, urine) then analyzing multiple parameters, and obtaining the results. A group of doctors empowered by AI algorithms will create the most probable scenarios of detection of most pathologies and estimation of timeframes, and produce a list of recommended interventions (when and how they could potentially be applied). After having the list of possible interventions, the process of personalized experimentation can start, using a supersystem of high-frequency (close to real time) personalized experimentation, using in silico modelling (AI-based calculation and prediction of the possible outcomes of applying an exact geroprotector cocktail) and compare in vitro results with in silico results.

The most promising results will be checked in vitro (organoids from a specific member of the clinic, and then installed in mice, like "tumographs in mice for cancer"). So these would be tested in silico, then tested in transplanted organoids, then validated in the third stage using the skin of the specific person (this constitutes the next stage of bio-environment specificity that will be very close to the actual in vivo environment). Cells extracted from tissues should be placed in bioreactor to keep them for multiple further experiments (extraction could be done once a month from different tissues, e.g. 100 tissues once, and then have them expanded in vitro using bioreactors).



Establishing a Framework for the Longevity industry

At present, there is no consensus on which of the various technologies touched upon in these documents falls under the umbrella of 'gerontology', and the more clearly defined terms such as 'P3 medicine' have not been traditionally been associated with geroscience in general. We propose that they should be classified together, given their increasing relevance to extending healthy longevity. The 4 subdivisions of the industry that we propose are **Geroscience**, **P3 medicine**, **AgeTech** and **Novel Financial System**.

Geroscience (the science of aging) describes all areas of research and technology that directly recognize and address the issues of the ageing process. This includes both basic research into the biology of aging, as well as interventions designed to directly address the hallmarks of aging, and by virtue thereof the majority of chronic diseases that stem from the root causes of aging. **P3 medicine** describes the shift in medicine towards precision, personalisation and preventive rather than reactionary treatment. This report argues that it should be classified as cornerstone of the Longevity industry due to its focus on preventive treatment and maintenance of health via early diagnostics and the application of interventions as early as possible. **AgeTech** includes all non-biomedical technologies which help to preserve the quality of life, wellbeing and functional capacities of elderly demographics. While not traditionally considered as a part of the Longevity industry, this report argues that it is one of the industry's main four pillars because it can help preserve function and wellbeing up to the point where more advanced therapies reach practical application in the clinic. Chapter 7 of the report considers the creation of a **Novel Financial System** to simultaneously avoid economic stagnation in the face of demographic aging, while creating an infrastructure whereby governments and financial institutions can reap gains from maximizing not just population lifespan, but healthspan as well. Given the significant impact that societal ageing and Longevity have upon economies, pension funds and insurance companies have the potential to tie financial performance to quantitative measures of healthy longevity like HALY (health-adjusted life years) and QALY (quality-adjusted life years) in order to help economies thrive due to an increase in its citizens healthy longevity.

This report, the first of its kind, outlines the vast and multifarious Longevity industry, and formulates a preliminary foundation for classifying and systematizing the various strands of the industry into one coherent landscape, and establishing a standardized framework to unite the fragmented stakeholders of the industry, and to provide better tools and leverages for analyzing the vast and complex landscape of this emerging Longevity mega-industry.

GEROSCIENCE R&D

Rejuvenation
Biotechnology

Gene Therapy

Geroprotectors

Regenerative Medicine

Nutraceuticals

Basic Research on
Biology of Aging

P3 MEDICINE

Personalized Diagnostics

Personalized Biomarker
Analysis

Personalized Prognostics

Personalized in vivo & in
silico drug testing

Personalized QALY &
HALE Estimation

Preventive Therapies

AGETECH

Novel Retirement Plans

Cognitive Enhancement

FinTech for the Elderly

NextGen Mobile Apps for
the Elderly

Continuing Education

Entertainment for the
Elderly

NOVEL FINANCIAL SYSTEM

Longevity Index Fund

Longevity Hedge Fund

Longevity Stock
Exchange

AgeTech Bank

Longevity Derivatives

Longevity Trust



Longevity Industry in Israel

Longevity industry, profiling:

- 160 Longevity companies;
- 180 Longevity investors;
- 10 Longevity non-profit organizations;
- 60 Longevity influencers in Israel;
- 10 Longevity university labs and research labs;
- 10 Longevity conferences.



Longevity in Singapore

Longevity industry, profiling:

- 100 Longevity companies;
- 80 Longevity investors;
- 10 Longevity Non-Governmental organizations;
- 30 Longevity influencers in Singapore;
- 15 Longevity R&D centers;
- 15 Longevity conferences.



Longevity in UK

Longevity industry, profiling:

- 260 Longevity companies;
- 250 Longevity investors;
- 50 Longevity articles published by UK geroscientists;
- 50 Longevity books published by UK geroscientists;
- 25 Longevity scientific journals published by UK geroscientists;
- 50 Longevity non-profit organizations;
- 55 Longevity influencers in the UK;
- 25 Longevity university labs and research labs.

Introducing Longevity Industry in UK

This special regional case study follows-up on the content and general outline of the Longevity Industry made by our consortium in the previous Longevity Industry Landscape Overviews, including [Volume I “The Science of Longevity”](#), released in February of 2018, and [Volume II “The Business of Longevity”](#), published in April of 2018; i.e. by presenting a broad yet comprehensive Global Longevity Industry Landscape Overviews.

These ongoing analytical reports are part of a collaborative project by The Global Longevity Consortium, consisting of the Biogerontology Research Foundation, Deep Knowledge Life Sciences, Aging Analytics Agency and the Longevity.International platform.

While our aim is first and foremost to provide a comprehensive assessment of the Longevity Industry globally, we are also interested in producing regional case-studies that analyze the Longevity Industry in specific geographic locations, and consider where the United Kingdom fits into this picture.

Given our significant presence in the UK, and the substantial dynamic of development in geroscience and advanced biomedicine in the region, we decided that beginning with a regional case study in the United Kingdom in particular would be most appropriate, given our specific experience and expertise with regards to the industry players and trends located in England.

The “UK Longevity Industry Report” provides a specific landscape overview of the companies, investors, articles, books, nonprofits and influencers based in the UK.

The present report gives a brief history of geroscience in the UK, with a particular emphasis on developments in the past two decades which distinguish the region as a longevity-progressive country, culminating in a detailed description of the state of the industry in 2018, and identifies the present custodians of the industry's future. We then take a broader view of the key persons and developments in regenerative medicine, geroscience, precision medicine, and gene therapies.

Why the UK?

It is hoped that a closer look at this particular country may provide a clearer case study of how these possibilities will play out, by demonstrating how this particular nation's technological, political and economic strengths and weaknesses affect its prospects for maintaining a healthy and productive population. The UK will serve as the standard against which to compare other longevity-progressive regions, most of which have disadvantages compared to the UK, but some of which might have specific advantages in particular areas compared to the UK. *The specific characteristics that make a country 'longevity-progressive' are systematized, categorized and described in detail in Chapter VI of the Longevity Industry Landscape Overview Volume II: The Business of Longevity.*

How Does the United Kingdom Measure Up as a Longevity Progressive Country?

In this publication we examine how the United Kingdom in particular is equipped to weather its own incoming 'Silver Tsunami'. As a developed nation, the UK will be one of the first to have exponentially increasing levels of older people, as well as diminishing birth rates – leading to a lower support ratio.

The report is structured in order to introduce readers to the major trends and players in the industry via several infographic MindMaps, so that the reader can quickly ascertain the report's major analytical findings and conclusions. It provides a framework to better structure readers' understanding of the entire Longevity field. It then dives into greater detail in each successive chapter, focusing on specific areas of the Longevity industry in the UK.

- The executive summary charts the major trends in the UK longevity industry in recent years, and concludes that the UK is an excellent position to achieve a global leadership position in the Longevity industry, so long as it focuses on the optimal assembly of its existing resources. It also highlights one of the strongest conclusions to come out of this report: namely that the British government should focus on and prioritize the coordinated development of its AI, Financial and Longevity industries, not separately but in synergetic convergence.
- Chapter I gives a detailed overview of the UK longevity industry, major occurrences over recent years, and charts the landscape in depth in order to identify major trends and patterns.

Longevity Industry in UK Landscape Q4 2018

Companies - 260
Investors - 250
Non-Profits - 50
Research Centres - 25

Personalised
Medicine

AgeTech

Investors
Companies
Non-Profits

Research
Labs

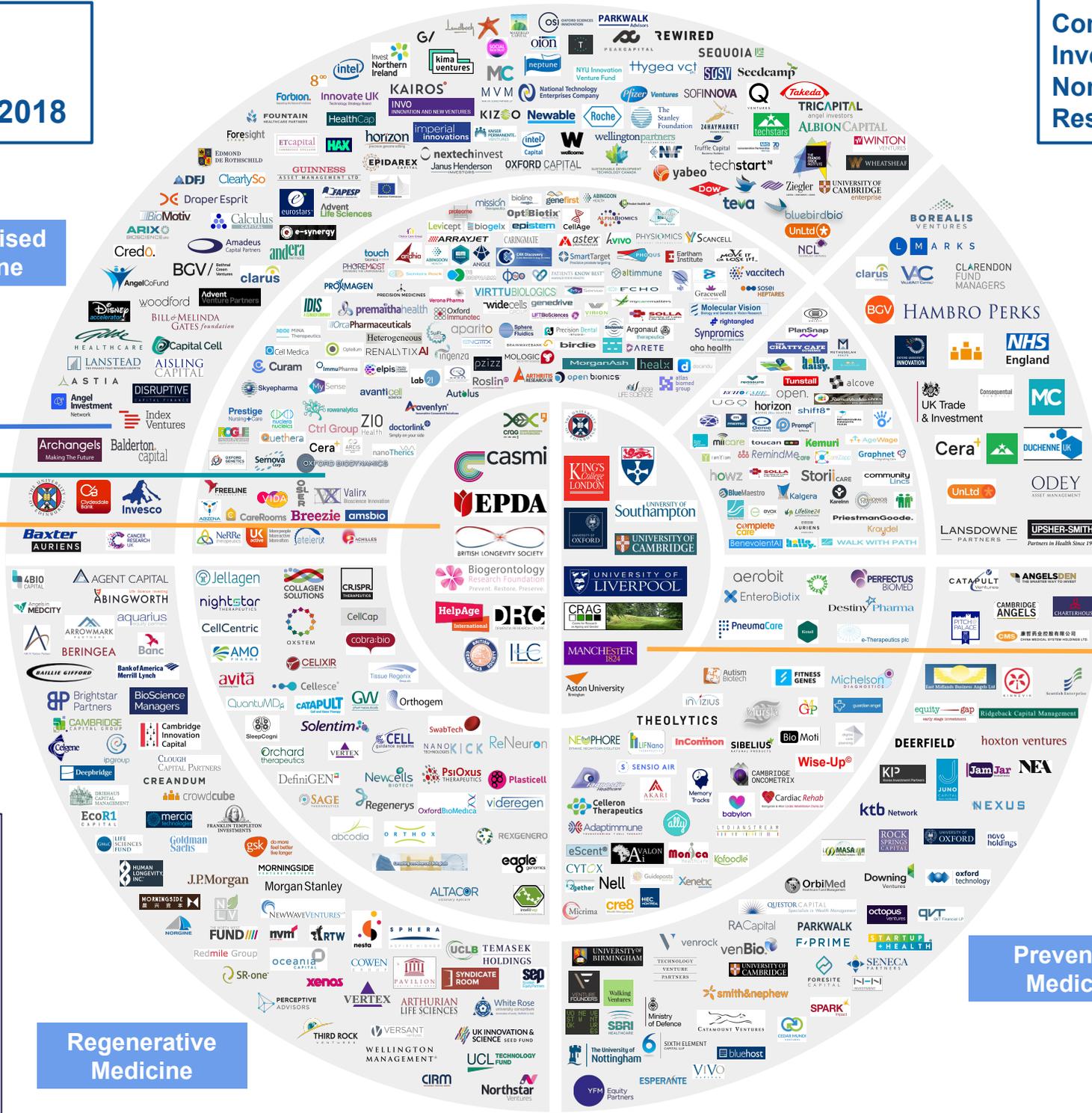
Preventive
Medicine

Regenerative
Medicine

AGING ANALYTICS AGENCY

DEEP KNOWLEDGE ANALYTICS

Longevity UK



Biogerontology
Research Foundation
Prevent. Restore. Preserve.

Books on Longevity Published in UK

The following table lists the books shown in the 'Books on Longevity Published in UK' section:

The Handbook of Aging and Cognition	Ageing in Asia	Blue Books of Neurology Series	Handbook of Parkinson's disease	Physiological basis of aging and geriatrics	Re-Aligning Feminist Thinking	The Cambridge handbook of age and ageing	Time of our lives: the science of human aging	Successful Aging
Human Senescence	The fountain of youth	Gender and Aging	Chromosomal instability and aging	Neurobiology of Alzheimer's disease	Geriatric Dermatology	Aging in a Changing Society	Neurodegenerative Diseases	Cognitive Aging: A Primer
Skin Disease in Old Age	Successful Aging	Controversial issues in Aging	Current Directions in Adulthood and Aging	Genes and aging	Understanding ageing	Understanding ageing and diversity		

Articles on Longevity Published by British Scientists

The following table lists the journal articles shown in the 'Articles on Longevity Published by British Scientists' section:

BCP	Journal of Internal Medicine	Journal of Gerontology	Journal of Neurology	Nature Reviews	Neuron	Journal of Neurochemistry
PNAS	The Lancet	PNAS	Nature	PNAS	Nature	Nature
Science	JAMA Ophthalmology	Neuron				

Articles on Longevity Published by British Scientists

The following table lists the journal articles shown in the second 'Articles on Longevity Published by British Scientists' section:

Journal of Neurochemistry	BCP	Journal of Internal Medicine	Journal of Gerontology	Journal of Neurology	Nature Reviews	Neuron	Journal of Neurochemistry
PNAS	The Lancet	PNAS	Nature	PNAS	Nature	Nature	
Science	JAMA Ophthalmology	Neuron					

UK Longevity Journals

The following table lists the journals shown in the 'UK Longevity Journals' section:

Ageing and Cognition	Age and Aging	Ageing & Society	Ageing & Mental Health	Ageing Health	Clinical Geriatrics	JAH
Ageing Horizons	Alzheimer's Research & Therapy	de	Educational Gerontology	Experimental Aging Research	Immunity & Aging	International Longevity Centre
Reviews in Clinical Gerontology	The Aging Male	The Journals of Gerontology: Series A	Molecular Neurobiology	Journal of Interpersonal Relationships	The Journals of Gerontology: Series B	Journal of Biological Gerontology

UK Longevity Non-Profit Organizations

The following table lists the organizations shown in the 'UK Longevity Non-Profit Organizations' section:

Age UK	Ageing Alliance	Alzheimer's Society	Alzheimer's Society	APPO	Association for Retirement & Ageing (ARA)	British Geriatrics Society (BGS)	British Longevity Society	BSRA	CRCAN
CASMI	Centre for Better Ageing	CHHP	CIPA	Centre for Research on Ageing (CRA)	Centre for Social Gerontology	Clinical Ageing Research Unit (CARU)	Cultural Health	Domestic Research Centre (DRC)	Alzheimer's Research UK
Friends of the Elderly	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network	Healthcare Research Network

Books on Longevity Published in UK

The following table lists the books shown in the 'Books on Longevity Published in UK' section:

The Telomere Effect	Ageing in World History	The Psychology of Control and Aging	Approaches to Dementia	Care-Giving in Dementia	Behavior, Health, and Aging	Ageing Populations in Psychological Perspectives	Gerontology and Genetics Collections	Perspectives on Human Memory and Cognitive Aging
The Roadmap to Old Age	Ageing and economic growth in the middle income range	Psychology of Aging	Representing aging, images and identities	Old age and disease in world modern medicine	An introduction to gerontology	Guide to the psychology of old age	The Roadmap to Old Age	
Social Gerontology	Emerging Aging and Longevity Research	Major issues in cognitive aging	Cognitive Neuroscience of Aging	Imaging the Aging Brain	Global handbook of old age psychiatry	Neurobiology of Aging and Dementia	Ageing and Diversity	

Why Israel?

Israel has seen a substantial rise in the maturity of its academic geroscience landscape (with at least one ageing research center or cluster either present or planned for every Israeli university), as well as a rapid increase in the size of its longevity industry. It is hoped that a closer look at this particular country may provide a clearer case study of how these possibilities will play out, by demonstrating how this particular nation's technological, political and economic strengths and weaknesses affect its prospects for maintaining a healthy and productive population.

The report is structured in order to introduce readers to the major trends and players in the industry via several infographic MindMaps, so that the reader can quickly ascertain the report's major analytical findings and conclusions. It provides a framework to better structure readers' understanding of the entire Longevity field. It then dives into greater detail in each successive chapter, focusing on specific areas of the Longevity industry in Israel.

- The executive summary charts the major trends in the Israeli longevity industry in recent years, and concludes that the Israeli is an excellent position to achieve a strong international position within the global Longevity industry landscape, so long as it focuses on the optimal assembly of its existing resources. It also highlights one of the strongest conclusions to come out of this report: namely that the Israeli government should continue its already-evident prioritization of its geroscience landscape and longevity industry assets.
- **Chapter I** gives a detailed overview of the current Israeli longevity industry, major occurrences over recent years, and charts the landscape in depth in order to identify major trends and patterns.
- **Chapter II** gives a detailed overview of the history of geroscience and the Longevity industry in Israel.
- **Chapter III** gives comprehensive coverage of the state of the Longevity industry in the Israel in 2018, and analyses the major roadblocks facing the industry, as well as what major trends and developments are likely to occur over the next several years.
- **Chapter IV** charts the near-term forecasts over the next several years resulting from our analysis, and aims to show where the nation is headed in the short-term future.
- **Chapter V** gives specific attention to the policy landscapes and the “politics of Longevity” forming in Israel, which is one of the most substantial ways in which the nation's government is taking a more progressive and proactive approach to the growth of both its geroscience sphere and its Longevity industry landscape than many other governments.
- **Chapter VI** presents the most relevant infographic mindmaps from our previous reports, in order to put the recent and current developments in the Israeli Longevity sphere in the larger context of the global Longevity industry.

The report concludes with a detailed appendix of profiles on the major entities and influencers making up the Israeli Longevity industry, profiling:

- 155 Longevity companies;
- 175 Longevity investors;
- 10 The top Longevity non-profit organizations;
- 50 Longevity influencers in Israel;
- 10 Longevity university labs and research labs.
- 5 Longevity conferences.

Israel's Proactive Stance on Digital Health and Preventive Medicine

Israel's proactive stance on the topic of Longevity reflects their progressive stance on many other related and convergent subjects as well. Israel's healthcare system is highly advanced compared to other regions of similar economic status. Furthermore, the Israeli healthcare system puts great emphasis on disease prevention, promoting healthy nutrition, early medical screening, and preventive medicine. As a result, public health in Israel has seen improvement over the past decade (with the incidence of heart attacks, for instance dropping by 50% in the past 10 years).

Much of the nation's technological prowess stems from taking a mature community of innovators and highly interdisciplinary approach to the problems it seeks to solve and the products it seeks to develop.

Israel has also made substantial efforts to develop its Digital Health industry. According to Startup Nation Central, the number of Israeli digital health startups increased from 65 in 2005 to almost 400 in 2016. And this rise of digital health shows no signs of stopping, with a 27% increase in investments in 2016 alone. The growth of Israel's digital health sector is boosted not only by its progressive and proactive technology company landscape, but by its government as well.

The Ministry of Health and Digital Israel recently announced the launch of a program that will connect medical providers and caregivers with each other via communications technologies in order to watch diagnoses and treatments being made and performed in different organisations in order to facilitate a kind of distributed, continuing education so as to help medical professionals stay abreast of the newest and best techniques available.

And the nation's proactive stance on Longevity has only intensified in the past year. In July of 2018, a landmark session of the Knesset Committee on Science and Technology was held, titled Strengthening the research and development for improving the quality of life and longevity and prevention of aging-related diseases, that was dedicated specifically to the topic of strengthening R&D for healthy longevity. The session featured leading Israeli scientists, as well as representatives of various Israel ministries.

Israel's High Healthcare Efficiency & Focus on Preventive, Personalised Medicine

Israel currently ranks fifth in the world for healthy longevity according to the United Nation's 2018 World Happiness Report. A recent article in National Geographic attributes this to lifestyle interventions like their Mediterranean-style diet and low alcohol consumption, to strong social, family and cultural values (which helps combat loneliness and detachment that is often seen in the elderly demographics of developed nations), and a strong healthcare system that puts great emphasis on personalised treatment and preventive medicine. Meanwhile, the nation currently ranks sixth in the world for healthcare efficiency according to Bloomberg's annual Healthcare Efficiency Index climbing up one place since last year. The index arrives at its ranking by taking a weighted average of life expectancy (60%), national per capita healthcare spending as a proportion of overall GDP (30%), and per capita spending on health in dollars (10%). However, experts are concerned that declining public spending on healthcare put the country's future capacity to keep its sixth-place position in doubt.

Interestingly, Israel ranks high despite the fact that it only spends 7.3% of GDP on public health, which is below the OECD average of 9%. The UK, for instance, spends 16.8% of GDP on public health, and yet ranks quite low, holding the 35th position globally, due to its low life expectancy of 79 years. This would suggest that Israel is using the funds it allocated to public health in a highly effective, efficient and proactive manner, getting a greater bang for their buck than countries that spend nearly double in terms of % GDP on public health. Nonetheless, public spending on health in Israel is declining (currently at 63%), while private spending is increasing (currently at 36%). Deficits in public health infrastructure and personnel are forcing people to rely increasingly on private medical spending, which serves to widen the gap between the wealthy and the poor, and is likely to undermine the country's overall public health in the years to come. The Israeli government needs to refocus efforts on public health in order to keep its country's overall health from slipping. By focusing, as it has done in the past, on personalised and preventive healthcare tactics, and on a greater emphasis on the maintenance and extension of healthy longevity, it has the power to maintain its current ranking and even surpass it. The possibility is there, and it is merely the will and commitment of the government that needs to be in place to make that goal a tangible reality.

Longevity Industry in Israel Landscape

Companies - 160
 Investors - 180
 Non-Profits - 10
 R&D Centers - 10

Investors
 Companies
 Non-Profits

AGING ANALYTICS AGENCY

ISRAELI LONGEVITY ALLIANCE
 דו"ק - התנועה לאיכות ואריכות חיים (נ"י)
 Vetek (Seniority) - the Movement for Longevity and Quality of Life

DEEP KNOWLEDGE ANALYTICS

Personalized Medicine



Progressive Wellness

R&D Centers

Preventive Medicine

Regenerative Medicine



Longevity Industry in Israel 2018 - 160 COMPANIES



AGING ANALYTICS AGENCY



Drug Development

Progressive wellness

Gene therapies

AgeTech

Neurotech

Others

Progressive R&D

Implant & Prosthetics

Cell therapy

Diagnostic

Singaporean Healthy Life Expectancy Lags Behind Life Expectancy

In a 2017 article for StraitsTimes, Dr. Brian Kennedy, former CEO of the Buck Institute for Research on Aging and the new Director of the Centre for Healthy Ageing at the National University Health System (NUHS) noted that while Singaporean life expectancy continues to rise, the nation's healthy life expectancy is lagging behind, citing a 2012 global study which reported that Singaporeans' lifespans grew by 5.4 for females and six years for males from 1990 to 2010, while their health spans only grew by 3.4 and 4.1 years during that same timespan. Kennedy noted that the combination of Singapore's ageing population and the Government's progressive approach to be a global leader in healthcare efficiency sets the country up for taking the lead in human ageing studies globally.

The new Centre for Healthy Ageing's short-term plans to put this commitment into action include research into delaying ageing through behavioural and lifestyle interventions like exercise and fasting, as well as through the use of drugs, performing studies to determine whether healthspan-extending interventions have similar outcomes across different population demographics and ethnicities, and a collaboration with the Institute for Ageing Research at the Albert Einstein College of Medicine in the US to determine whether the common diabetes drug metformin can extend human healthspan.

The need for an increased Government commitment to prioritizing healthspan extension research is all the more pressing given that nearly 25 percent of Singapore's population will be over the age of 65 by the year 2030. A recent report by Marsh and McLennan Asia-Pacific Risk Centre entitled "Elderly health costs to rise tenfold by 2030: Report" estimated that annual elderly healthcare costs will rise 10x per capita by 2030, reaching nearly S\$52,000 (US\$38,000) per capita.

Singapore has already proven its progressive stance on the problem of demographic ageing through other initiatives, like implementing changes in social policy to increase quality of life for its elderly demographic, such as increased healthcare access, promotion of intergenerational bonding, as well as post-secondary education, but such social initiatives are not enough. The Singaporean Government needs to cement its commitment to fund research into the clinical validation and translation of healthspan-extending interventions. And, indeed, as noted in a recent Straits Times article, *"By emphasising preclinical and clinical studies to slow ageing, Singapore can take the lead in combating the medical crisis of this century."*

Sources:

[1 straitstimes.com](#)

[2 straitstimes.com](#)



Retirement Security in Singapore

This year Singapore was ranked 28th globally and 3rd in Asia (behind Japan and South Korea) for the strength of their retirement security according to the Natixis Investment Managers' Global Retirement Index. The index ranks countries according to 18 different performance indicators that cover key aspects of retirement security including the material means to live comfortably; access to quality financial services to help preserve savings value and maximise income; access to quality health services; and a clean and safe environment.

Singapore ranked very high compared to the other 42 countries surveyed in the retirement financing sub-index (ranking second after New Zealand). While they held the top spot in the previous year's report, they slipped to second place due to lower scores in the areas of government indebtedness, bank non-performing loans, old-age dependency and governance.

The report also highlighted areas in which there is room for improvement for the nation, such as the fact that a large portion of healthcare expenditure is not covered by insurance, despite the fact that the nation has the seventh-highest life expectancy of all the countries ranked in the report.

Furthermore, recent survey titled "Ready for 100? Preparing for longevity in Singapore" conducted by the international research firm Economist Intelligence Unit (EIU) and insurer Prudential reported that the majority of the 1,214 Singaporean residents surveyed expected to still be working by the age of 62 (the standard retirement age in Singapore).

The report argues that this is for the most part a result of the nation's increasing life expectancy (83.1 years, which is the third longest in the world behind Japan and Switzerland). 75% of respondents indicated that they are not financially prepared to live to 100 years of age.

The Singapore Government's National Population and Talent Division indicates that the number of citizens living to 100 years of age is increasing, up to 1,100 in 2015 compared to just 50 in 1950.

Sources:

[1 straitstimes.com](#)

[2 straitstimes.com](#)

Longevity Industry in Singapore Landscape

Personalized Medicine

Companies - 100
Investors - 80
Non-governmental organisations - 10
Research Centres - 15

AgeTech

Progressive clinics

Research Labs

Preventive Medicine

Progressive wellness

Regenerative Medicine

Companies

Investors

Non-Profits

AGING ANALYTICS AGENCY

DEEP KNOWLEDGE ANALYTICS

LONGEVITY INTERNATIONAL



Drug Discovery

AgeTech

Other

100 Companies

Progressive Wellness

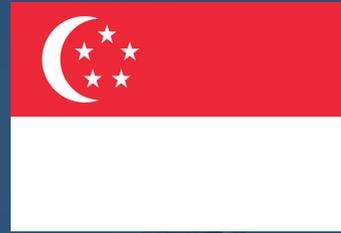
Longevity Industry in Singapore

Stem cells/ Regenerative

Progressive Clinics

Neurological

Diagnostics



Chapter V: Media and Conferences

15 Conferences 2017-2019

NAME	DATE	WEBSITE
3rd International Conference on Biomedical Signal and Bioinformatics	16 - 18 November 2018	icbsb.org
4th International Conference on Advances in Biology and Chemistry (ICABC 2017)	21 - 23 August 2017	icabc.org
Single Cells: Technology to Biology	24 - 26 February 2019	cell-symposia.com
RNA Biology Symposium 2018 in Singapore	13 - 14 September 2018	rnasociety.org
Molecular mechanisms of developmental and regenerative biology	11 - 13 November 2018	meetings.embo.org
First International Conference on Biometrics Science and Engineering	4 - 6 August 2017	icbse.org
The Longevity Summit	27 September 2018	events.economist.com
Ageing and Resilience in the 21st Century	11 - 13 October 2017	webapps.duke-nus.edu.sg
Biologics and Biosimilars Congress: Asia	27 - 28 November 2018	global-engage.com
International Conference on Medical and Biosciences	20 - 21 December 2018	researchworld.org
International Conference on Food Microbiology and Food Safety	2 - 3 January 2019	theires.org
International Conference on Medical, Biological and Pharmaceutical Sciences	20 - 21 April 2019	iastem.org
20th International Conference on Genetics and Genomic	10 - 11 September 2018	waset.org
Ageing, Longevity and Health – New Frontiers and Perspectives	17 October 2018	webapps.duke-nus.edu.sg
5th NUS Academic Psychiatry Conference 2019	21 - 22 January 2019	nusmedicine.nus.edu.sg



Singapore's Longevity Conference & Media Landscape: Introduction

Singapore's Longevity conference landscape is characterised by a select few conferences that put the topic at the core of their agenda, and which treat the topic in a serious and actionable way. A hallmark example of this is The Economist's September 2018 conference "The Longevity Summit: Is Asia Ready for 100?", which serves as not only the most Longevity-focused conference to be held in Singapore, but also one by one of the world's leading business media brands, renowned internationally for its caution and conservatism (which is also why this specific conference in particular is given additional coverage in the present chapter).

The rest of the conferences making up the landscape consist of fields and topics that are tangentially related to the science, business and socio-economics of Longevity. Take, for example, the "Single Cells" Technology to Biology" symposium held by Cell in partnership with the Genome Institute of Singapore, which highlights multi-omic single cell analyses that can be used in pursuit of strengthening Singapore's personalised medicine landscape, and which states in its conference agenda synopsis that "the application of this knowledge for precision medicine is also not far from reality, as one can easily imagine a time when a standard blood test or biopsy will include single-cell profiling to aid in diagnosis or to monitor treatment." As we have discussed in this and our previous reports, the fields of Longevity and personalized medicine are synergetic and convergent, with personalised as well as preventive medicine being considered rightfully as a niche of the broader Longevity sphere.

As another example, take the "Molecular mechanisms of developmental and regenerative biology" workshop held by EMBO in partnership with the Stem Cell Society of Singapore. While not strictly or explicitly about the topic of Longevity per se, many prospective healthspan-extending medicines use the fields of cell therapies and regenerative medicine as their foundations.

Thus, while the number of Longevity Conferences held in Singapore is still small, those conferences that are being held are being hosted by some of the world's leading media brands, which we hope will make great strides in terms of making Singaporean policy makers, regulators and governmental representatives take note of the importance and, more crucially, the increasing acceptance of the topic of Longevity in the eyes of Singapore's media brands.



Singapore's Longevity Media & Conference Landscape: Main Trends

Some of the most prominent themes covered by Longevity-focused conferences in Singapore – especially those explicitly focused on the issues of the emerging Longevity industry and the challenge of an ageing population, include:

- The progressive policy proposals and initiatives put forward by the Singaporean government in order to proactively and preventatively increase quality of life and overall functionality of citizens aged 65 and over, and reduce the oncoming economic burden posed by an ageing population
- How the objectives of the government, industry and individuals themselves are converging upon a set of shared aims with regards to increasing healthy Longevity in Singapore
- How other countries can learn from and adopt many of the progressive policies being adopted in Singapore in relation to Longevity and Ageing
- How ongoing advancements in biomedicine are gradually pushing healthcare in the direction of preventive medicine and personalised medicine
- How various fields of progressive biomedicine, such as cell therapies and regenerative medicine, can serve as scaffolds of progress for the emerging Longevity industry, which can leverage advancements in other areas of biomedicine not necessarily directly related to Longevity in order to boost the industry's own dynamic of development

Landmark 2018 Economist Business of Longevity Conference Held in Singapore

In July of 2018 The Economist held its second-annual Business of Longevity Conference in Singapore, bringing together Singaporean and international stakeholders from the spheres of government, policy, NGOs and biotech in order to discuss the topic of Longevity and its impact on the Singaporean economy and populace. This marked the most important conference on the topic of Longevity ever to have been held in Singapore to date.

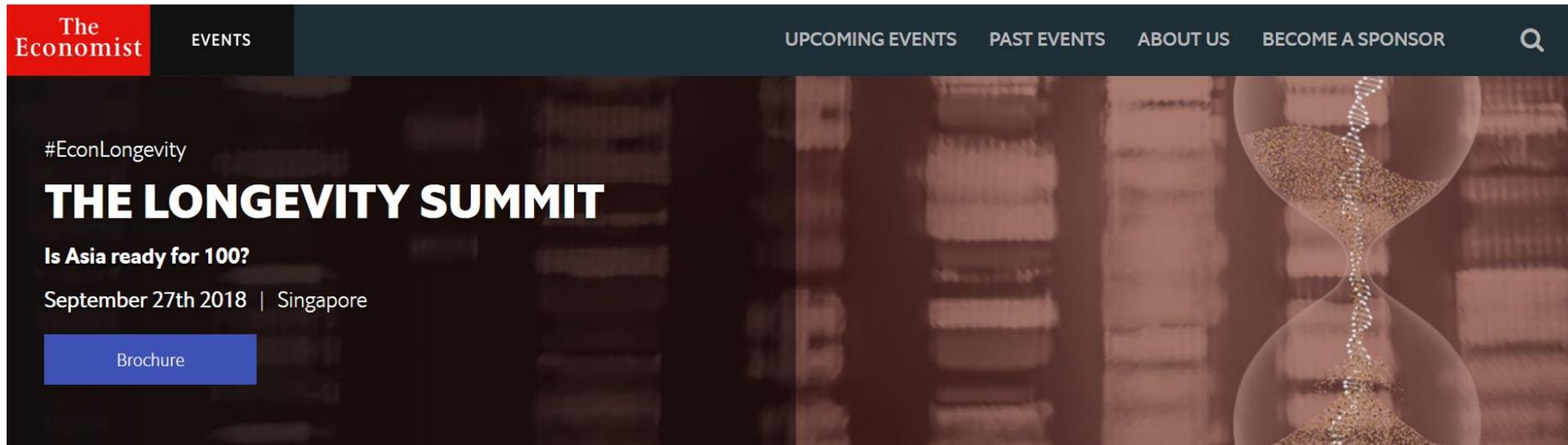
“Asian countries like Japan, Singapore, South Korea and China are facing a demographic crisis. The aged are starting to dramatically outnumber the young, an issue that affects every aspect of society. Businesses are struggling to adapt to the changing nature of their workforces, and health care systems are coming under increasing financial strain. While governments are acting – Singapore has signaled a rise in GST tax and Japan is investing in pension reform and productivity improvements – they may not be doing enough to prepare their societies for the reality of living to one hundred. How can ageing societies get ready for extended life expectancy? And what are the opportunities for those investing in the ‘silver economy’?”

“In 2017, for the first time, *The Economist* brought together Asian business leaders, political decision-makers and health-care entrepreneurs to discuss how to make longevity a source of healthy innovation. At the **Longevity Summit 2018**, *The Economist* will build on this momentum to foster thinking on the topic of “living to 100”.”

The event sought answer the following key questions:

- How are the interests of individuals, governments and businesses aligning around longevity?
- Can developing countries establish ‘ageing in place’ infrastructure and community care rather than expensive inpatient hospital systems?
- How can companies incorporate longevity into their operations?
- What can other countries learn from the policies and ideas already being implemented to ease the burden of ageing around the region?
- What’s stopping longevity-enthusiasts and entrepreneurs from successfully executing on their business strategies?

Key Agenda Points from The Economist's 2018 Business of Longevity Conference



The screenshot shows the event page for 'THE LONGEVITY SUMMIT' on The Economist's website. The page features a dark background with a large image of an hourglass on the right. The text on the left includes the hashtag #EconLongevity, the event title 'THE LONGEVITY SUMMIT', the subtitle 'Is Asia ready for 100?', the date 'September 27th 2018 | Singapore', and a blue button labeled 'Brochure'. The navigation bar at the top includes 'The Economist' logo, 'EVENTS', and links for 'UPCOMING EVENTS', 'PAST EVENTS', 'ABOUT US', and 'BECOME A SPONSOR'.

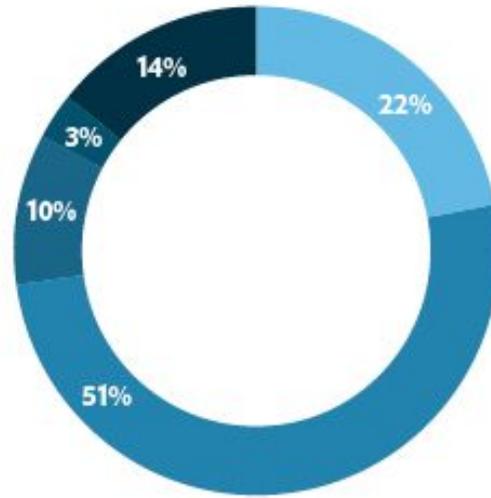
“The world’s over-60 population is already nearing a billion – and it’s still growing. Low fertility rates and increasing life expectancy have the United Nations predicting that by 2050 there will be 2.1 billion of these older people, and around half of them will live in Asia. Longevity is a polarising issue. Optimists enthuse about advances in biotechnology and the market power of a silver economy; doomsayers fear skyrocketing health-care costs and inadequate workforces. A more plausible, middle position is to see the challenges associated with an ageing population as inextricably linked with their solutions. Governments and businesses need healthy populations to sustain demand, productivity and growth. And as people age, they want to stay healthy, engaged and purposeful. Happily, these are complementary demands. But across Asia, progress in meeting the challenges of ageing has been patchy. Japan and Singapore have made great strides in helping their populations cope with longevity. Hong Kong, Taiwan and Korea are catching up by embracing new ideas and policy solutions. Philippines, Vietnam and Malaysia enjoy demographic buoyancy, with younger populations for the moment, but in the coming decades they will face the same pressures as their greying neighbours. What lessons can Asia’s longevity leaders share when it comes to engaging the over-60 population in the economy and society? Can the longevity dividend offset the costs of increased demand for health care and social services?”

Sources:

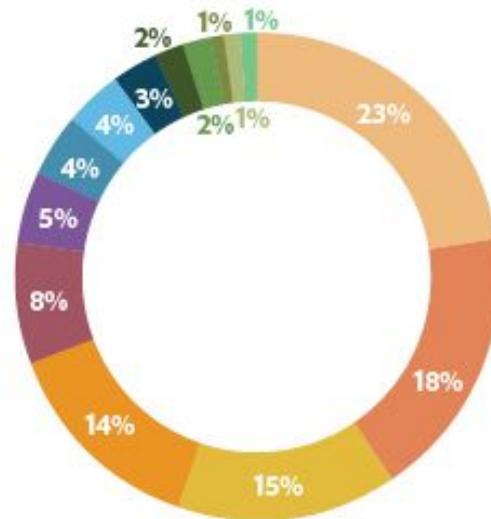
events.economist.com

Audience Profile for Economist's 2017 Business of Longevity Conference

Audience profile of The Business of Longevity 2017



- 22% Chairman/President/C-level Management/ Chief Representative
- 51% Vice-President/Director/ Head/Managing Director
- 10% Advisor/Consultant/ Economist/Specialist
- 3% Professor/Dean
- 14% Manager



- 23% Healthcare
- 18% Financial services/ Insurance
- 15% Chemicals/ Pharmaceuticals
- 14% NGO
- 8% Academic/Institute/Think tank
- 5% Advertising/ PR Agencies
- 4% Engineering/ Manufacturing
- 4% Consultants/Legal
- 3% Local Government/ Government Agencies
- 2% Chamber of Commerce/ Trade Associations
- 2% Media
- 1% Computers/ IT/Electronics/ Electrical Equipment/ Telecommunications
- 1% Construction/Building Materials/Real Estates
- 1% Aerospace/Automotive/ Airlines/Shipping

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Stay updated with our WhatsApp/ Telegram service. Send JOIN to 93276484 on WhatsApp, or 94806129 on Telegram.

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TODAY
THURSDAY 20 DECEMBER 2018

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Singapore World Big Read Opinion Visuals Brand Spotlight 8 DAYS

Singaporeans living longer, but need to shorten years spent in ill health

By VALERIE KOH



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We set you thinking
TODAY
THURSDAY 20 DECEMBER 2018

Cut through the clutter.
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Singapore World Big Read Opinion Visuals Brand Spotlight 8 DAYS

Average lifespan of S'poreans in 2040 will be 85.4 years, third longest globally: Study



TODAY is a Singapore English-language digital news provider. It is the second-most-read English-language newspaper in Singapore. Readership is 730,000 according to the Nielsen Media Index Report 2012.

TODAY online in September 2017: *“Singaporeans are living longer but there is one segment of their lives that health experts and the authorities want to shorten – their years spent in ill health. The average of eight years, out of a total of 82, that Singaporeans spend in ill health was put in sharp focus by Prime Minister Lee Hsien Loong during the National Day Rally.”*

Sources:

1 todayonline.com

2 todayonline.com

THE STRAITS TIMES



Low-carb diet linked to shorter lifespan: Study



The Straits Times is an English-language daily broadsheet newspaper based in Singapore. A free section, featuring a selection of news stories, is currently available at the site. Regular podcast, vodcast and twice-daily – midday and evening updates – radio-news bulletins are also available for free online.

The Straits Times in August 2018: *“Dr Seidelmann and her team found that replacing meat with plant-based fats, such as avocados and nuts, and proteins, such as soya products and lentils, reduces the risk of mortality.”*

Sources:

1 [straitstimes.com](https://www.straitstimes.com)

2 [straitstimes.com](https://www.straitstimes.com)

THE STRAITS TIMES



PREMIUM

No magic solution for longevity



Galapagos giant tortoise gene study hints at longevity secrets

TUE, DEC 04, 2018 - 10:22 AM



Galapagos giant tortoises possess genetic variants linked to DNA repair, immune response and cancer suppression – providing clues into their longevity, according to a study published Monday. AFP

S'pore's wealthy expect to live to 100, but worry if wealth will last

THU, APR 19, 2018 - 8:06 PM

GENEVIEVE CUA ✉ gen@sph.com.sg 🐦 @GenCuaBT

CLOSE to half of Singapore's millionaires expect to live to 100, and this is driving significant changes to their spending, investing and legacy behaviour, a study by UBS has found.

UBS Investor Watch Research has found that 46 per cent of those polled in Singapore expect to live to 100, compared to 53 per cent globally.

The expectation of a long life is creating anxiety, however, as 42 per cent worry that their wealth will not support them till age 100. Of these, 66 per cent worry about the rising costs of healthcare, and 63 per cent worry about whether they can afford their current lifestyle in retirement.

In Asia, 45 per cent worry about their wealth lasting till 100, compared to 21 per cent in Europe.

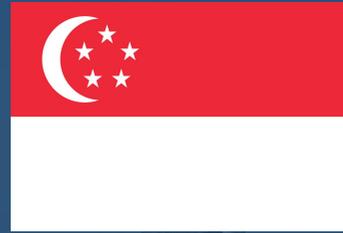
The Business Times is an English-language financial daily based in Singapore. It is currently the only daily newspaper in Singapore that focuses on business and financial news.

The Business Times in December 2018: *"A team of international researchers sequenced the genomes of two Galapagos giant tortoises. According to the study published in the journal Nature Ecology & Evolution, the researchers detected "lineage-specific variants affecting DNA repair genes, inflammatory mediators and genes related to cancer development".*

Sources:

1 [businesstimes.com.sg](https://www.businesstimes.com.sg)

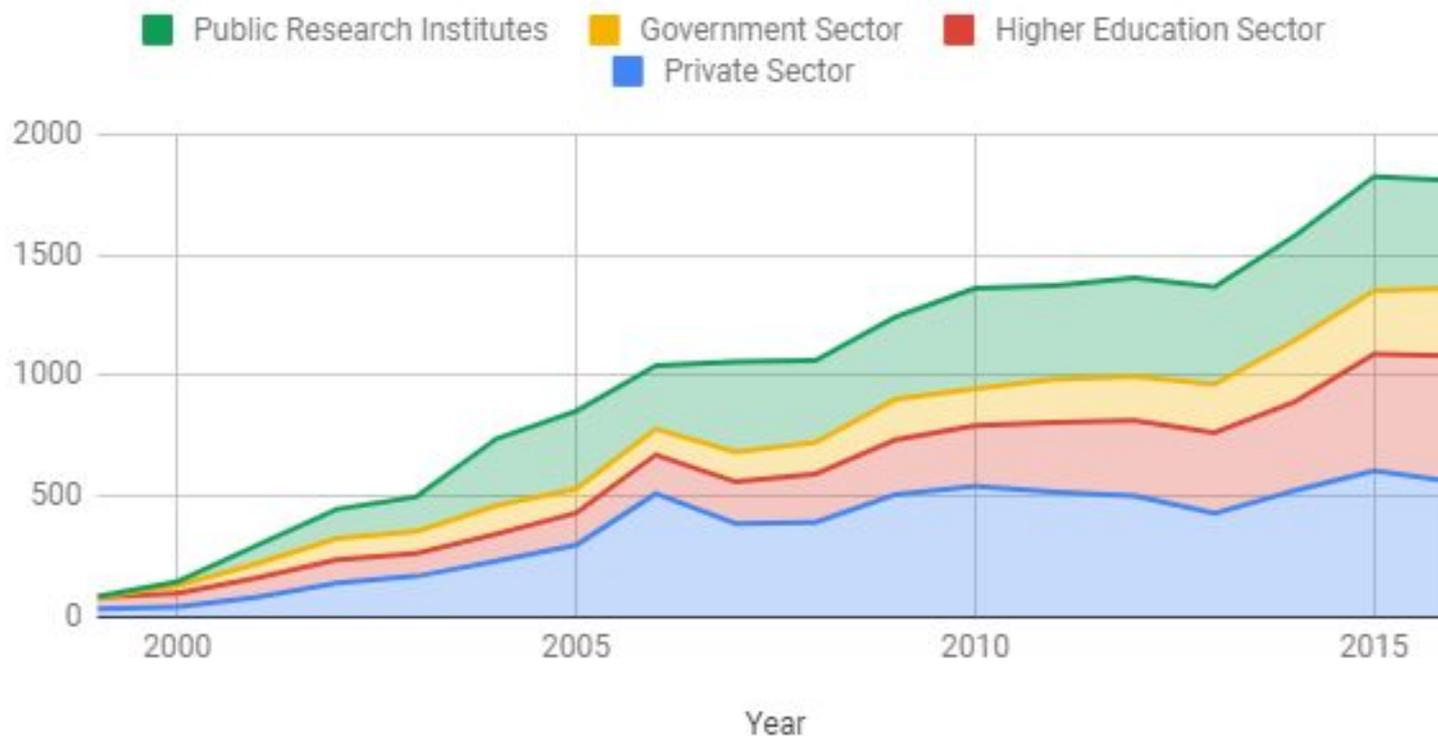
2 [businesstimes.com.sg](https://www.businesstimes.com.sg)



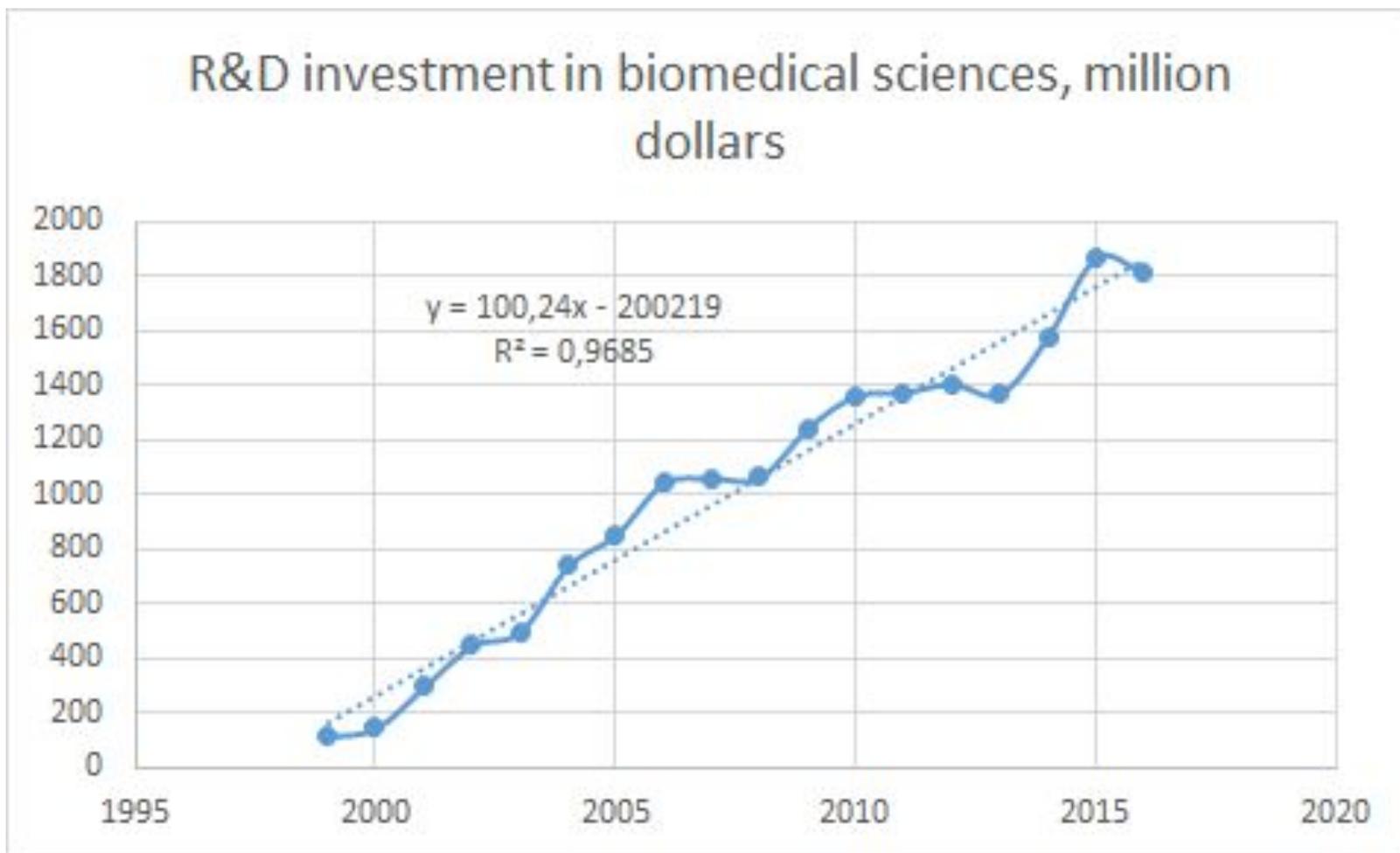
Chapter VI: Economics of Longevity



Research and Development in biomedical sciences, million dollars



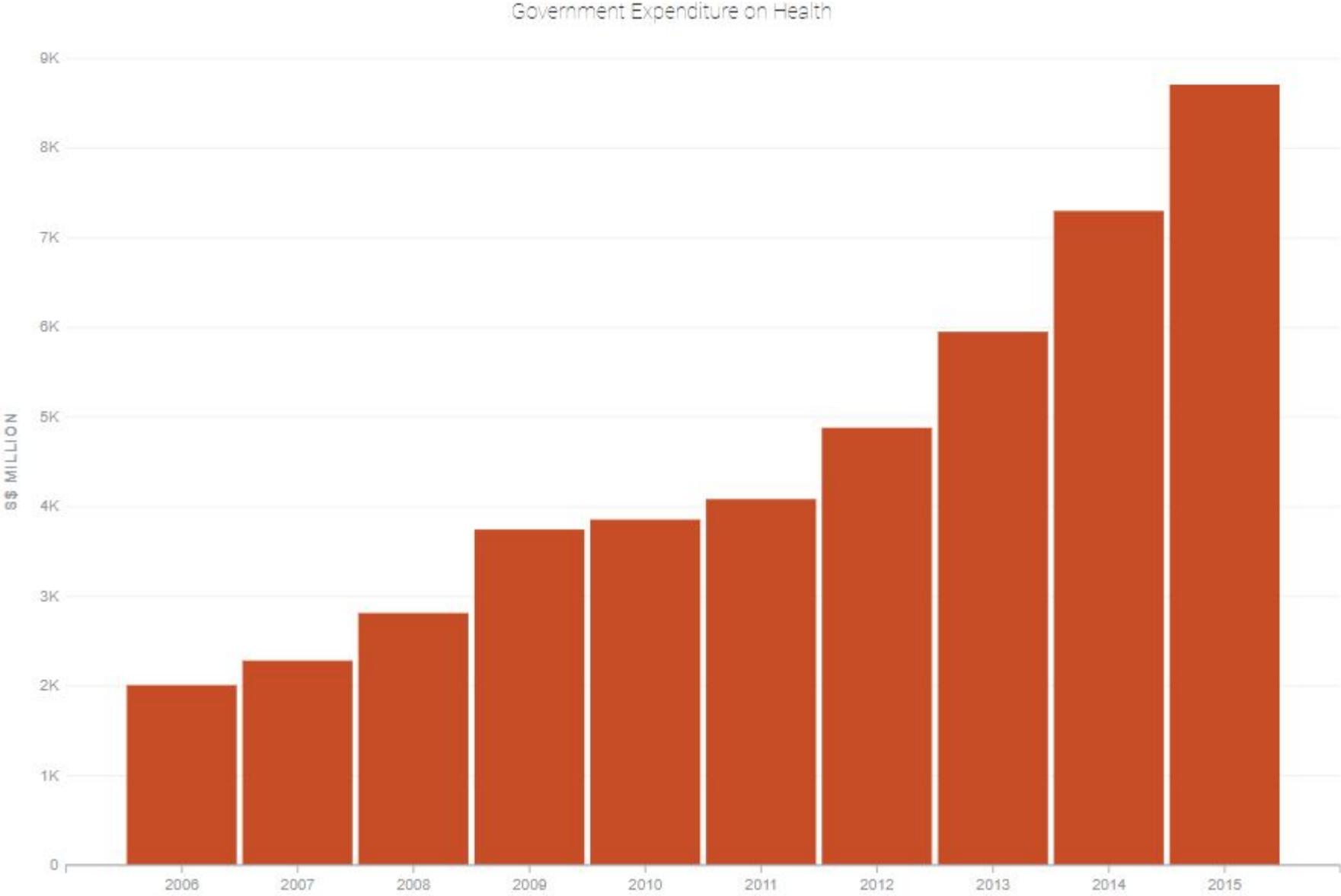
Investment in biomedical R&D in Singapore is heavily supported by all sectors. The most essential role is played by the private sector. But for the last 3 years its share is not growing. The higher education sector is increasing its impact and may soon become the main investor in biomedical R&D. About 20% of R&D in Singapore goes to biomedical research. The total share of biomedical research funding is also increasing in the long term.



R&D volume in the industry is constantly and relatively steadily increasing. For the period 2011 to 2015, the Singapore government has committed a total of S\$16.1 billion on R&D expenditures. Singapore has already various ageing-related research initiatives, many of which involve multiple research players including A*STAR, NUHS, and other universities and hospitals.



Government expenditure on health



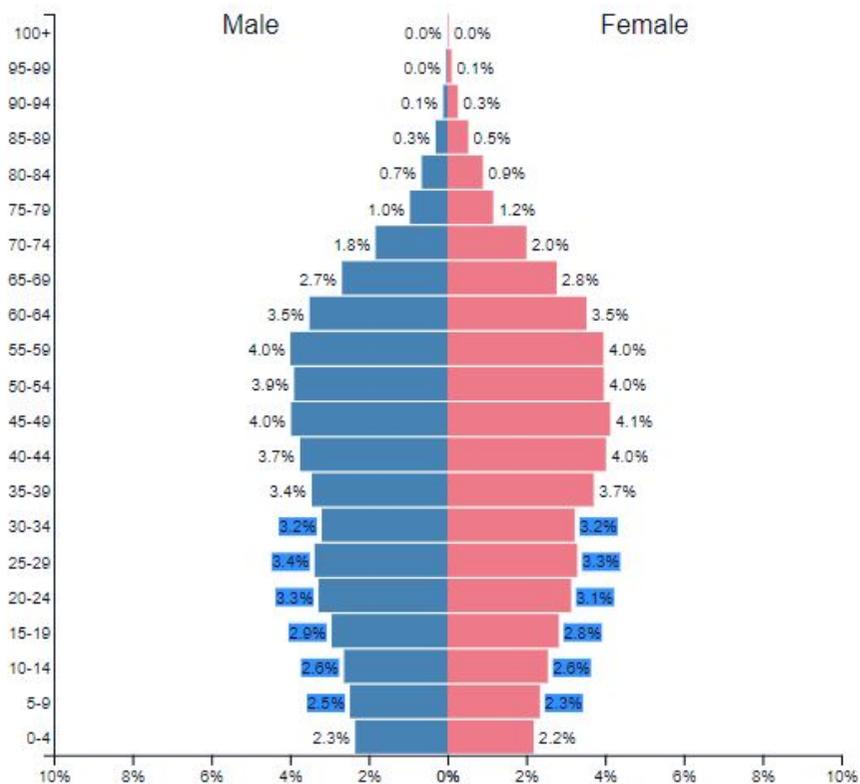
Sources:

data.gov.sg

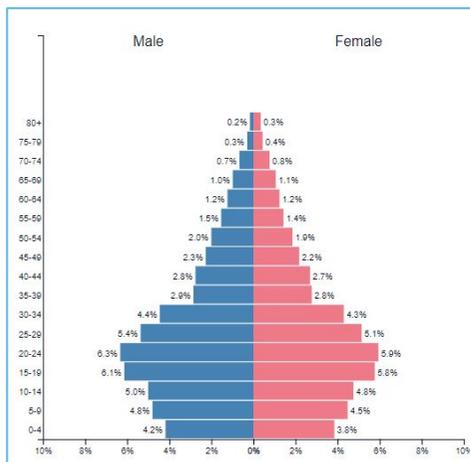


Current population pyramid (2019)

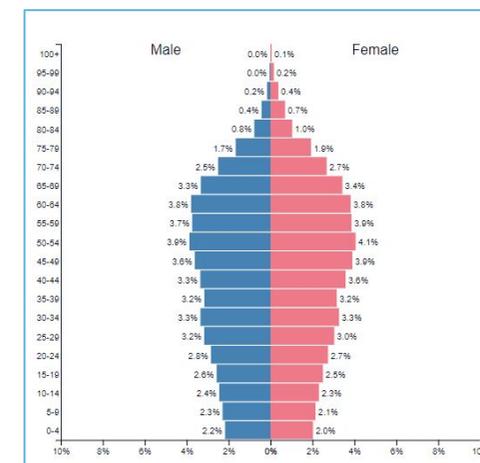
By 2030, the population of Singapore will have reached **6 million**, an increase of 10% from 2015. Population growth in Singapore has been falling since the 1990s, and this will continue up to 2030 due to its falling birth rate and falling net migration.



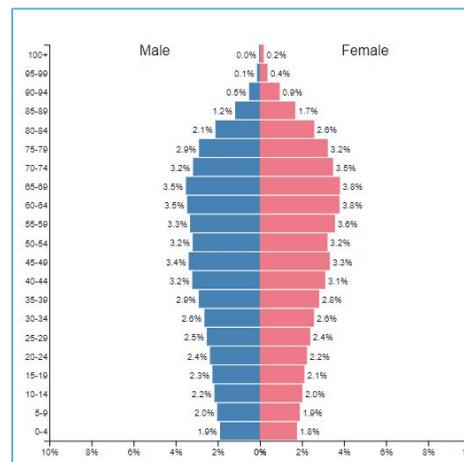
1980



2020

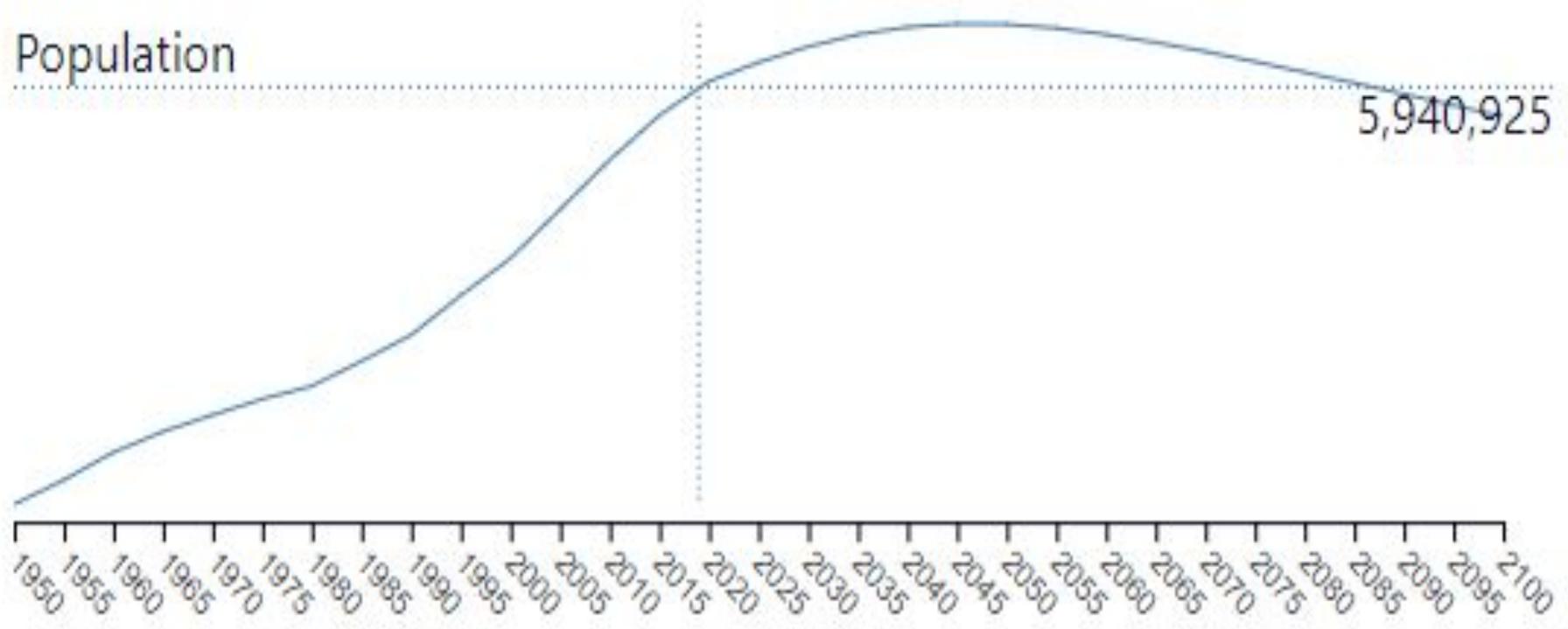


2040





Population pyramids in Singapore: past and future

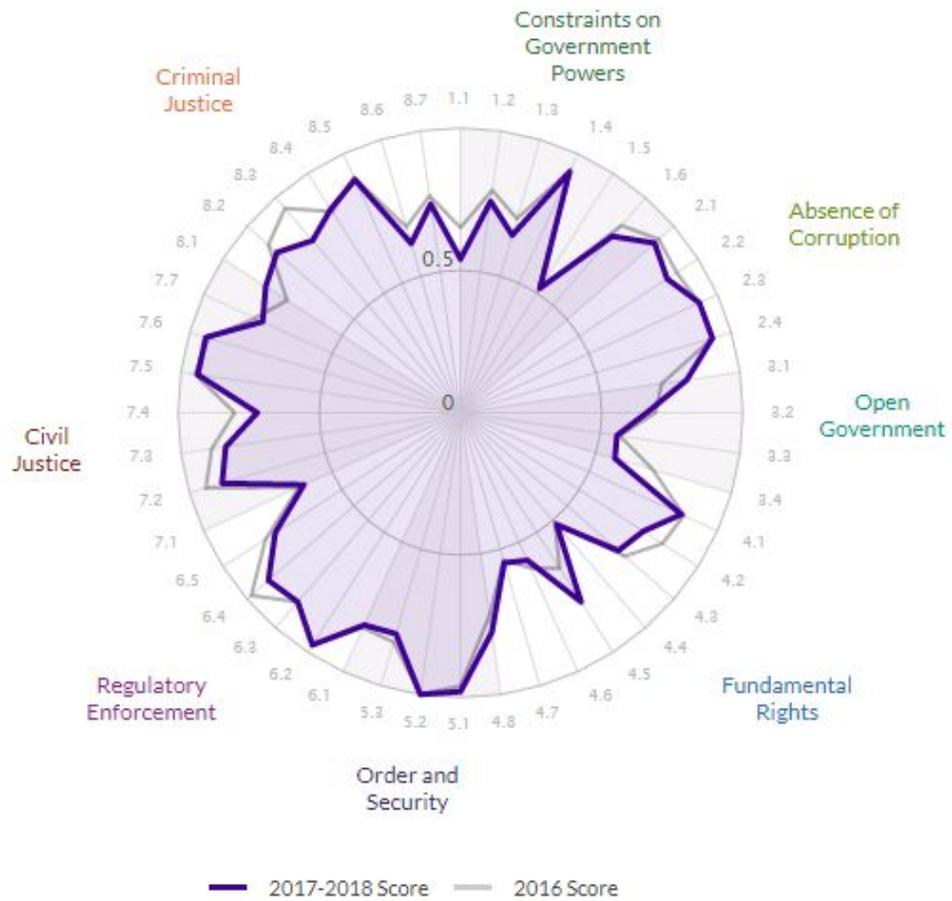


Singapore population: statistics and prediction

Highly friendly legal environment for longevity

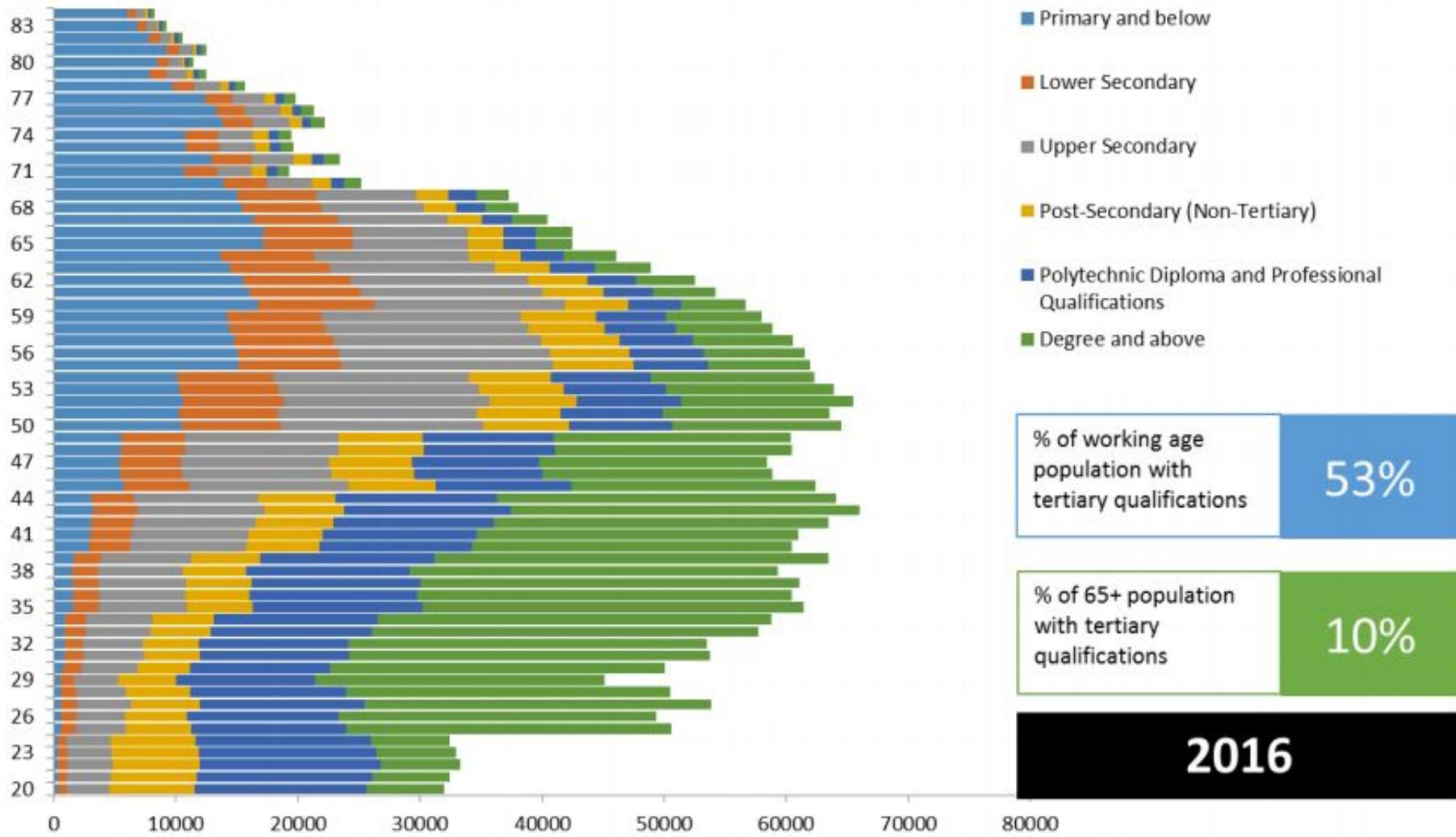
Overall Score	Regional Rank	Income Rank	Global Rank
0.8	3/15	13/35	13/113
Score Change	Rank Change		
-0.02 ▼	-4 ▼		

	Factor Trend	Factor Score	Regional Rank	Income Rank	Global Rank
Constraints on Government Powers	—	0.70	4/15	23/35	25/113
Absence of Corruption	—	0.91	1/15	4/35	4/113
Open Government	—	0.65	6/15	26/35	28/113
Fundamental Rights	—	0.70	5/15	28/35	32/113
Order and Security	—	0.93	1/15	1/35	1/113
Regulatory Enforcement	▼	0.87	1/15	2/35	2/113
Civil Justice	—	0.81	1/15	5/35	5/113
Criminal Justice	—	0.80	1/15	5/35	5/113



▲ Trending up ▼ Trending down Low Medium High

Statistics of longevity (2016), distribution by education



In this section you will find 7 different ways that the government of Singapore has developed to help seniors entering their silver years. The Singapore official government website presented the following schemes:

1. Medisave

Medisave is a national medical savings scheme which helps individuals put aside part of their income into their Medisave Accounts. This can be used to pay for their future personal or immediate family member's hospitalisation and certain outpatient expenses incurred at any hospital in Singapore.

2. Enhancement for Active Seniors (EASE)

Through EASE, seniors can enjoy subsidies of up to 95% to install improvement items such as grab bars and slip-resistant bathroom floors to make it more elder-friendly.

3. ComCare Long Term Assistance (also known as Public Assistance)

Seniors can receive up to \$1,180 in cash assistance (depending on household size) for those who are permanently unable to work due to old age, illnesses or unfavourable family circumstances. Those who qualify may also receive additional aid to help those with recurring hygiene essentials or consumables such as adult diapers and nutritional milk supplements. Additional medical assistance will also be available.

4. Silver Support Scheme

From end-Jul 2016, the government will give payouts of \$300 – \$750 (depending on type of HDB flat they live in) every three months for the bottom 20% of seniors who had low incomes through life and little or no family support. This is on top of the monthly cash assistance provided by the ComCare Long Term Assistance Scheme to cover their daily living expenses.

Sources:

gov.sg

WHEN I NEED TO SEE THE DOCTOR

- **Government Subsidies**
At all public hospitals, specialist outpatient clinics (SOC) and polyclinics
- **Community Health Assist Scheme (CHAS)**
Subsidies for medical and dental care for lower- and middle-income households
- **MediShield Life Premium Subsidies**
Up to 50% for lower- and middle-income households
- **Medisave Top-Ups**
Yearly top-up of \$100 – \$200 till 2018, for seniors born on or before 31 Dec 1959 who do not enjoy Pioneer Generation benefits
- **Intermediate and Long-Term Care Subsidies**
Up to 80% for home care and 75% for residential services such as nursing homes

WHEN I NEED EXTRA CARE

- **Enhancement for Active Seniors (EASE)**
Subsidises up to 95% to make HDB flats senior-friendly, e.g. by installing features like grab bars and slip-resistant bathroom floors
- **Foreign Domestic Worker Levy Concession**
Only \$60 a month for households with seniors aged 65 years and above

5. Pioneer Generation Package

Especially for our pioneers – Singaporeans born on or before 31 December 1949, and obtained citizenship on or before 31 December 1986 can enjoy the benefits of the Pioneer Generation Package!

Benefits include special subsidies for MediShield Life premiums, annual Medisave top-ups (up to \$800 a year for life) and an additional 50% off subsidised services and medication at polyclinics and Specialist Outpatient Clinics (SOC) in public hospitals.

ADDITIONAL HELP FOR SENIORS WITH LITTLE SUPPORT

- **ComCare Long Term Assistance/ Public Assistance**
Cash for those permanently unable to work due to old age, illnesses or unfavourable family circumstances
- **Medifund**
Help for medical bills
- **Additional MediShield Life Premium Support**
Help those unable to afford premiums even after subsidies

Silver Support Scheme New

From end-Jul 2016, payouts of \$300 – \$750 every 3 months for bottom 20% of seniors who had low incomes through life and little or no family support

Specially for Our Pioneers

Singaporeans born on or before 31 Dec 1949, and obtained citizenship on or before 31 Dec 1986, also receive:

- Special subsidies at CHAS GP and dental clinics
- Additional 50% off subsidised services and medications at polyclinics and SOC in public hospitals
- Special subsidies for MediShield Life premiums
- Annual Medisave top-ups
- Cash of \$1,200 a year for those under the Disability Assistance Scheme

INCREASING ADDITIONAL INCOME DURING RETIREMENT

- **Enhanced CPF Savings**
Additional 1% interest on the first \$30,000 of CPF savings for those aged 55 and above
- **More Workfare Benefits**
From 1 Jan 2017, eligible low-wage workers will receive higher Workfare Income Supplement (WIS) payouts to be paid monthly
- **Silver Housing Bonus**
Additional income when moving to a smaller flat
- **Lease Buyback Scheme**
4-room or smaller flat owners can sell part of their flat lease to HDB
- **2-Room Flexi Scheme**
Owners spend less cash or CPF by choosing a shorter flat lease

WHEN I NEED HELP WITH LIVING EXPENSES

- **GST Voucher**
Help for lower- and middle-income households through:
 - **Cash**
For immediate needs, such as grocery bills
 - **CPF Medisave**
Top-up for medical needs
 - **U-Save**
Rebate to offset utilities bills every quarter
- **Senior Citizen Concession Card**
Enjoy lower fares on buses and trains

6. Lease Buyback Scheme (LBS)

Seniors who live in a 4-room or smaller flat will be able to use this scheme as an additional monetisation option. Through the scheme, you can sell part of your flat’s lease to HDB to receive a stream of income in your retirement years, while continuing to live in it.

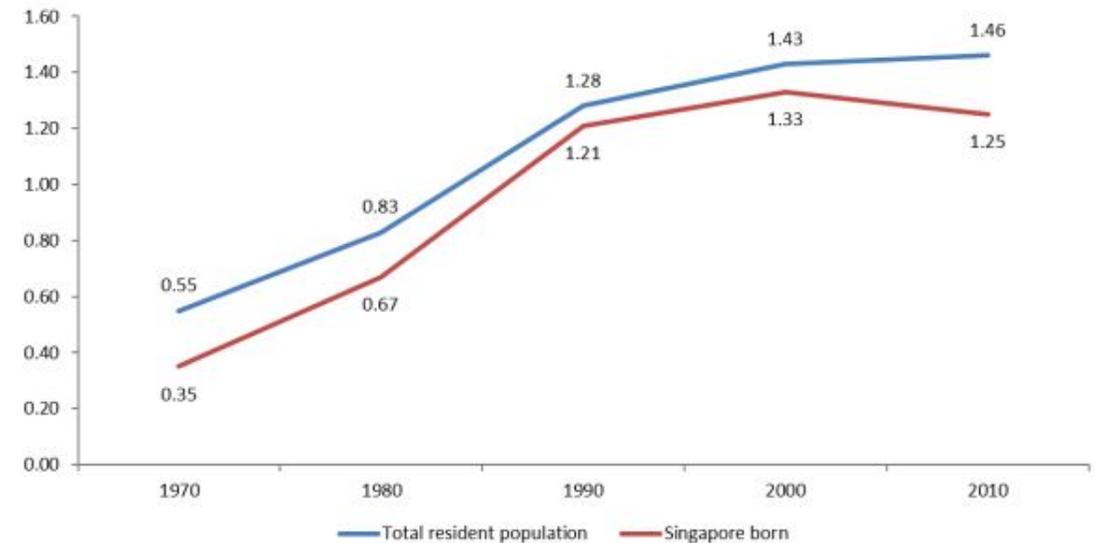
You can choose to retain the length of lease based on the age of the youngest owner. The proceeds from selling part of your flat’s lease will be used to top up your CPF Retirement Account (RA), which earns you up to 5% interest.

7. Senior Citizen Concession Card

Senior citizens can enjoy lower rates on buses and trains with the launch of the Off-Peak Pass (OPP) on 5 July 2015. This gives senior citizen cardholders one more option when purchasing their travel pass, on top of the Hybrid Concession Pass. Now seniors can be even more active in pursuing their hobbies, visiting friends and loved ones, or even volunteering for their favourite causes.

Whilst official government policy continues to be one of openness to immigration (especially of skilled labour) with an average annual intake of 30,000 new permanent residents, there is recognition that a well-calibrated immigration policy is only one measure to mitigate the economic effects of population ageing. As Prime Minister Lee said in his 2012 New Year's message: *"A vibrant economy needs enough workers and talent, yet we run into physical and social constraints if we admit too many foreign workers too quickly. Diversity enriches our society, but only provided new arrivals adopt our values and culture."*

Fig. 7. Economic Support Ratio: by place of birth (1970-2010)



Source: Institute of Policy Studies estimates, using Population Census data published by Singapore Department of Statistics

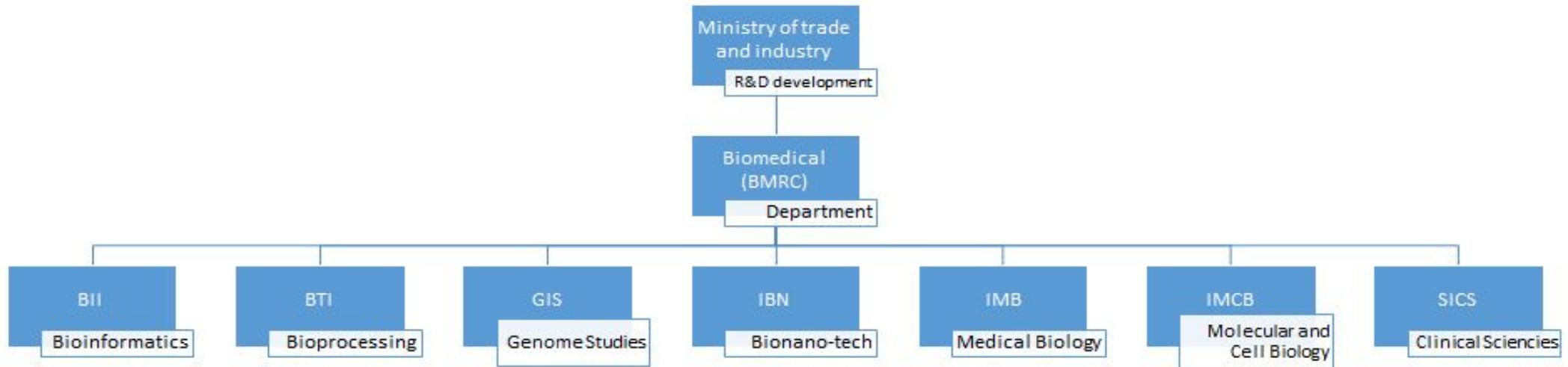
Immigration cannot, however, permanently offset the reversal of the first demographic dividend from population ageing. Immigrants also grow old, and an ever-larger intake of immigrants would be needed to prevent the total resident population ESR from declining in the future.

As of June 2017, permanent resident and non-permanent resident foreigners comprised 39% of Singapore's total population of 5.6 million (Department of Statistics, 2017), up from 14% in 1990. With Singapore's TFR at ultra-low levels since 2003, the unwinding of the first demographic dividend amongst the local-born population is already in evidence. The Economic Support Ratio (ESR) amongst the Singaporean-born population peaked in the 2000s.

The Agency for Science, Technology and Research (A*STAR) is a statutory board under the Ministry of Trade and Industry of Singapore. The agency supports R&D that is aligned to areas of competitive advantage and national needs for Singapore. These span the four technology domains of Advanced Manufacturing and Engineering (AME), Health and Biomedical Sciences (HBMS), Urban Solutions and Sustainability (USS), and Services and Digital Economy (SDE) set out under the nation’s five-year R&D plan (RIE2020).

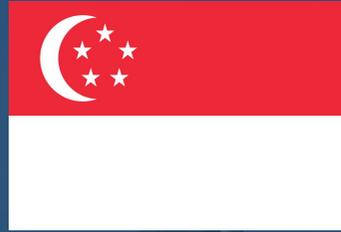
A*STAR was established in 1991 with the primary mission to advance the economy and improve lives by growing the knowledge-intensive biomedical, research, scientific and engineering fields. The Biomedical Research Council (BMRC) oversees research entities that serve to support key industry clusters in Biomedical Sciences, such as pharmaceuticals, medical technology, biotechnology and healthcare services.

The BMRC Research Institutes focus on building up core biomedical capabilities in the areas of bioprocessing; chemical synthesis; genomics and proteomics; molecular and cell biology; bioengineering and nanotechnology and computational biology.





Appendix



30 Faces of Longevity in Singapore



30 Faces of Longevity Industry in Singapore

1. Finian Tan
2. Danny Soon
3. Gary Khoo
4. Bussarawan (Puk) Teerawichitchainan
5. Chong Hock Sia
6. Christiani Jeyakumar Henry
7. Colin Stewart
8. Birgit Lane
9. Brian Kennedy
10. Hwee-Pink Tan
11. Janice Chia
12. Jeffrey Lu
13. Carl Firth
14. Judith Swain
15. Kanwaljit Soin
16. Kenneth Noonan
17. Lim Chwee Teck
18. Lim Xinhong
19. Lok Shee-Mei
20. Melis Tay
21. Neo Kah Yean
22. Ng Huck Hui
23. Paolo Rampichini
24. Paul Si
25. Penny Wan
26. Vishal Doshi
27. Wallace Torres
28. Wanjin Hong
29. Wilf Blackburn
30. Yu Cai

30 Longevity influencers



Finian Tan



Danny Soon



Gary Khoo



Bussarawan (Puk)
Teerawichitchainan



Chong Hock Sia



Christiani
Jeyakumar Henry



Colin Stewart



Birgit Lane



Brian Kennedy



Hwee-Pink Tan



Janice Chia



Jeffrey Lu



Carl Firth



Judith Swain



Kanwaljit Soin

30 Longevity influencers



Kenneth Noonan



Lim Chwee Teck



Lim Xinhong



Lok Shee-Mei



Melis Tay



Neo Kah Yean



Ng Huck Hui



Paolo Rampichini



Paul Si



Penny Wan



Vishal Doshi



Wallace I. Torres



Wanjin Hong



Wilf Blackburn



Yu Cai



Finian Tan

Chairman and Founder, Vickers Venture Partners

Dr. Finian Tan is Chairman at Vickers Venture Partners and Chairman & Founder at Vickers Financial Group (S) Pte Ltd. He is on the Board of Directors at Singapore Technologies Electronics Ltd. Prior to joining CSFB in 2002, Dr. Tan was a partner and Managing Director of the Silicon Valley venture capital firm- Draper Fisher Jurvetson Eplanet – being in charge of their Asia Pacific operations. In his time there, he spearheaded the investment into Baidu in 2000. Dr. Tan received his undergraduate degree from the University of Glasgow, a graduate degree from the University of Cambridge and a doctorate degree from the University of Cambridge.



He has also previously served as Chairman or Board Member on numerous boards and committees, including Cambridge Industrial Trust Management (Chairman of the board and Chairman Exco and HR committees, CIT listed on Singapore Exchange), United Eagle Airlines (China), Sunfun Info Co Ltd (China) listed in Taiwan, Asia Food Channel (Singapore, Founding Chairman, now owned by Food Network USA), Media development Authority of Singapore (Singapore, Chairman Audit Committee and Investment Committee), Singapore Polytechnic (also on Exco), Singapore Government Parliamentary Committee for Trade and Industry Resource Panel, Defence Science and Technology Agency (Singapore), the Life Sciences Investment Pte. Ltd. (Singapore), SMA (Singapore-MIT) Governing Board, Singapore National Computer Board, The National University of Singapore (also member of the investment committee), The National Cancer Centre (Singapore), The Eastern Cluster of Hospitals in Singapore (Singhealth), Tuas Power Pte. Ltd (Singapore)., Sentosa Cove Pte. Ltd. (Singapore), Majulah Connection (Singapore), the Singapore Venture Capital Association and the Singapore-Shandong Business Council.



Danny Soon

Senior Director, Biomedical Research Council, A*STAR

Danny is currently the Senior Director at the Biomedical Research Council (BMRC), he joined A*STAR in 2015.

He previously worked at Eli Lilly and Company for 15 years in early phase clinical development, where he headed up the Lilly-NUS Centre for Clinical Pharmacology (LNUS).

As the Managing Director and Principal Investigator, Danny had responsibility and oversight for all clinical Phase 1 studies conducted and operations in the unit.

As an investigator, Danny was personally involved in over 90 clinical pharmacology studies, and oversaw over 130 studies at Lilly-NUS in various roles. This includes first-in-human studies, biomarker development work, human physiology investigations and pivotal registration PK studies, in neuroscience, diabetes, musculoskeletal and cardiovascular therapeutic areas.



Gary Khoo

Director, healthy ageing division, Health Promotion Board, Singapore

Gary Khoo is a senior leader of the Health Promotion Board (HPB). Established in 2001, HPB's mission is to help Singaporeans increase the quality and years of healthy life and prevent illness, disability and premature death.

Mr Khoo oversees the development and implementation of national programmes and strategies to help seniors improve and maintain their functional ability and lead healthier and longer lives. The National Seniors Health Programme, launched in support of the government's Action Plan for Successful Ageing to keep seniors active, engaged and productive, has reached out to more than 200,000 seniors in Singapore.

Since 2009, Mr Khoo has led the development of several other key initiatives. These include "Lose to Win", a holistic weight-management programme, which has enabled overweight participants to achieve an average weight loss of 1–3 kg over 12 weeks, and the Diabetes Prevention Programme, which has helped more than half of participants with prediabetes to achieve normal glucose level one year after intervention. He is also integral to the foundation of HPB's volunteer programme, the Health Ambassador Network.





Bussarawan (Puk) Teerawichitchainan

Associate professor of sociology, school of social sciences, Singapore Management University

Bussarawan (Puk) Teerawichitchainan is associate professor of sociology and Lee Kong Chian Fellow at the School of Social Sciences, Singapore Management University. She is currently a visiting scholar at Chulalongkorn University's College of Population Studies.

Her recent research addresses a variety of topics related to population ageing, family and intergenerational relationships, and health and the well-being of older persons in the context of South-east Asia (particularly Myanmar, Thailand and Vietnam) as well as from a comparative, cross-national perspective. Her ongoing research projects include a study that examines how crossborder migration affects Myanmar grandparents caring for grandchildren. Another project investigates the long-term impacts of war exposure on health and the later life course of Vietnamese war survivors in Vietnam.

Her research has been funded by various agencies including Singapore's Ministry of Education and the National Institutes of Health in the United States.





Chong Hock Sia

Director & Senior Consultant at Health Sciences Authority

Sia Chong Hock holds a Bachelor's degree in Pharmacy from the University of Singapore, as well as a Master's degree in Healthcare Management (with Distinction) from the University of Wales.

Currently, he is the Director of Quality Assurance and Senior Consultant of Audit and Licensing at the Health Products Regulation Group of the Singapore Health Sciences Authority. He is also an Adjunct Associate Professor with the National University of Singapore and a Singapore Pharmacy Council Member. In 2013, Mr Sia was named the PSS Industry Pharmacist of the Year.

Outside of Singapore, he is Chairman of the ASEAN Joint Sectoral Committee on GMP Inspection and Member of the PIC/S Committee of Officials. He has a keen interest in good manufacturing practices, supply chain integrity and harmonization of regulatory controls to ensure accessible, safe and quality medicinal products to consumers. Periodically, he gives talks and contributes reviews on these topics.





Christiani Jeyakumar Henry

Professor, Department of Biochemistry, Yong Loo Lin School of Medicine, NUS.

Christiani Jeyakumar Henry initially trained as a Food scientist and subsequently obtained his MSc and PhD in Nutrition from the London School of Hygiene and Tropical Medicine. He was instrumental in the development & launch of the UK's first dedicated Functional Food Centre.

He was Head of Food Sciences and Nutrition at Oxford Brookes University, and Director of the Functional Food Centre in Oxford. Professor Henry has served on several committees including the UK Committee on Medical Aspects of Food & Nutrition Policy (COMA) panel on novel foods, was a board member of the UK Food Standards Agency and was a member of the General Advisory Committee on Science (GACS) of the Food Standard Agency (FSA). He also served as a panel member on the Department for International Development (DFID) health & population research committee, and was a member of the research panel of the UK Crop post harvest Technology.

He was Royal Society visiting professor at the Chinese University of Hong Kong & continues to remain a visiting professor at the same university. He was also a member of the recent Joint FAO/WHO consultation on fats and fatty acids in human nutrition.





Colin Stewart

Founding partner of Singapore, A*STAR

Colin Stewart, has been a pioneer in developing many of the techniques that are now widely used in mouse experimental genetics, in establishing protocols for deriving embryonic stem (ES) lines, uniparental ES lines, and for the derivation of the first human ES lines.

He was instrumental in identifying the cytokine LIF as being crucial to sustaining stem cell pluripotency (Nature 1988). Subsequently he showed that LIF and its signalling pathway is critical to regulating uterine receptivity for embryo implantation in mammals (Nature 1993). He developed numerous mouse models of congenital diseases, particularly those arising from defective genomic imprinting e.g. Prader-Willi.

Over the last decade his interests have centered on the laminopathies, a heterogeneous collection of diseases all arising from mutations in the LaminA gene. He collaborated with Nicolas Lévy, in being the first to show that mutations in the LMNA gene cause progeria (Science 2003), and to make mouse models of many of the laminopathies, including progeria. He also developed the first iPSCs lines derived from patient fibroblasts in establishing an in vitro model for Progeria (HGPS). Currently, he is a founding partner of Daedalus Therapeutics that is developing new treatments to ameliorate cardiomyopathies and vascular disease.





Birgit Lane

Chief Scientist, Skin Research Institute of Singapore, A*STAR

As IMB's first Executive Director, Birgit Lane oversaw the Institute's creation in 2007 from her previous position as Executive Director of its forerunner, the Centre for Molecular Medicine. She first joined CMM on coming to Singapore in January 2005, on sabbatical leave from the University of Dundee. Previously she held the Cox Chair of Anatomy and Cell Biology in the College of Life Sciences at Dundee from 1991 until her resignation in 2009.

Birgit Lane has published over 200 research papers and reviews. She is known internationally for her work on keratins and has a long-standing interest in the function of the keratin cytoskeleton in epithelia and its importance in disease. She has made pioneering contributions to the use of monoclonal antibodies to keratins in diagnostic pathology and cell biology, and to the recognition of keratin mutations as causing inherited skin fragility disorders.

In Singapore, Professor Birgit Lane also holds adjunct appointments in A*STAR's IMCB and in the Departments of Pathology and Biochemistry at NUS, and is an Honorary Visiting Consultant at the National Skin Centre. She also is an Adjunct Professor at the Karolinska Institute, Sweden and Emeritus Professor at the University of Dundee. She is an elected Fellow of the Royal Society of Edinburgh and of the UK's Academy of Medical Sciences.





Brian Kennedy

Director, Centre for Healthy Ageing, National University Health System (NUHS), Singapore

Dr. Brian Kennedy is internationally recognized for his research in the basic biology of aging and as a visionary committed to translating research discoveries into new ways of delaying, detecting, preventing and treating human aging and associated diseases. He is the Director of the Centre for Healthy Ageing at the Yong Loo Lin School of Medicine at National University Singapore. He also serves as a Distinguished Professor in Biochemistry and Physiology. The Centre seeks to demonstrate that ageing interventions can be successfully employed in humans to extend healthspan, the disease-free and highly functional period of life. Other goals include world class preclinical research to better understand the biology of ageing and community-based approaches to improve health quality with ageing in Singapore.

NUHS

National University
Health System

From 2010 to 2016 he was the President and CEO of the Buck Institute for Research on Aging. Currently he remains as a Professor at the Institute, where his lab addresses the biology of aging. Dr. Kennedy has adjunct appointments at the Leonard Davis School of Gerontology at USC and the Department of Biochemistry at the University of Washington, where he was a faculty member from 2001 to 2010. In addition, Dr. Kennedy is also actively involved with a number of Biotechnology companies, serving in consulting and Board capacities, as is Scientific Director of Affirmativ Health. In addition, Dr. Kennedy serves as a Co-Editor-In-Chief at Aging Cell. Finally, Dr. Kennedy has a track record of interaction in China, where he was a Visiting Professor at the Aging Research Institute at Guangdong Medical College from 2009 to 2014.



Hwee-Pink Tan

Academic director, SMU-TCS iCity Lab, Singapore Management University

Hwee-Pink Tan currently leads a team of ten technology and social-science researchers to bring together internet of things (IoT) technologies and social-behavioural research to enable and sustain ageing-in-place, in partnership with A*STAR (the Agency for Science, Technology and Research in Singapore), Tata Consultancy Services, various government agencies and regional health systems as well as voluntary welfare organisations.

Prior to joining Singapore Management University, he spent seven years at the Institute for Infocomm Research (I2R), A*STAR, where he was a senior scientist and concurrently the Science and Engineering Research Council programme manager for the A*STAR Sense and Sense-abilities Programme.

Mr Tan is a senior member of the Institute for Electrical and Electronic Engineering and an adjunct faculty member with Geriatric Education and Research Institute. He has published more than 100 papers and has served in executive roles for various conferences on IoT. He graduated from the Technion, Israel Institute of Technology, in 2004 with a PhD.





Janice Chia

Founder and managing director, Ageing Asia

Janice Chia founded Ageing Asia, Asia's first ageing market consultancy social enterprise, with the mission to drive innovation in the way future generations age by engaging the business community to create better products and services that will enable healthy ageing, independent ageing and dignified ageing.

Ms Chia has accumulated her vast experience from visiting over 300 residential and aged-care homes in more than 15 countries. Since 2009, she has been actively involved in consulting organisations seeking global best practices in housing, health and care models that can be translated for the Asian market. She is quoted regularly in the media on Asia-Pacific business trends in ageing.

Ms Chia has also launched several industry innovations, including ASPIRE55 Singapore, Asia's first virtual retirement village, a well-being community that offers a combination of social, health and care services and enables members to continue living in their existing homes.





Jeffrey Lu

Co-Founder/CEO Engine Bio, Goodman Capital

Passionate about innovative technologies and entrepreneurship. Currently building Engine Biosciences, a venture-backed technology company focused on solving complex diseases faster and capital-efficiently with our comprehensive data-driven computing, AI, and experimental biology platforms. Also investing proprietary capital in early-stage technology/biotech start-ups.

Over a decade of experience spanning investing, start-ups, and serving as a senior corporate executive in billion-dollar companies and successful startups in biotech, technology, travel, and real estate across Asia and USA. Have built high-performance strategy, data analytics, and business teams, resulting in major business growth, start-ups reaching profitability, and high shareholder returns (multiple highly profitable exit transactions at combined ~\$450M exit valuations, plus additional strong operating businesses valued in 9 figures).

Since his first full-time job at Bain, where he was trained in developing "true north" data-driven insights and strategies for business growth, Jeff has been excited about the power of data to build transformative businesses across many sectors and is now actively applying this approach for his entrepreneurial and investing activities..





Carl Firth

Founder & CEO at ASLAN Pharmaceuticals

Dr Carl Firth is Founder and CEO of ASLAN Pharmaceuticals, an Asia enabled pharmaceutical company that develops novel medicines for global markets. Previously, he was Head of Asia Healthcare at Bank of America Merrill Lynch, supporting public and private financing of healthcare companies across the region and advising on transactions.

Prior to joining the banking industry, he worked in China and Asia for 4 years leading business development, strategic projects and the development of new products. Carl has held positions in other commercial areas in the UK, including acquisitions, licensing and competitive intelligence, and has over 5 years of pharmaceutical experience.

Carl holds a PhD from Cambridge University in Molecular Biology and an Executive MBA from London Business School.





Judith Swain

Executive Director at A*STAR

Dr. Judith L. Swain is currently Chief Medical Officer of Physiowave, LLC, and Visiting Professor, National University of Singapore. She was previously A*STAR Senior Fellow, Agency for Science, Technology and Research (Singapore), and Professor of Medicine at the Yong Loo Lin School of Medicine, National University of Singapore, and was the Founding Executive Director of the Singapore Institute for Clinical Sciences within A*STAR.

Prior to coming to Singapore she was the Dean for Translational Medicine at the University of California, San Diego.

Dr. Swain has served in a number of national leadership roles in the U.S., including President of the American Society for Clinical Investigation, President of the American Association of Physicians, and an elected member of the Council of the Institute of Medicine.





Kanwaljit Soin

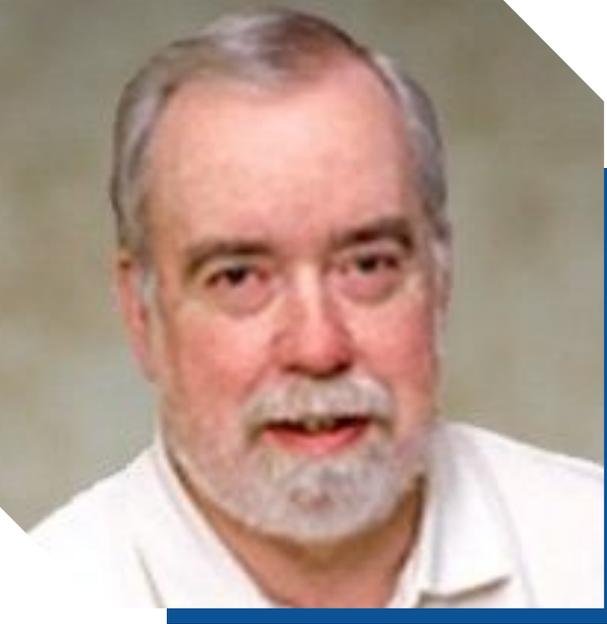
Founding president, Women's Initiative for Ageing Successfully

Kanwaljit Soin is a practising medical specialist and was Singapore's first female nominated member of parliament. She is a founder of many civil society organisations, including WINGS (Women's Initiative for Ageing Successfully) and AWARE (Association of Women for Action and Research). She was a global ambassador of UK-based HelpAge International, which serves disadvantaged older people worldwide. She has served as a board member of the Washington University International Advisory Council for Asia. She has also been a jury member for the Rolex Awards for Enterprise.



In 2000, Ms Soin was presented with the Women Who Make a Difference Award by the International Women's Forum in Washington, DC. In 2006, she received the Lifetime Achievement Award from the United Nations Development Fund for Women (Unifem) Singapore for her selfless contribution to society, especially towards the less advantaged. She was named Singapore's Her World Woman of the Year in 1992, and in 2014 she was inducted into the Singapore Women's Hall of Fame.

Ms Soin is the co-editor of *Our Lives to Live: Putting A Woman's Face to Change in Singapore* and author of *Silver Shades of Grey: Memos for Successful Ageing in the 21st Century*.



Kenneth Noonan

Chief Executive Officer at Lightstone Singapore Pte.Ltd.

Dr. Kenneth D. Noonan, Ph.D., serves as Member of Scientific Advisory Board at Integra Holdings and is a Venture Partner at Advanced Technology Ventures. Dr. Noonan focuses on life sciences, including pharmaceuticals, biopharmaceuticals, in vitro diagnostics and research products. Dr. Noonan is the Chief Executive Officer of Singapore Office at Lightstone Ventures.

He focuses on life sciences, including pharmaceuticals, discovery and development services, in vitro diagnostics and research products. Dr. Noonan was previously a Venture Partner at the firm. He serves as the Managing Director of TK Associates. Dr. Noonan was the Head of European Life Sciences Practice and Senior Partner for L.E.K. Consulting LLP, since November 2001.

Prior to joining L.E.K., Dr. Noonan was the Senior Vice President of Corporate Development at Applera Corporation, from 2000 to 2001, where Dr. Noonan had corporate responsibility for strategy and transactions. Dr. Noonan has served as a Director of Life Sciences International plc and Hyseq Inc. During his academic career, Dr. Noonan has authored over 50 articles in the area of cancer biology and cell replication. Dr. Noonan received his Ph.D. degree in Biochemistry from Princeton University and a B.S. degree in Biology from St. Joseph's University.



Lim Chwee Teck

Professor, Mechanobiology Institute, National University of Singapore

Professor Lim is the inaugural NUSS Professor at the Department of Biomedical Engineering and Founding Principal Investigator at the Mechanobiology Institute. He is also the Acting Director of the Biomedical Institute for Global Health Research and Technology. He also co founded Department of Biomedical Engineering, NUS Nanoscience and Nanotechnology Initiative and Centre for Advanced 2D Materials.

Prof Lim's research interests are interdisciplinary and include human disease mechanobiology, development of microfluidic technologies for disease detection, diagnosis and precision medicine and flexible wearable technologies for healthcare applications. He has authored over 370 peer-reviewed journal papers and delivered more than 360 plenary/keynote/invited talks. He currently sits on the editorial boards of more than 20 international journals. He and his team have garnered more than 80 research awards and honors including Highly Cited Researcher 2018, Winner of IDTechEx Launchpad 2017, International Precision Medicine Conference Prize 2017, ASEAN Outstanding Engineering Achievement Award and Asian Scientists 100 in 2016, Vladimir K. Zworykin Award in 2015, University's Outstanding Researcher Award and Outstanding Innovator Award in 2014, the Credit Suisse Technopreneur of the Year Award, Wall Street Journal Asian Innovation Award (Gold) in 2012, President's Technology Award in 2011 and the IES Prestigious Engineering Achievement Award in 2010 among others. His research was cited by the MIT Technology Review magazine as one of the top ten emerging technologies of 2006 that will "have a significant impact on business, medicine or culture."





Lim Xinhong

Director at Vickers Venture Partners

Dr Lim Xinhong joined Vickers in 2015 and is based in Silicon Valley. He has led investments into drug delivery, AI drug discovery and advanced materials companies, and advises on fund strategy and portfolio companies in the life sciences, healthcare and tech sectors. Dr Lim obtained a Certificate in Innovation and Entrepreneurship from the Stanford University Graduate School of Business. He is an Assistant Professor (Adjunct) in skin stem cell biology at the Lee Kong Chian School of Medicine, Nanyang Technological University (NTU) and the Skin Research Institute of Singapore (SRIS) at the Agency for Science, Technology and Research (A*STAR).

Dr Lim received his Ph.D. in Developmental Biology from Stanford University under the tutelage of Breakthrough Prize winner Professor Roel Nusse, a pioneer of Wnt signalling biology. Lim has been the lead Principal Investigator on more than \$15 million of research grants funding his work on stem cell regulation and skin biology. His work on Wnt signalling and stem cells has been published and cited in the most prestigious scientific journals, including Nature and Science, as well as highlighted in the international press, including by CNN and BBC.

He is the recipient of numerous awards, including the Singapore National Academy of Sciences Young Scientist Award, the Ten Outstanding Young Singaporeans Award (Medical Innovation) and the A*STAR-IMB Investigatorship in Skin Biology. Lim is fluent in English, Mandarin and Cantonese, and has a working knowledge of French.



VICKERS
VENTURE
PARTNERS



Lok Shee-Mei

Associate Professor, Duke-NUS MS

Dr Shee-Mei Lok is an Associate Professor in the Emerging Infectious Disease program, Duke-NUS Medical School. She was a National Research Foundation Fellow in year 2009 to 2014 and is now a NRF Investigator. She is a structural virologist specializing in X-ray crystallography and cryo-electron microscopy. Her research focuses on the structural changes of dengue virus during its infection cycle and the effect of antiviral therapeutics on the virus particle.

She obtained her PhD from NUS in 2004 specializing on x-ray crystallography. She did her post-doctoral training in Purdue University under the supervision of Prof Michael Rossmann from 2004 till 2009. She served as visiting Assistant Professor in Baylor College of Medicine in the year 2010 in the laboratory of Prof Wah Chiu.





Melis Tay

Operations Startup Manager at AbbVie

Melis Tay has 10 years of experience in GMP Biotechnology and Biopharmaceutical industry, in areas of Manufacturing operations and Process Development & Engineering.

Melis is experienced in areas of commissioning and validation, operations, management, technical transfer and regulatory filing audit. She participated in three start up projects – two 20,000L capacity multi-product biopharmaceutical facilities and a 2000L scale single use platform. Currently Melis is involved in the fourth startup project.

The AbbVie logo, consisting of the word "abbvie" in a white, lowercase, sans-serif font, centered on a dark blue square background.

abbvie



Neo Kah Yean

Senior Vice President at A*Star ETPL

As Senior Vice President, Commercialisation for Biomedical Sciences at ETPL, Kah Yean leads an experienced team of business development and licensing professionals to originate and manage an impactful portfolio of deep science technologies based on A*STAR's assets and funding to advance towards productization.

Kah Yean's 25-year career spans the breadth of the healthcare industry, having spent time in pharmaceuticals, diagnostics and consumer healthcare with focus in general management, commercial and strategic roles for Asia-Pacific.

She has held various leadership roles in multinationals such as Johnson & Johnson, Bayer and Baxter with a solid track record in business achievement and people development.





Ng Huck Hui

Executive Director A*STAR Graduate Academy

Professor Ng Huck Hui was appointed Executive Director of A*GA on 1 April 2017. He oversees AGA's talent management and development strategy, and initiatives to nurture young STEM talent as well as a strong Singaporean scientific pipeline of talent.

Professor Ng is concurrently the Executive Director of GIS. He joined A*STAR as Group Leader (Biology) in GIS in 2003, before assuming the appointment as Acting ED GIS in January 2012 and ED GIS in October 2012. Under his leadership, GIS has grown to be a home for over 250 researchers working on different aspects of Human Genomics (Human Genetics, Infectious Diseases, Cancer Therapeutics and Stratified Oncology, Human Disease Models, Translational Genomics, Computational and Systems Biology).

In recognition of his scientific contributions, Professor Ng has received numerous local and international honours and awards, including the Young Scientist Award in 2004, National Youth Award in 2005, National Science Award in 2007 and President's Science Award in 2011.



Paolo Rampichini

Head Supply Chain APAC Pharma at Roche

Paolo has 26 years experience in supply chain management in FMCG and pharma industries. In the first 9 years he worked for unilever and big leading supply chain operations and projects.

In 1999 he has joined Roche Pharmaceuticals as supply chain and procurement director of the Italian affiliate and manufacturing plant. In 2008 he has moved to Roche Headquarter in Basel, Switzerland leading small molecules global supply chain and global supply chain transformation project.

In 2014 he has relocated to Singapore to lead the pharma supply chain of Asia Pacific Region in a highly developing environment.





Paul Si

Head Project Management Asia at Novartis

Paul Si is an organized and highly efficient team leader with strong project management and excellent communication skills. Paul is a proven track record in successfully managing and delivering projects in energy, chemical and pharmaceutical sectors. Thriving within a high pressure, deadline driven environment and he loves the challenges that projects delivery brings and always looking for next project challenge.

Over 24 years of experience in delivering major greenfield capital projects from feasibility / conceptual to commissioning / qualification complete phase, including a 944MW hydroelectric dam project in Malaysia, a \$3.2b Solar Panel fabrication facility and several Life Science facilities for Novartis, GSK Vaccines and Schering-Plough in Singapore.





Penny Wan

Regional vice-president and general manager, JAPAC, Amgen

Penny Wan is Amgen's vice-president and general manager of the Japan and Asia Pacific region. With over 20 years of experience in the biopharmaceuticals industry, she leads Amgen's expansion efforts in the region. Since joining the company in 2014, she has been instrumental in building Amgen's commercial presence across the region, ensuring that innovative medicines reach patients, payers and physicians in these markets.

Prior to Amgen, Ms Wan was general manager of Roche Pharma China, which became one of the fastest-growing multinational corporations in the country. She spearheaded innovative partnership solutions with government, professional and patient groups to improve access and outcomes for patients. Ms Wan also worked in the pharmaceuticals division of Wyeth, where she held various management, marketing and commercial positions in the US, Hong Kong and Taiwan.

During her time in China, Ms Wan served as an executive committee member of RDPAC (R&D-based Pharmaceutical Association Committee), where she led the industry-shaping efforts in biologics and served as vice-president of the Shanghai Association of Enterprises with Foreign Investments. She received the 2013 White Magnolia Memorial Award from the Shanghai municipality in recognition of her contributions to the city.

The Amgen logo, consisting of the word "AMGEN" in a bold, blue, sans-serif font.



Vishal Doshi

Founder, CEO at AUM Biosciences

Mr. Doshi is a healthcare expert with multiple years of commercial, technical and strategic management experience. He is a registered pharmacist with a strong academic background in the clinical trial industry.

He has extensive experience in structuring and managing risk sharing deals in various roles worth over 1 billion USD as well as in clinical research across the pharmaceutical and CRO industry, spanning US, Europe and Asia. He is a Key Opinion Leader to Korean Health Industry Development Institute and has previously held senior business development and management roles at IQVIA, EPS International and ICON. He holds a Master's Degree in Pharmaceutical Sciences, BSc Pharmacy with research focus in oncology.

He has a strong scientific and managerial background with a clear understanding of local/global solutions. He has good strategic appreciation and vision and is able to build and implement sophisticated plans with a proven track record.





Wallace I. Torres

Executive Director QA - Site Head Drug Substance at Amgen

Wallace is a Senior executive with verifiable year-after-year success achieving Quality, revenues and business growth objectives internationally and within changing environments. He has extensive experience on Pharmaceutical quality and manufacturing operations. Wallace is highly successful in building relationships with upper-level decision makers, seizing control of critical problem areas and delivering results in a consistent way. Wallace is customer focused, people oriented and performance-driven executive.

Wallace repeatedly produced sustainable results in controlling and promoting Quality and Manufacturing goals in a major Pharmaceutical company. He has proven achievements in handling complex organizations in the Sterile, Solids and Semisolids Manufacturing and Quality Organizations. Extensive business background in international, multi-cultural environments.



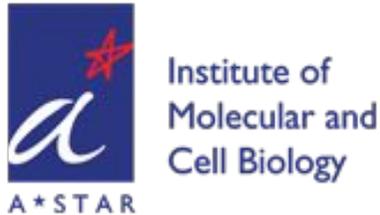


Wanjin Hong

Professor and Executive Director of IMCB

Wanjin HONG graduated from Xiamen University (Fujian, China) in 1982 and was one of a few hundred Chinese students chosen for further graduate training in the United States via the CUSBEA program. He received his PhD from the State University of New York (SUNY Buffalo), and was a postdoctoral fellow there before he joined the Institute of Molecular and Cell Biology (IMCB) in Singapore as a principal investigator in 1989. He was the recipient of National Science Award in 1999 in Singapore. Presently, he is a Professor and Executive Director of IMCB. He serves as the Editor-in-Chief of Bioscience Reports and is on the editorial board of TRAFFIC.

Prof Hong has also made significant contributions in the field of cancer cell biology. His early works demonstrated that E2F1 is sufficient to confer oncogenic growth. He has identified human Hbrm as a novel interacting protein of the tumor suppressor retinoblastoma protein. His recent work has demonstrated that TAZ is a novel oncogene and is able to promote cell migration, invasion and tumorigenesis. Prof Hong's future studies will focus on the physiological role of two SNAREs (VAMP8 and VAMP5), three PX-domain sorting nexins (SNX3, SNX12 and SNX27) and two small GTPases (Rab34 and Rab36) by analyzing the knockout mice. The mechanism governing the role of TAZ/YAP in promoting invasiveness of breast cancer or other cancers will be studied by focusing on interacting proteins and downstream target genes.





Wilf Blackburn

Chief executive officer, Prudential Singapore

Wilf Blackburn assumed the position of chief executive officer of Prudential Assurance Company Singapore (Prudential Singapore) in 2016. Mr Blackburn is an industry veteran with nearly three decades of diverse life insurance experience, having worked in seven Asian countries.

He joined Prudential Corporation Asia in Hong Kong in 2012 and initially led new market initiatives. This role included overseeing the launch of Prudential's business operations in Cambodia and the establishment of Prudential's representative offices in Myanmar and Laos. In 2014, Mr Blackburn was appointed as chief executive officer of Prudential Vietnam, and subsequently as Vietnam country head.

Prior to joining Prudential, Mr Blackburn was with Allianz for over 11 years, where his roles included chief executive officer of their life insurance joint ventures in China, Thailand and the Philippines and regional general manager of life and health insurance for Asia. Before Allianz, he worked in the United Kingdom for three life insurers, after commencing his career with a firm of consulting actuaries.

Mr Blackburn qualified as a fellow of the Institute of Actuaries in 1995. He has an MBA from the University of Bath and a BSc in mathematics (first-class honours) from the University of Newcastle upon Tyne. He has been a postgraduate student at the City University (now CASS), SAID Business School (Oxford University) and Harvard Business School.





Yu Cai

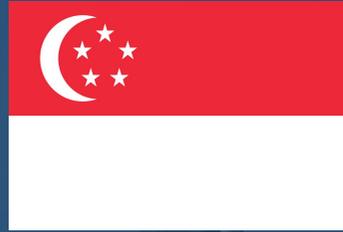
Adjunct assistant professor of Department of Biological Sciences, NUS, Singapore

Yu Cai obtained his B.Sc (1993) from Xiamen University, China and Ph.D (2003) from Institute of Molecular and Cell Biology (IMCB) (in Bill Chia/Xiaohang Yang lab), National University of Singapore. He spent one year in the same lab as a postdoc before joining Temasek Life Sciences Laboratory (TLL) as a Young Investigator (YI) in 2004.

Currently, he is an adjunct assistant professor of Department of Biological Sciences, NUS, Singapore.

His research includes stem cells, which can self-renew and give rise to differentiated daughters, are responsible for the generation of diverse cell types during development and the maintenance of tissue/organ homeostasis in adulthood. His laboratory deploys two well-established systems, female germline stem cells and neural stem cells of the model organism *Drosophila melanogaster* to study stem cell biology in an entire organism (in vivo). The immediate aim is to investigate the underlying mechanisms controlling stem cell self-renewal vs. differentiation during development. The long-term goal is to extrapolate their knowledge to stem cell-based therapy in regenerative medicine and cancer biology.



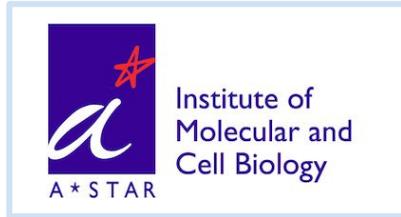


15 Longevity R&D Centers

Longevity R&D Centers



Institute of Bioengineering and Nanotechnology



Institute of Molecular and Cell Biology



Singapore Institute for Clinical Sciences



Experimental Therapeutics Centre



Singapore Bioimaging Consortium



Genome Institute of Singapore



Institute of Medical Biology



Institute of Structural Biology



Mechanobiology Institute



Cancer Singapore Institute



Waseda Bioscience Research Institute



Clinical Nutrition Research Centre



National Neuroscience Institute



Life Sciences Institute



Biomedical Institute for Global Health Research and Technology



BIGHEART aims to create innovative science and technology convergence for quantitative life sciences and precision engineering medicine, which will transform global health with economic and societal impact for communities both locally and globally. The symposium will explore practical technology solutions for global health, promoting interactions among researchers, clinicians, engineers, computer scientists, industry and policy makers toward effective translation.

Objectives:

- Transform future of medicine & healthcare through interdisciplinary collaboration in engineering, science & medicine,
- Address current critical clinical needs so as to improve well-being, health and longevity,
- Facilitate broad spectrum of healthcare innovation ranging from hospital, community to home and doctor to patient,
- Bring solutions from lab to bedside and market through partnership with hospitals & industry.



CSI Singapore conducts basic and translational cancer studies by adopting a multifaceted approach through two strong, multidisciplinary research programs: Cancer Biology & Stem Cell and Experimental Therapeutics. They span the spectrum from laboratory-based studies to targeted therapies in humans, allowing to harness basic science discoveries to create more effective, as well improve, existing cancer treatments. Its areas of focus lie particularly in gastric, liver, lung and leukemia cancers, which are prevalent in Asian populations, along with a breast cancer working group examining Asian phenotypes.

CSI works closely with basic scientists and clinicians across Singapore in various institutes, including the National University of Singapore (NUS), National University Hospital (NUH), National Cancer Institute Singapore (NCIS), Duke-NUS Graduate Medical School and Institute of Molecular and Cell Biology (IMCB). To accomplish its research goals, the Institute initiated and leads the Frontiers in Cancer Science, an annual cancer conference offering researchers globally a major platform to engage in world-class scientific partnerships.

CSI houses a full spectrum of basic and clinical translational facilities with a multitude of state-of-the-art core support technologies. These sophisticated technologies provide robust investigational resources for CSI and also the wider NUS community.



The Clinical Nutrition Research Centre (CNRC) is a joint initiative between the Singapore Institute for Clinical Sciences, A*STAR and the National University Health System. The centre specializes in basic and translational human nutrition research involving studies across the life cycle. These include investigating the impact of macro- and micro- and extra- nutrient intake on human physiology, sensory properties, food behaviour and understanding the role of food structure on human nutrition and health.

The centre has 3 broad research themes:

1. **Metabolic Impact of food intake:** Food Structure and physiological outcomes; Glycaemia / Glucose metabolism; Lipid metabolism; Brown Adipose Tissue activation; Cardio-metabolic risk factors; Food intake and satiety.
2. **Sensory and Cognitive Influences:** Cognitive Influences on energy intake; Food choice and selection; Sensory perception; Mastication / Oral processing; Texture cues to change eating rate.
3. **Impact of food on Body Composition and Metabolic Health:** Partitioning of energy metabolism; Changes in body composition after weight loss; Impact of weight change on metabolism; Insulin sensitivity after weight loss.



The Experimental Therapeutics Centre (ETC) was set up by the Agency of Science, Technology & Research (A STAR) in 2006 as a centre of excellence to advance and accelerate drug discovery in Singapore. Its primary mission is to guide early stage scientific discoveries towards proof-of-concept in man and translate scientific discoveries into diagnostics and research tools in order to serve unmet medical needs.

ETC provides a collaborative public-private partnership framework to translate early stage discoveries into drug candidates, diagnostics and innovative research tools in collaboration with academic and industrial partners.

In the process, it aims to develop technology platforms that can be utilized by the R&D community in Singapore, and provide education, mentoring and support for staff, scientists, clinicians and students who are interested in drug development.

Situated within the thriving Biopolis campus where research institutes are co-located with pharmaceutical and biotech companies and in close proximity to universities and major healthcare institutions, ETC is well-positioned to tap on synergies for multi-disciplinary research and harness the tremendous capability of the R&D community to develop exciting new products that advance human healthcare, benefit those who have generated the ideas and the institutions from which they originate, and create value for Singapore.



The Genome Institute of Singapore (GIS) is the national flagship programme for the genomic sciences in Singapore. It was established in June 2000, and initially known as the Singapore Genomics Programme. The Agency for Science and Technology Research (A*STAR) is the parent funding body for the GIS and has a long term commitment to create a world-class infrastructure.

Set in the Biopolis, the Genome is adjacent to other biomedical institutes such as Singapore's Institute of Molecular and Cell Biology, the Bioinformatics Institute, the Institute of Bioengineering and Nanotechnology, the Biotechnology Institute, the Biomedical Research Council, regional and multinational industrial R&D organisations.

Together, the biomedical and engineering research arms of A*STAR form an integral part of excellence in scientific research. GIS houses over 300 scientists, trainees and staff. The major technical platforms of high throughput sequencing, molecular cytogenetics, bioinformatics, single cell genomics, high throughput/ content screening and genome engineering have been integrated with programmes in molecular and cellular biology, computational biology and human genetics. With these components in place, GIS is well positioned for success.



Established in 2003, the Institute of Bioengineering and Nanotechnology (IBN) is the world's first bioengineering and nanotechnology research institute.

IBN's mission is to conduct multidisciplinary research across science, engineering, and medicine for breakthroughs to improve healthcare and quality of life. IBN's research activities are focused on:

- Nanomedicine and Biomaterials,
- Tissue and Organoid Models,
- Synthetic Xenobiology and Biosystems,
- Green and Safe Biomaterials.

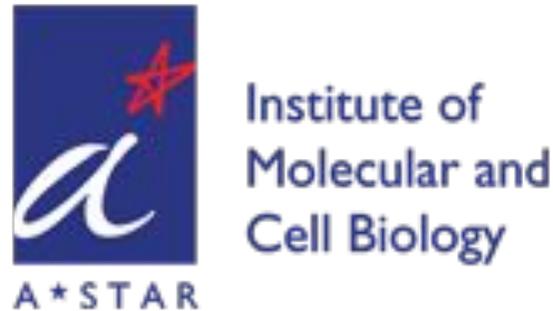
Since 2003, IBN has carved out a unique niche at the interface of bioengineering and nanotechnology. Founded by Professor Jackie Y. Ying, the Institute conducts interdisciplinary research bridging science, engineering and medicine. IBN is focused on generating new knowledge and creating innovative technology platforms that combine novel catalytic chemistry, biomaterials, nanofabricated devices, and microfluidic systems with biological and biomedical engineering.



As the newest institute of the A*STAR biomedical sciences cluster, IMB focuses its research portfolio on the critical and challenging interface between basic science and medicine. Its goal is to understand mechanisms underlying human disease, so that it may discover new and effective approaches to combating illness and promoting wellbeing.

The Institute of Medical Biology helps scientists and clinicians to work closely together to support, inform and refine each other's strengths and specializations. This increases the efficiency of translating new scientific knowledge into medically useful processes, to benefit people faster. This sector of the young biomedical research community in Singapore has a fast moving and productive future ahead.

Research activities in IMB today range across stem cells, development and differentiation, skin biology, cancer and genetic diseases. By studying how molecular changes lead to increasing cell specialization and complexity in the context of human tissues and diseases, new knowledge gained will lead to novel therapeutic strategies for improved quality of life. From Singapore and around the world, its scientists are bringing together their pioneering spirit and creative research talent to form a research institute of international excellence. IMB's research will help to build the bridges between basic science and clinical medicine that are so necessary to nurture an innovative and productive biomedical industry here in Singapore.



The Institute of Molecular and Cell Biology (IMCB) was launched on 23 January 1985, with the official opening ceremony held on 2 October 1987 at the National University of Singapore (NUS), to develop and support the biomedical R&D capabilities in Singapore. It subsequently became an autonomous research institute (RI) of the Agency for Science, Technology and Research (A*STAR), moving to Biopolis in 2004.

IMCB's original vision was to foster a vibrant research culture to enable cutting edge discoveries and nurture high-quality talent. The creation and development of IMCB has catalyzed the transformation of Singapore into an international hub for biomedical research, development & innovation.

Today, IMCB has established itself as a premier molecular and cell biology institute. IMCB was awarded the Nikkei Prize 2000 for Technological Innovation in recognition of its growth into a leading international research centre and its collaboration with industry and research institutes worldwide. Sixteen IMCB Principal Investigators have received National Science and Technology Awards and Medals.

Its vision is to remain a premier molecular biology and cell institute with increasing focus on addressing the mechanistic basis of human diseases.



The NTU Institute of Structural Biology (NISB) is a new initiative established in April 2014. The main aim of NISB is to integrate Structural Biology research across NTU to address important questions in biology and human diseases. It will also play a strategic role in the NTU Life/Biomedical Research Cluster that includes both LKC Medicine and SCELSE.

NISB builds on the existing strengths and facilities at the School of Biological Sciences such as the newly established world-class electron microscopy EM laboratory, and the joint NTU-IMCB Centre located at Biopolis to create a state-of-the-art technology platform encompassing all structural methods.

NISB's mission is:

- To create a vibrant and multidisciplinary research community to foster world-class research and to nurture research collaborations. Research at NISB will integrate chemical, physical and biological sciences to enable us to further understand protein function and their role in human diseases.
- To create a culture of innovation and to provide a nurturing environment for the mentoring of young scientists. There should be no barrier between different techniques in structural biology and researchers will be encouraged to exploit all available resources to answer important biological questions.
- To consolidate and establish world class facilities as well as the development of joint technology platforms/infrastructures to serve as the foundation for cutting edge research.



The Life Sciences Institute (LSI) is a research centre dedicated to the understanding of fundamental biological pathways in human health and disease, environmental science and industrial processes. NUS has made ageing and age-related diseases, especially neurodegenerative diseases, a major focus area.

Life Sciences Institute promotes scientific discovery through creative and multidisciplinary approaches in an environment that is highly collaborative. It also seeks to integrate its pioneering basic research with the application and exploitation of new research discoveries. LSI brings together scientists and clinicians from five NUS faculties and supports advanced core facilities and cutting-edge research infrastructure.

Life Sciences Institute focuses programs upon Immunology, Ageing, Neurobiology, Lipid Research, Tissue Engineering and Human Variation combined with hosting the Singapore Centre on Environmental Life Sciences Engineering (SCELSE), the Singapore Institute of Neurotechnology (SINAPSE) and the Clinical Imaging Research Centre (CIRC).

LSI continues to be a key contributor to the R&D landscape in Singapore.



Instituted in 2009, the Mechanobiology Institute was created through joint funding by the National Research Foundation and the Ministry of Education with the goal of creating a new research centre in mechanobiology to benefit both the discipline and Singapore.

MBI's primary focus is to identify, measure and describe how the forces for motility and morphogenesis are expressed at the molecular, cellular and tissue level. Toward that goal, it is working to create a common international standard for defining these steps by developing powerful new computational models, experimental reagents, and tools for studying diseases of cells and tissues. Its goal is then to transfer these basic discoveries to both the clinic and the classroom.

With a systems-level perspective, it is creating MBIInfo, a step-by-step, modular understanding of cell mechanics across molecular, cellular and tissue levels. By studying functions in normal and diseased tissues, the Institute will facilitate transfer of their discoveries to medical professionals through a Tissue Repair Manual. The deliverable of this integrated Manual of Cellular and Molecular Function will be accomplished through interdisciplinary teams drawn from Singapore and international researchers in medicine, biology, chemistry, physics, engineering and computing.

Mechanobiology is an emerging discipline, one that demands dedication and researchers with both a broad vision and the drive to succeed. MBI is creating a new and powerful community of motivated scientists committed to the advancement of the discipline and the future of mechanobiology.



The National Neuroscience Institute (NNI) is the national centre for referrals in neurosciences. It was the last of the three national centres to be established as part of the government's blueprint for enhanced specialist healthcare.

As the national and international centre of excellence in the neurosciences; its mission and goals rest upon its tripod of strengths – patient care, research and education.

The establishment of NNI in 1999 resulted in the transfers of the Departments of Neurology and Neurosurgery from Tan Tock Seng Hospital (TTSH) to form the foundations of clinical service. NNI officially started operations on 1 June 1999. At that time, it occupied part of the new Tan Tock Seng building and functioned as the neuroscience division of TTSH. A new department of Neuroradiology was later initiated to provide the specialised diagnostic imaging and interventional services for neurological diseases. These were supported by dedicated bench research laboratories, as well as administrative and education resources. In 2001, the NNI integrated the TTSH campus clinical Neurology and Neurosurgery services and research resources with the Department of Clinical Neurosciences at Singapore General Hospital.

Today, NNI operates directly from both campuses, as well as provides specialty services to most other hospitals in Singapore. The institute is a member of the SingHealth (Singapore Health Services) Group, an integrated healthcare delivery network which offers a complete range of multi-disciplinary and integrated medical care. The Group comprises hospitals, national specialty centres and a network of polyclinics.



The Singapore Bioimaging Consortium (SBIC) is one of the 10 research institutes of the Biomedical Research Council under the Agency for Science, Technology and Research (A*STAR) in Singapore. SBIC is located on 4 levels of the Helios building, in the heart of Biopolis, Singapore's premier international Research and Development hub for Biomedical Sciences.

SBIC is a leading preclinical bio-imaging platform in Asia and in the world characterized by:

- Scientific and academic excellence;
- Efficient integration and promotion of collaborations among A-STAR institutes and other partners in Singapore;
- High societal impact (healthcare improvement, cost containment) with rapid bench-to-bedside transfers in collaboration with the clinical community;
- Close interface with the industrial sector and successful commercialization of know-how, ensuring financial sustainability/profitability;
- Ability to capture economic opportunities in order to create value, including with the creation of new enterprises;
- Ability to attract, develop and retain talents in basic and applied research and related businesses.



Established in 2007, the Singapore Institute for Clinical Sciences (SICS) is a research institute within the Agency for Science, Technology and Research (A*STAR), and its mission is to do needs driven, impact-focused research to promote the health and human capacity of Singapore.

SICS is distinguished by its focus on clinical sciences and the use of innovative approaches and technologies that enable the efficient and effective study of human health and diseases. The clinical scientists in SICS conduct the full spectrum of "bench to bedside" research activities in:

- Metabolic diseases (including diabetes, obesity and insulin resistance)
- Pathways to normal growth and development (including neurocognitive and behavioural development) via birth cohort studies e.g. GUSTO & S-PRESTO – Growing Up in Singapore Towards healthy Outcomes, and Singapore PREconception Study of long-Term maternal and child Outcomes
- Nutritional sciences (including functional foods, body composition, carbohydrate / fat / protein metabolism and aspects of food intake, energy regulation, human growth and development, satiety regulation, sensory and taste perception, and nutritional psychology)
- Biology of human ageing.

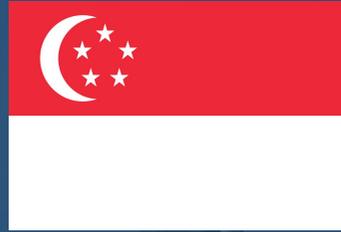
The institute aims to attract, train and nurture clinician-scientists and to develop joint programmes with universities, academic medical centres, government hospitals and research institutes.



In September 2009, Waseda University established “Waseda Bioscience Research Institute in Singapore (WABIOS)” as its first full-fledged overseas research centre, in order to pursue collaborative, joint, and/or interdisciplinary research together with the world-leading researchers working at A*STAR, NTU, and NUS.

The Institute intends to be a hub for international cooperative research and a place of exchange for young researchers and graduate students, and eventually to build a bridge for research and education between Singapore and Japan.

Biopolis is a core base of research for Singapore which aims at making the country function as an international hub-state for Bioscience and Biomedical Science. Establishing a research institute of Waseda University within Biopolis to pursue collaborative, joint, and/or interdisciplinary research together with world-leading researchers working in A*STAR, NUS and NTU, the institute intends to open a new academic frontier by taking advantage of Singapore’s availability for cutting-edge information.

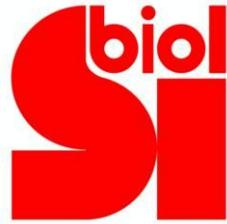


10 Non-Governmental Organizations

10 Non-Governmental Organizations



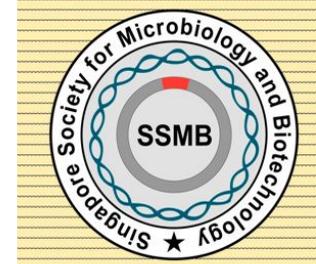
Singapore Society for Biochemistry and Molecular Biology



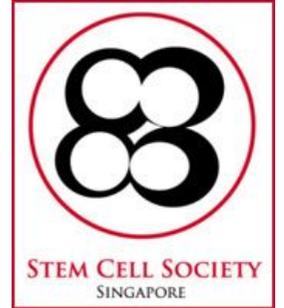
Singapore Institute of Biology



Biomedical Engineering Society



Singapore Society for Microbiology and Biotechnology



Stem Cell Society



Singapore Consortium or Synthetic Biology



Biotech Connection Singapore



Association for Medical and Bio-Informatics



Singapore Neuroscience Association



Temasek Life Sciences Laboratory



The Association for Medical and Bio-Informatics, Singapore (AMBIS) is an organization that promotes excellence in Medical and Bio-Informatics and advances the development of this emerging discipline in Singapore. AMBIS is actively involved in promoting collaborations and exchanges among the medical and bioinformatics community through conferences, meetings, seminars, workshops and symposia. AMBIS is a national member of the International Medical Informatics Association (IMIA), a member of the Asia-Pacific Association for Medical Informatics (APAMI) and a regional affiliate of the International Society for Computational Biology (ISCB).

The basic aims of the organization are:

- To promote the growth, development and usage of information science and information technology as applied to health care and to the education of health professionals in Singapore.
- To advance cooperation among health professionals in the field of medical and bio-Informatics.
- To provide a forum for the dissemination, exchange and analysis of information through education and participation of its members.
- To offer recommendations to international or governmental agencies and other appropriate bodies concerning the need for, and the structure of, educational programs in the field of medical informatics. Attention will be given to mechanisms for implementing such educational programs in informatics.
- To represent the interests of health professionals in the promotion and pursuit of informatics with international or governmental agencies and other bodies.



In response to the emerging need to provide a society offering equal status to representatives of both biomedical and engineering interests, the Biomedical Engineering Society was incorporated in Illinois on February 1, 1968. BMES published its "Historical Perspective" in 2004, celebrating its 35-year history and growth.

The Society is a nonprofit professional association, which was established to serve as the lead society and professional home for biomedical engineering and bioengineering students, academics, and professionals. The mission of the Society is to promote and enhance biomedical engineering knowledge worldwide and its utilization for human health and well-being.

Initially, the membership of the Society included 171 founding members and 89 charter members. With the cooperation of the Federation of American Societies for Experimental Biology, the first open meeting of the Biomedical Engineering Society was held at the Ritz-Carlton Hotel in Atlantic City on April 17, 1968.



Biotech Connection Singapore is part of an international network of non-profit organizations that aims to promote the transfer of ideas from theory to real world applications by providing a platform for fostering interaction between academia, industry and businesses.

Biotech Connection Singapore aims to connect innovators with each other and industry resources to help people get the support necessary to conceptualize, develop and commercialize technology & research.

Their engagement with the community occurs via three ways: education, consulting and communications.

Biotech Connection Singapore was founded in 2014.



Synthetic biology is a maturing scientific discipline that combines science and engineering in order to design and build new biological parts, devices and systems. Synthetic biology offers enormous opportunities to benefit society with promising applications in areas such as energy, healthcare and the environment. Launched in September 2016, the Singapore Consortium for Synthetic Biology, SINERGY aims to consolidate Singapore's capabilities in synthetic biology and harness synergies across industry sectors to create a vibrant and globally connected bio-based economy in Singapore.

Efforts to foster interactions and co-development between the industry, universities and research institutes will encourage user-inspired research, augment manpower development, as well as speed up the translation of expertise in synthetic biology for industry applications. SINERGY is supported by the National Research Foundation and hosted at the National University of Singapore.

Key areas of interest:

- Advanced Manufacturing for Specialty Chemicals
- Protein and Enzyme Engineering
- Biosensors and Cell-Free Systems
- Biomimetics
- Synthetic Genomics
- Proprietary Strain Construction and Optimization



The Singapore Institute of Biology (SIBiol) was founded in 1974 by an enthusiastic group of biologists who wanted to further the cause of Biology and its applications. It was officially registered as a Society on 26 February 1975 with the objectives of encouraging the improvement of education in biology and the training of those interested in biology; advancing the character and status of the profession of biology and its applications, and the interests of those engaged therein; facilitating the exchange of information in biology and its applications through meetings, exhibitions, publications and other ways; publicising and disseminate information about biology and its application and on matters concerning the profession; securing and distributing grants and loans for education and research in biology and its applications; and representing the opinion of the members of the Institute on matters related to the objectives of the Institute.

In addition to being a constituent body of the Singapore National Academy of Science, the Institute is affiliated to the International Society for Plant Physiology, the Commonwealth Association of Agricultural Scientists and the Asian Fisheries Society.



The Singapore Neuroscience Association (SNA) was formed on 29th January 1988 as an interim society by Associate Professor Laurence Garey (who was elected as the first President) and Associate Professor Tan Choon Kim as its first Secretary.

Although a Society of Neuroscience has existed already, it was aimed at mainly clinicians. It was felt that there were sufficient non-clinician neuroscientists then who might wish to be associated with an organization whose aim was to further the interests of the whole of the neurosciences. It was hoped that the new society (SNA) would be active in encouraging dialogue and even collaborations between neuroscientists, both basic and clinical. The society also envisaged a program of seminars by local and foreign speakers, exchanges of expertise and ideas, the organization of international meetings and the publication of a newsletter on a periodic basis. The Singapore Neuroscience Association was only finalized on 27th August 1988 and announced in the Singapore Government Gazette of 9th September 1988.

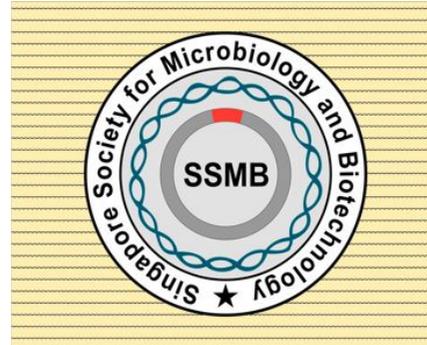
Singapore Neuroscience Association (SNA) was formed to give a platform to neuroscientists and clinicians in support of neuroscience research in Singapore.



The original name of SSBMB was Singapore Biochemical Society (SBS). It was founded in 1983 by several academic staff of the Department of Biochemistry at the National University of Singapore and other biochemists in Singapore. In 1993, SBS officially changed its name to SSBMB.

The aim of SSBMB is to promote biochemistry and molecular biology among fellow biochemists and interested laymen in Singapore and the region. Towards this end, SSBMB has organized several highly successful international meetings – the 4th FAOB Congress in 1986, the 3rd IUBMB Conference in 1995, and the 22nd FAOBMB Conference in 2011. A further aim of the society is to promote science among the next generations of scientists. Thus, SSBMB organizes the annual Young Scientists' Symposium for polytechnic students and awards prizes to the best student in Biochemistry and/or Biotechnology at the National University of Singapore, Singapore Polytechnic, Ngee Ann Polytechnic and Republic Polytechnic. Small travel awards have also been given to graduate student members of the society.

The SSBMB also fully supports all the activities of Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB).



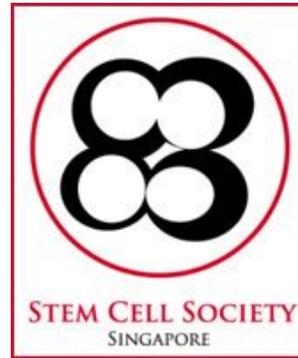
The formation of the Singapore Society for Microbiology (SSM) in 1972 provided an impetus to the development of microbiology in Singapore.

The Singapore Society for Microbiology and Biotechnology (SSMB) is a professional society of microbiologists and other professionals of related interest.

The Society is a constituent member of the Singapore National Academy of Science, and plays an active role in promoting microbiology and biotechnology to schools, universities, industries and the general community.

Through their regular events and workshops for members and the community, the aspiration of SSMB is to facilitate scientific exchanges among local and visiting professionals. At the same time, corporate members can introduce new technologies and services to the community.

Its online portal and social activities provide further networking points for members. From these, SSMB strive to extend the interest of microbiology and biotechnology in Singapore.



The Stem Cell Society, Singapore (SCSS) was registered in January 2008. SCSS is a non-profit organization which seeks to serve the community with a threefold objective:

1. to bring together researchers, clinicians, health professionals, and companies interested in stem cells,
2. to provide information to lay persons about stem cells
3. to provide a focus for all issues connected with stem cells.

To achieve these objectives:

- SCSS will run regular monthly meetings on academic/clinical, and technical aspects of stem cell research. These monthly meetings will comprise of talks followed by a networking session.
- SCSS will hold an annual Stem Cell Conference covering a wide range of stem cell related topics including; research, clinical, ethical and legal.
- SCSS will also run an outreach programme to educate the public about stem cells



Temasek Life Sciences Laboratory (TLL) is a non-profit organization established in 2002 to undertake cutting edge research in molecular biology and genetics utilizing a broad range of model organisms. TLL is affiliated to the National University of Singapore and Nanyang Technological University. It is located within the campus of the National University of Singapore and is situated alongside other research institutes and academic departments of the university.

It has about 220 researchers from over 23 countries. Its vision is to create an environment which can attract the brightest young minds worldwide, support their research and challenge them to be leaders in their own fields. The institute is based on small but well supported and interactive research groups in which originality, innovation and creativity are emphasized. Collaboration between research groups within TLL and with other local and international research groups is actively encouraged.

TLL has already had a positive impact on the development of biotechnology industry in Singapore through collaborations and joint research ventures with local and international partners.



15 Longevity Conferences 2017-2019

15 Conferences 2017-2019



The Longevity Summit



3rd International Conference on Biomedical Signal and Bioinformatics



Single Cells: Technology to Biology



International Conference on Medical, Biological and Pharmaceutical Sciences



First International Conference on Biometrics Science and Engineering



20th International Conference on Genetics and Genomic



Molecular mechanisms of developmental and regenerative biology



4th International Conference on Advances in Biology and Chemistry



International Conference on Food Microbiology and Food Safety



Ageing and Resilience in the 21st Century



Ageing, Longevity and Health - New Frontiers and Perspectives



5th NUS Academic Psychiatry Conference 2019



Biologics and Biosimilars Congress: Asia



RNA Biology Symposium 2018 in Singapore



International Conference on Medical and Biosciences

NAME	DATE	WEBSITE
3rd International Conference on Biomedical Signal and Bioinformatics	16 - 18 November 2018	icbsb.org
4th International Conference on Advances in Biology and Chemistry (ICABC 2017)	21 - 23 August 2017	icabc.org
Single Cells: Technology to Biology	24 - 26 February 2019	cell-symposia.com
RNA Biology Symposium 2018 in Singapore	13 - 14 September 2018	rnasociety.org
Molecular mechanisms of developmental and regenerative biology	11 - 13 November 2018	meetings.embo.org
First International Conference on Biometrics Science and Engineering	4 - 6 August 2017	icbse.org
The Longevity Summit	27 September 2018	events.economist.com
Ageing and Resilience in the 21st Century	11 - 13 October 2017	webapps.duke-nus.edu.sg
Biologics and Biosimilars Congress: Asia	27 - 28 November 2018	global-engage.com
International Conference on Medical and Biosciences	20 - 21 December 2018	researchworld.org
International Conference on Food Microbiology and Food Safety	2 - 3 January 2019	theires.org
International Conference on Medical, Biological and Pharmaceutical Sciences	20 - 21 April 2019	iastem.org
20th International Conference on Genetics and Genomic	10 - 11 September 2018	waset.org
Ageing, Longevity and Health – New Frontiers and Perspectives	17 October 2018	webapps.duke-nus.edu.sg
5th NUS Academic Psychiatry Conference 2019	21 - 22 January 2019	nusmedicine.nus.edu.sg

3rd International Conference on Biomedical Signal and Bioinformatics

16 - 18 November 2018, Singapore

169



Biomedical Signal and Bioinformatics attempt to make sense of signals and large amounts of data mined from biomedical research. ICBSB 2018 is a main annual research conference aims to bring together researchers around the world to exchange research results and address open issues in all aspects of Biomedical Signal and Bioinformatics.

This conference provides opportunities for delegates from different areas to exchange new ideas, applications and experiences face to face, to establish business or research relations, and to find global partners for future collaboration.

ICBSB 2018 features invited speeches as well as peer-reviewed paper presentations. The conference is completely open for all who are interested in the related fields of Biomedical Signal and Bioinformatics.

Topics and Scope include but are not limited to:

- Bioinformatics
- Brain-Computer interfaces
- Cardiovascular biomechanics
- Computer aided and automated diagnosis
- Drug design
- Functional imaging
- Gene networks
- Medical imaging and image processing
- Neuroengineering
- Robotics

Sources:

icbsb.org/



4th International Conference on Advances in Biology and Chemistry

(ICABC 2017) 21 - 23 August 2017, Singapore

170

ICABC
2017

The Main Attractions of the 4th International Conference on Advances in Biology and Chemistry 2017:

1. Keynote speaker:

Associate Prof. GAUTAM SETHI, from National University of Singapore, Clinical Research Centre, Singapore

2. Publication:

Accepted and registered papers will be published in IJBBB or IJCEA.

3. Academic Visit:

There was a half-day academic visit in National University of Singapore and half-day tour in Singapore City on August 23, 2017.

Accepted papers will be published in:

International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB), and all papers will be indexed by Electronic Journals Library, Chemical Abstracts Services (CAS), Engineering & Technology Digital Library, Google Scholar, and ProQuest.

Sources:

icabc.org/



A revolution is underway, unleashed by the study of single cells, in our understanding of cell identity, diversity, development, and function. The emerging technologies for single-cell “omics” for the study of genomes, epigenomes, transcriptomes, and proteomes, are becoming increasingly widespread, with some of the most exciting advances enabling multimodal analyses and systems biology assays that perturb and record at single-cell resolution.

The overarching goal of this symposium is to provide a forum for sharing and disseminating cutting-edge technologies, biological insights, and biomedical applications in the field of single-cell analysis.

Topics:

- Atlasing Cell Types
- Perturbing and Recording Single Cells
- Spatial Profiling
- Epigenetics and Multimodal Profiling
- Data Analytics
- Precision Medicine



RNA Biology Symposium 2018 in Singapore

13 - 14 September 2018, Singapore



RNA biology has emerged as one of the most influential areas in modern biology. This symposium brings together internationally renowned experts in the field of RNA biology with the focus on: Non classical RNAs, RNA editing/modifications, RNA splicing, RNA in disease and cross talk between RNA classes and processes.

The two day conference encompasses a slate of keynote speakers including Ada Yonath (Weizmann Institute of Science, Israel) and Paul Agris (University of Albany, USA) as well as talks from Ralf Bartenschlager, Jeffrey A. Chao, Ling Ling Chen, Martin Jinek, Mary O'Connell, Amy Pasquinelli, Igor Ulitsky and many more.

In addition, there will also be selected talks from the submitted abstracts, a poster exhibition, and an award ceremony for outstanding posters. The awards for the outstanding posters are supported by the Singapore RNA Biology Alliance and the RNA society.



Molecular mechanisms of developmental and regenerative biology

11 - 13 November 2018, Singapore

173



The EMBO Workshop will discuss cell fate decisions during the transition from pluripotency to lineage commitment in early development, the interactions of stem cells with their niches during lineage specification, and the spatiotemporal control of cell identity during the differentiation of somatic lineages and the germline.

The complex multi-tissue interactions in organoids will be discussed as a novel experimental model for the understanding of patterning in the embryo, tissue morphogenesis and organogenesis. New insights into regenerative biology will be presented by investigating responses to tissue damage or loss and the developmental kinetics leading to aberrant phenotypes.

Source:

meetings.embo.org



First International Conference on Biometrics Science and Engineering

4 - 6 August 2017, Singapore



2017 the First International Conference on Biometrics Science and Engineering (ICBSE 2017) was held in Singapore during August 4-6, 2017 as the workshop of ICSIP 2017.

The aim objective of ICBSE 2017 was to present the latest research and results of scientists related to Biometrics Science and Engineering topics. This conference provided opportunities for the different areas delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

First International Conference on Biometrics Science and Engineering hoped that the conference resulted constituted significant contribution to the knowledge in these up to date scientific field. The organizing committee of conference was pleased to invite prospective authors to submit their original manuscripts to ICBSE 2017.



The Longevity Summit

27 September 2018, Singapore

175

#EconLongevity

THE LONGEVITY SUMMIT

Is Asia ready for 100?

September 27th 2018 | Singapore

Asian countries like Japan, Singapore, South Korea and China are facing a demographic crisis. The aged are starting to dramatically outnumber the young, an issue that affects every aspect of society. Businesses are struggling to adapt to the changing nature of their workforces, and health care systems are coming under increasing financial strain. While governments are acting – Singapore has signaled a rise in GST tax and Japan is investing in pension reform and productivity improvements – they may not be doing enough to prepare their societies for the reality of living to one hundred.

In 2017, for the first time, The Economist brought together Asian business leaders, political decision-makers and health-care entrepreneurs to discuss how to make longevity a source of healthy innovation. At the Longevity Summit 2018, The Economist will build on this momentum to foster thinking on the topic of “living to 100”.

The event will answer the following key questions:

- How are the interests of individuals, governments and businesses aligning around longevity?
- Can developing countries establish ‘ageing in place’ infrastructure and community care rather than expensive inpatient hospital systems?
- How can companies incorporate longevity into their operations?
- What can other countries learn from the policies and ideas already being implemented to ease the burden of ageing around the region?
- What’s stopping longevity-enthusiasts and entrepreneurs from successfully executing on their business strategies?

Source:

events.economist.com

Ageing and Resilience in the 21st Century

11 - 13 October 2017, Singapore



The world is ageing. The number of people 65 and older is projected to triple by mid-century, from 531 million in 2010 to 1.5 billion in 2050. By mid-century, most countries would be trading their young for the old as the share of their population that is 65 and older surpass those younger than 15. This demographic shift is accompanied by wider changes in the society including continuing low fertility rates, late marriages, preference for singlehood and migration amongst others.

Academics and policy makers recognize the need for self-reliance of older adults as family sizes shrink and longer lives challenge financial and social adaptations. Successful adaptation to ageing requires the resilience of the individual, family, and society. With this conference the organizers aim to explore different ways of defining and measuring resilience as well as ways to enhance resilience at all levels including physical, psychological and social in older adults and their families. Innovative measures at the policy and programme levels will be featured.

Themes that will be explored include:

1. What is resilience – explorations of the different types of resilience from physical, mental to finance, social and other dimensions
2. How can or should resilience be measured
3. What are the factors that impact on resilience
4. What are the factors associated with resilience
5. How can resilience be promoted



Biologics and Biosimilars Congress: Asia

27 - 28 November 2018, Singapore



Global Engage is pleased to announce the Biologics and Biosimilars Congress Asia, co-located with Vaccines R&D and Commercialisation Congress Asia will take place in Singapore on the 27th and 28th November 2018. This event will feature over 30 expert speakers over two days and is expected to attract over 150 attendees and 20 poster presentations. This conference is part of Global Engage's successful Drug Discovery series which includes their Precision Medicine, Medicinal Chemistry, and Synthetic Biology congresses.

The biologics theme will feature cutting-edge research on topics such as modern antibody-based therapeutics & engineering, immunotherapy, and protein biotherapeutics. Presentations on technological advancements such as antibody-drug conjugates (ADCs), success in monoclonal antibody (Mab) and antibody-derived therapeutics for chronic diseases will be extensively covered at the meeting. This field continues to show significant growth with an increasing number of clinical achievements across Asia.

The biosimilars theme explores biosimilar projects growth in Asia. The expert speakers share their insights on development strategies, market access, and commercialisation success. This will allow you, the industry leaders and researchers to track progress and changes in the regulatory environment, clinical trials, and biomanufacturing process. Biosimilars are gaining momentum and prominence as the patents of big branded drugs lapse and cost-cutting initiatives in the healthcare sector.



RW- 510th International Conference on Medical and Biosciences (ICMBS) is a prestigious event organized with a motivation to provide an excellent international platform for the academicians, researchers, engineers, industrial participants and budding students around the world to SHARE their research findings with the global experts. 510th ICMBS 2018 will be held in Singapore during 20th-21st December, 2018.

The key intention of 510th ICMBS 2018 is to provide opportunity for the global participants to share their ideas and experience in person with their peers expected to join from different parts on the world. In addition this gathering will help the delegates to establish research or business relations as well as to find international linkage for future collaborations in their career path. The organizers hope that 510th ICMBS 2018 outcome will lead to significant contributions to the knowledge base in these up-to-date scientific fields in scope.



International Conference on Food Microbiology and Food Safety

2 - 3 January 2019, Singapore



The IRES - 415th International Conference on Food Microbiology and Food Safety(ICFMFS) aimed at presenting current research being carried out in that area and scheduled to be held on 2nd - 3rd January, 2019 in Singapore . The idea of the conference is for the scientists, scholars, engineers and students from the Universities all around the world and the industry to present ongoing research activities, and hence to foster research relations between the Universities and the industry. This conference provides opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

This Conference is Organized by The Institute of Research Engineers and Scientists (The IRES), The conference would offer a large number of invited lectures from renowned speakers all over the country. The Best paper awards will be given for the papers judged to make the most significant contribution to the conference.

Earlier The IRES had conferences held at London (UK), Singapore, Kuala Lumpur, Penang, Jakarta, Bali, Batam, Bangkok, Pattaya, Phuket, Manila, Hong Kong,China, Johannesburg (South Africa), Phnom Penh (Cambodia), Abu Dhabi and Dubai.



IASTEM - 592nd International Conference on Medical, Biological and Pharmaceutical Sciences (ICMBPS) will be held on 20th - 21st April, 2019 at Singapore . ICMBPS is to bring together innovative academics and industrial experts in the field of Medical, Biological and Pharmaceutical Sciences to a common forum.

The primary goal of the conference is to promote research and developmental activities in Medical, Biological and Pharmaceutical Sciences. Another goal is to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in and around the world. The conference will be held every year to make it an ideal platform for people to share views and experiences in Medical, Biological and Pharmaceutical Sciences related areas.

This Conference is Organized by International Academy of Science, Technology, Engineering and Management. The conference would offer a large number of invited lectures from renowned speakers all over the country. The Best paper awards will be given for the papers judged to make the most significant contribution to the conference.



20th International Conference on Genetics and Genomic

10 - 11 September 2018, Singapore



The International Research Conference is a federated organization dedicated to bringing together a significant number of diverse scholarly events for presentation within the conference program. Events will run over a span of time during the conference depending on the number and length of the presentations.

ICCNN 2018: 20th International Conference on Clinical Neurology and Neurophysiology aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of Clinical Neurology and Neurophysiology. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Clinical Neurology and Neurophysiology.

ICGG 2018 has teamed up with the Special Journal Issue on Genetics and Genomics. A number of selected high-impact full text papers will also be considered for the special journal issues. All submitted papers will have the opportunity to be considered for this Special Journal Issue. The paper selection will be carried out during the peer review process as well as at the conference presentation stage. Submitted papers must not be under consideration by any other journal or publication. The final decision for paper selection will be made based on peer review reports by the Guest Editors and the Editor-in-Chief jointly. Selected full-text papers will be published online free of charge.

Ageing, Longevity and Health - New Frontiers and Perspectives

17 October 2018, Singapore

182



It has arrived an era where people are living longer. At this crossroad, the science, art and practice of longevity is alive with a horizon of possibilities to unlock the longevity dividend. Radical ideas and interdisciplinary approaches have been introduced to understand the experience of ageing from the perspectives of health, labor, housing transport, urban planning, leisure, social participation, education and intergenerational relationships. This conference aims to bring together leading thinkers and practitioners and feature some of the best practices in the field of population ageing.

The Centre for Ageing Research and Education (CARE) is proud to host the 2018 International Alliance of Research Universities (IARU) Ageing, Longevity and Health (ALH) Scientific and Graduate Student Conference. The conference will feature key research initiatives of the Ageing, Longevity and Health network and it will be held at the Duke-NUS Medical School on 17 October 2018.

Conference Thematic Focus:

- Healthy Ageing
- Interventions to Support At Risk Older Adults in the Community
- Employment and Employability of Older Adults
- Ageing, Technology and the Environment



5th NUS Academic Psychiatry Conference 2019

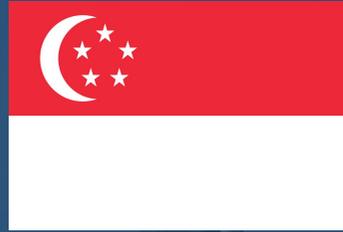
21 - 22 January 2019, Singapore



The 5th NUS International Academic Psychiatry Conference will be held from 21 - 22 January 2019 at the NUHS Tower Block, Singapore. The theme of the conference "Resilience Across the Age Continuum" reflects the importance of developing mental resilience in the community of all young, middle-aged and older adults to maximise our potential throughout the lifespan.

They hope to provide a platform for the regional mental health providers to discuss ideas, network and share research findings throughout the two days of plenary lectures, oral presentations and poster sessions. There will also be pre-conference workshops held on 19 January 2019.

Some key focus areas of the conference will be Ageing & Preventive Psychiatry, Public Health & Epidemiology and e-Mental Health.



100 Longevity Companies

1. 1st Base
2. Advent Access
3. AITbiotech
4. AlemHealth
5. Angsana Molecular & Diagnostics Laboratory
6. AsiaMedic
7. ASLAN Pharmaceuticals
8. Attune Technologies
9. AUM Biosciences
10. Axil Scientific
11. AYOXXA Biosystems
12. Becton Dickinson
13. Bio3D Technologies
14. Biofourmis
15. BioMind
16. Biotec Pharmacon
17. BowHead Health
18. CELLRESEARCH CORPORATION
19. CENNERV PHARMACEUTICALS
20. Chugai Pharmaceutical
21. Clearbridge Biomedics
22. Clinicea
23. ConnectedHealth
24. Cordlife Services (S) Pte Ltd
25. Cornea Biosciences
26. Cover2Protect
27. DocDoc
28. Doctor Anywhere
29. Drop Technologies
30. Engine Biosciences
31. FairMedOnline
32. Fullerton Healthcare Corporation
33. GlaxoSmithKline
34. Goldencare Group
35. HC Surgical Specialist
36. Healint
37. Health Management International
38. HealthSTATS
39. HistoIndex
40. Hocoma
41. Holmusk
42. HOYA Surgical Optics
43. Hummingbird Bioscience
44. i-DNA Biotechnology
45. I3 Precision
46. Innovfusion
47. iNova
48. Institute of Mental Health
49. InvitroCue
50. iX Biopharma
51. Jaga-Me
52. Jubilant Pharma
53. Juvo Labs
54. Klinify
55. Lab Me Analytics
56. Leben Care Technologies Pte Ltd
57. Leica Microsystems
58. Lifescan Imaging
59. Lion TCR
60. Lucence Diagnostics
61. Lundbeck
62. MERCK PTE LTD
63. MerLion Pharma
64. MiRXES
65. Moleac
66. myhCue
67. Nova Satra
68. Novena Heart Centre
69. Orange Valley
70. Osteopore
71. PALICO BIOTECH
72. PAN-MALAYAN PHARMACEUTICALS
73. PATHNOVA LABORATORIES PTE
74. PrIME Biologics
75. PSC Biotech
76. QIAGEN Singapore
77. QT Vascular
78. Quinxell
79. RadLink-Asia
80. Roche Singapore
81. Scigen
82. Senescence
83. Sentec Pte Ltd
84. SG Meditech
85. Singapore Medical Group (SMG)
86. Singapore Medical Innovative Technology
87. Singhealth
88. SHINESeniors
89. Smart Thermograph PTE LTD
90. Speedoc
91. Stem Med
92. STEMCELL Technologies
93. Steril Medical *
94. Straits Biotech
95. Supercraft3D
96. Taiho Pharma *
97. Tessa Therapeutics
98. Tricog Health Pte Ltd.
99. UCARE.AI
100. Vela Diagnostics

1st Base



1st Base Pte Ltd. provides life sciences products and services. It offers a range of products and services for various aspects of life sciences research. The company provides oligonucleotide synthesis, DNA and next-generation sequencing, fragment analysis, peptide synthesis, DNA and RNA synthesis, gene synthesis, customized antibody production, proteomics, and molecular biology services; and a range of biochemicals, ready-to-use buffers, and reagents for research needs. It serves customers through a network of distributors in Singapore, Malaysia, Thailand, Indonesia, Australia, New Zealand, India, Hong Kong, Taiwan, the Philippines, Vietnam, Bangladesh, and Sudan. 1st Base offers a comprehensive range of products and services for all aspects of life sciences research.

Web site:	base-asia.com
Number of Employees:	11-50
Founded in:	2002
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Advent Access



Advent Access is a medical technology startup focused on end-stage renal disease management. Founded on the principles of Stanford Biodesign and as a spin-off from A*STAR, Advent Access' mission is to pioneer innovations to significantly reduce dialysis cost and restore quality of life for kidney failure patients. Advent Access' first product is the av-Guardian™ – an award-winning implant technology that aims to improve vascular access reliability, enable less-painful self-cannulation and in the long run, potentially reduce vascular access surgeries or hospitalizations. The av-Guardian™ forms a key component of Advent Access' dialysis-machine agnostic platform to transform hemodialysis to be performed independently, safely and more affordably. Centered around the patient, the av-Guardian™ and the self-care platform seek to enable labour-light dialysis to be delivered in novel or alternative care environments.

Web site:	adventaccess.com
Number of Employees:	2-10
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Peh Ruey Feng
Funding To Date:	SGD2.6M
Investors:	Accuron MedTech

AITbiotech



Founded in 2008 by biotechnology entrepreneur Alex Thian and Sue Yap with the vision of building a leading biotechnology company, AITbiotech has grown to become a leading Molecular Diagnostic (MDx), Molecular Services and Life Science Products provider in Singapore and ASIA. AITbiotech is a world leader in multiplex real-time PCR (qPCR) assays for tropical infectious diseases. Its multiplex qPCR assays, marketed under the abTESTM including the Influenza 4-plex and Dengue 4-plex assays are being used by many major hospitals in Singapore and Asean. Focusing on using latest genomics technology tools, AITbiotech offers high quality and consistent Molecular Services to the Asian research and biomedical markets.

Web site:	aitbiotech.com
Number of Employees:	Undisclosed
Founded in:	2008
Based in:	Singapore
Founders:	Alex Thian, Sue Yap
Funding To Date:	Undisclosed
Investors:	Undisclosed

AlemHealth



AlemHealth provides telemedicine and digital health solutions designed and optimised for frontier markets. They enable physicians to collaborate across borders and specialties, and ensures patients everywhere receive world class care at prices they can afford. AlemHealth connects patients, hospitals and diagnostic centres in emerging markets to a global network of diagnostic imaging services.

Web site:	alemhealth.com
Number of Employees:	11-50
Founded in:	2014
Based in:	Singapore
Founders:	Aschkan Abdul-Malek, Sajjad Kamal
Funding To Date:	\$120K
Investors:	Y Combinator, Nest, Enabling Future, Data Collective DCVC, Womena, StartUp Health

Angsana Molecular & Diagnostics Laboratory



Angsana Molecular & Diagnostics Laboratory Pte Ltd is a multinational company specialising in developing premium genomics assays in four areas that have the largest impact on the Asian population- Molecular Oncology, Fetal & Maternal Health, Allergy & Immunology and Pharmacogenomics. Established in 2014, Angsana Molecular & Diagnostics is a multinational company headquartered in Singapore, with offices in Hong Kong and Malaysia. Angsana Molecular & Diagnostics Laboratory not only provides clinicians with the analysis of medical conditions at a molecular level but also consultation on the diagnosis and empower them with personalised medical treatment. Angsana Molecular & Diagnostics aims to be a life company committed to better healthcare for humanity's tomorrow.

Web site:	angsanadx.com
Number of Employees:	11-50
Founded in:	2014
Based in:	Singapore
Founders:	Chris Tan
Funding To Date:	Undisclosed
Investors:	Undisclosed

AsiaMedic



Since 1997, AsiaMedic Limited has been delivering excellent service and adhering to its 4 core values – competence, care, convenience and confidence. Conveniently located at Orchard Road, AsiaMedic Limited is a progressive one-stop health screening and diagnostic healthcare provider housing the latest advanced medical imaging equipment with highly qualified clinical professionals. AsiaMedic's Health Navigator concept provides a strategic and personalized approach to preventive health risk management through lifestyle modifications via health care interventions by means of customized health screening programmes and personalised health management solutions.

Web site:	asiamedic.com
Number of Employees:	101-250
Founded in:	1997
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

ASLAN Pharmaceuticals



ASLAN Pharmaceuticals is a clinical-stage oncology-focused biotechnology company developing novel therapeutics for global markets. The company targets diseases that are both highly prevalent in Asia and orphan indications in the United States and Europe. ASLAN Pharmaceuticals focuses on Asia prevalent tumour types, including biliary tract cancer, gastric cancer and breast cancer. Founded in 2010, ASLAN has rapidly established a strong track record in oncology-focused product development. Since its founding, ASLAN has raised over US\$167 million in financing, formed innovative partnerships with pharmaceutical industry leaders and developed four therapeutic medicines that target cancers for which there are few effective treatments.

Web site:	aslanpharma.com
Number of Employees:	11-50
Founded in:	2010
Based in:	Singapore
Founders:	Carl Firth
Funding To Date:	\$167M
Investors:	Milestone Capital China, KGI Venture Capital, TopTaiwan, Taya Ventures, Taiwan institutional funds, Daiwa Corporate Investment, MVP Capital

Attune Technologies



Attune Technologies is a next-generation healthcare IT company that has pioneered Cloud based products designed to help the entire healthcare ecosystem. Attune's solutions seamlessly integrate Labs, Hospitals, Pharmacies, Blood Banks, Radiology, Medical Devices (IoT), Insurance Companies, and Accounting resulting in increased revenues and operational efficiency. Attune's solutions can be deployed across the spectrum of organizations – starting from single physician clinics to a network of healthcare providers making it the largest Cloud based healthcare IT service provider in the region.

Web site:	attunelive.com
Number of Employees:	101-250
Founded in:	2008
Based in:	Singapore
Founders:	Arvind Kumar, Anand Gnanaraj, Mohanaraj Paramagurusamy
Funding To Date:	\$16M
Investors:	Norwest Venture Partners, Qualcomm

AUM Biosciences



AUM Biosciences is an oncology-focused biotechnology company that aims to accelerate the development of innovative, affordable medicines for patients in Asia and around the world. AUM Biosciences focuses on early-stage development of innovative medicines for the treatment of Asian-prevalent cancers. With an aim to build a pipeline of five assets by 2020, AUM Biosciences will in-license assets from academia and industry partners with a focus on small molecules. AUM Biosciences is led by a highly-experienced management team with more than 50 years of high-quality oncology drug development experience combined.

Headquartered in Singapore, AUM Biosciences is strategically positioned to work with leading research centres throughout Asia.

Web site:	aumbiosciences.com
Number of Employees:	2-10
Founded in:	2018
Based in:	Singapore
Founders:	Vishal Doshi
Funding To Date:	SGD2M
Investors:	Undisclosed

Axil Scientific



Since 1998, Axil Scientific have served the life science research market in Singapore with its distinctive culture – Strong Technical Support, Responsive and Reliable Customer Care, and Rapid Turnaround Time. Axil Scientific has gone full circle with its experience in sales, distribution, manufacturing and sales channel management. To serve the growing needs and requirements of its researchers, axil scientific is able to offer the widest selection of tools through distribution of life science related products, providing DNA sequencing, next generation sequencing and other related services with a speedy turnaround time and at a fair price.

Web site:	axilscientific.com
Number of Employees:	11-50
Founded in:	1998
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

AYOXXA Biosystems



AYOXXA Biosystems GmbH, based in Cologne (Germany), is an international biotech company focused on the development of its proprietary beads-on-a-chip technology for advanced protein analysis. LUNARIS™. AYOXXA's innovative multiplex protein analysis platform is a fully integrated system designed for the parallel analysis of multiple biomarkers in picogram amounts of biological samples, allowing scientists to gain a maximum of high quality and reproducible insights. LUNARIS™ is fully scalable, with integrated, image-based quality control and transparent data processing and management, enabling translational proteomics by addressing all the needs from basic to clinical research and development. AYOXXA is commercializing and expanding a portfolio of detection kits covering ophthalmology, model-to-man and immuno-oncology applications.

Web site:	ayoxxa.com
Number of Employees:	11-50
Founded in:	2010
Based in:	Singapore (2010), Germany (2012)
Founders:	Dieter Trau, Andreas Schmidt
Funding To Date:	€11.3M
Investors:	BioMedPartners, HR Ventures, Creathor Ventures, KfW, Wellington Partners

Becton Dickinson



Becton Dickinson is a global medical technology company that is advancing the world of health by improving medical discovery, diagnostics and the delivery of care. Becton Dickinson leads in patient and healthcare worker safety and the technologies that enable medical research and clinical laboratories. The company provides innovative solutions that help advance medical research and genomics, enhance the diagnosis of infectious disease and cancer, improve medication management, promote infection prevention, equip surgical and interventional procedures and support the management of diabetes. Becton Dickinson has more than 40,000 associates across 50 countries who work in close collaboration with customers and partners to help enhance outcomes, lower health care delivery costs, increase efficiencies, improve health care safety and expand access to health.

Web site:	bd.com
Number of Employees:	10,001+
Founded in:	1897
Based in:	New Jersey, USA
Founders:	Maxwell Becton, Fairleigh Dickinson
Funding To Date:	\$15M
Investors:	Apax Partners, Global Health Investment Fund (GHIF)

Bio3D Technologies



Bio3D Technologies have created world's first and Singapore's first true scientific and biological 3D printer with multiple print heads, modular design, nozzle-to-platform auto-alignment, remote viewing and control etc. They are also the first to integrate an anti-vibration levitating platform into a 3D printer. With the introduction of Bio3D Explorer, they made 3D bioprinting even more affordable and accessible. Once again, they created the world's first portable, foldable bioprinter.

Web site:	N/A
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Biofourmis



Biofourmis is a fast-growing global digital HealthTech startup that is reinventing remote patient monitoring to bring this extremely demanding goal within reach. By harnessing the power of artificial intelligence, they're advancing the practice of medicine by detecting personalized patterns predictive of patient's health deterioration. Biofourmis was founded by scientists, and cardiologists in September 2015, focused on combining clinicians' knowledge of biological mechanism that drives the human body and diseases and advanced machine learning techniques to enable the machine to find personalized patterns predictive of patient's health deterioration.

Web site:	biofourmis.com
Number of Employees:	11-50
Founded in:	2015
Based in:	Singapore
Founders:	Kuldeep Singh Rajput, Wendou Niu
Funding To Date:	\$6.6M
Investors:	Aviva Ventures, Openspace Ventures, SpesNet Pte. Ltd., Eden Strategy Institute

BioMind



BioMind is an award-winning deeptech company that builds AI technology and creates predictive applications to help hospitals diagnose medical conditions and manage healthcare-related problems. They develop AI applications covering a wide spectrum of areas including: brain tumours, vascular diseases, genetics, patient rehabilitation, pathology and many others.

Web site:	biomind.ai
Number of Employees:	51-100
Founded in:	2017
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Biotec Pharmacon



Biotec Pharmacon ASA is a biotechnology company developing, producing and marketing immune modulating beta-glucans and novel recombinant enzymes. Biotec Pharmacon ASA is the parent holding company providing support functions to the operating companies, including administration, finance, IT, QA etc.

Web site:	biotec.no
Number of Employees:	11-50
Founded in:	1990
Based in:	Norway, Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

BowHead Health



Bowhead is a platform for personalized wellness. They are a team of medical and naturopathic doctors, biochemistry and data scientists, software and robotics engineers, designers and wellness coaches. They believe that when people are health empowered, they take better care of themselves and their world. Their recipe for optimal health: data-driven guidance, convenient care & targeted nutritional supplementation.

Web site:	bowheadhealth.com
Number of Employees:	11-50
Founded in:	2015
Based in:	Singapore
Founders:	Francisco Diaz-Mitoma, Rhea Mehta, Francisco Diaz-Mitoma Jr.
Funding To Date:	Undisclosed
Investors:	Undisclosed

CellResearch Corporation



CellResearch Corporation was founded in Singapore in 2002 by scientists with a keen interest and expertise in Cell Biology. It's original remit was to provide skin and scar cells to laboratories around the world for research, as well as to perform contract research for cell laboratories internationally. In 2004, our scientists isolated Epithelial and Mesenchymal Stem Cells from the Umbilical Cord Lining Membrane. This novel and significant discovery was put up for intellectual property protection, and to date we have patents granted in multiple strategic key territories around the world.

Web site:	cellresearchcorp.com
Number of Employees:	1-10
Founded in:	2002
Based in:	Singapore
Founders:	Gavin Tan, Phan Toan Thang, Ivor J Lim
Funding To Date:	\$5.9M
Investors:	Undisclosed

CENNERV PHARMACEUTICALS



**Cennerv
Pharma**

Cennerv Pharma is a drug development company that is focused on bringing therapeutic small molecules for mental disorders or illnesses to market. They target diseases like depression, insomnia, dementia, attention-deficit hyperactivity disorder and Alzheimer's diseases. The many advances of medical science has impacted very positively on the life span of the human being. However, with this extension of longevity, come also the problems of growing old. The world is facing an increasing global population and, in particular, a rapidly ageing population. Herein lies the tremendous opportunity for our products improving the quality of life years for humans and impacting on the dignity of those suffering from mental disorders.

Web site:	cennervpharma.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Chugai Pharmaceutical



Chugai Pharmabody Research (CPR) was established in Singapore as a wholly-owned subsidiary of Chugai Pharmaceutical Co., Ltd. (“Chugai”), Japan’s No.1 biopharmaceutical company, in January 2012 and started operations on July 2, 2012. CPR is Chugai’s fourth satellite research institute, following others in Japan, South Korea and Singapore.

Web site:	chugai-pharm.co
Number of Employees:	10001+
Founded in:	1925
Based in:	Japan, Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Clearbridge Biomedics



Biolidics Ltd, formerly known as Clearbridge BioMedics, is a medical technology company focusing on the development of cell enrichment systems which, when combined with other analytical tests, have a wide range of applications for cancer diagnosis, prognosis, treatment selection and treatment monitoring. Biolidics has developed patented technology and solutions with the potential to serve as a platform technology for the diagnosis, prognosis, treatment selection and treatment monitoring of various types of cancers.

Web site:	N/A
Number of Employees:	11-50
Founded in:	2009
Based in:	Singapore
Founders:	Johnson Chen
Funding To Date:	SGD15.3M
Investors:	Spring SEEDS Capital, BioVeda Capital, Dark Horse Investment, Vertex Ventures, NUS Technology Holdings

Clinicea



It is a cloud-based medical software made for Doctors, Clinics & Hospital OPD's, by Healthcare and Technology veterans, with a decade of experience in Practice Management, EMR&EHR solutions globally. It targets actual workflows of a Doctor & Clinic, to give them a booster shot of speed. It can replicate the Paper-Based Forms doctors use, Clinical Templates they like, Workflows they have, into precise digital Case-Sheets. No need to re-train or re-learn. An easy product with pricing to match.

Web site:	clinicea.com
Number of Employees:	1-10
Founded in:	2012
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

ConnectedHealth



ConnectedHealth is an established start-up which is pioneering a new approach to transform healthcare through its focus on 'Tech-enabled Chronic Disease Management'. Healthcare is on the verge of being disrupted by technology in a similar way to banking, retailing and many other industries. By applying its core technologies of remote monitoring and data analytics to chronic diseases such as diabetes, ConnectedHealth aims to transform how patients interact with clinicians.

Web site:	connhealth.com
Number of Employees:	1-10
Founded in:	2010
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	SGD1.5M
Investors:	Ronald Ling, Lim Ho Kee, Boon Hwee Kohm, Hari Ramachandran, Get2Volume, Mike Holt, National Research Foundation

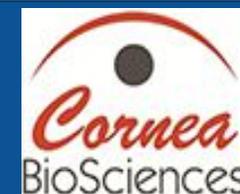
Cordlife Services (S) Pte Ltd



Cordlife Group Limited ("Cordlife", together with its subsidiaries, the "Group") is a consumer healthcare company catering to the mother and child segment. Established in May 2001 and successfully listed on the Mainboard of Singapore Exchange Trading Limited ("SGX-ST") in 2012, the Group is one of the pioneers in the cord blood banking industry in Asia. The company operates as a subsidiary of Cordlife Limited.

Web site:	cordlife.com
Number of Employees:	501-1000
Founded in:	2001
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Cornea Biosciences



Cornea Biosciences™ is a division of LinCor Biosciences, Pte. Ltd.™. The company was founded in 2011 and incorporated in Singapore with the express objective of furthering development of the bioengineered cornea, and providing this cornea to the millions of people unilaterally or bilaterally blind from corneal disease or injury and unable to obtain a corneal transplant due to a severe shortage of human donor corneas. The company's cornea is the result of ten years of research and development conducted at the University of Ottawa in Canada and Linkoping University in Sweden.

Web site:	corneabio.com
Number of Employees:	Undisclosed
Founded in:	2011
Based in:	Singapore
Founders:	James F. Socks
Funding To Date:	Undisclosed
Investors:	Undisclosed

Cover2Protect



Cover2Protect.com is a Singapore based technology platform for people with needs around healthcare. (my)aiBUD is an AI driven preventive healthcare solution which is aiming towards decreasing the cost of healthcare by early detection and intervention. Cover2Protect is a start-up aimed at enabling Special care groups (phase 1 focus is autism) for their short term day to day activities and managing health of their special needs child to long term goals Financial planning goals .

Web site:	cover2protect.com
Number of Employees:	1-10
Founded in:	2017
Based in:	Singapore
Founders:	Rajat Sharma, Gaurav Jaiswal
Funding To Date:	\$100K
Investors:	Undisclosed

DocDoc



DocDoc is Asia's leading patient empowerment company. Operating in 8 countries with more than 23,000 doctors under contract, DocDoc enables patients to find the right care at the right time. The company combines deep expertise in clinical informatics, artificial intelligence, and healthcare quality assessment to deliver simple yet powerful solutions.

Web site:	docdoc.com
Number of Employees:	51-200
Founded in:	2012
Based in:	Singapore
Founders:	Grace Park, Cole Sirucek
Funding To Date:	\$14.1M
Investors:	Adamas Finance Asia, SparkLabs Global Ventures, Yee How Choong, Vectr Ventures

Doctor Anywhere



Doctor Anywhere is a Singapore-based telehealth company that provides on demand healthcare solutions to help you lead happier, healthier lives. Their digital platform gives you quick access to health and wellness solutions, wherever you are. Their platform makes healthcare simple, seamless and convenient, and is optimised to help you manage your health in a way that best suits your lifestyle needs. With technology, better health outcomes are more achievable than ever before. They recognize modern-day struggles and are dedicated to improving healthcare services to suit our evolving lifestyle preferences.

Web site:	doctoranywhere.com
Number of Employees:	11-50
Founded in:	2016
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	SGD5.6M
Investors:	Kamet Capital Partners

Drop Technologies



Drop is the world's first device with a unique, automatic and pending patent procedure that gathers the initial sweating levels and electric resistance of the skin to categorize the user in three levels of treatment (Basic, Intermediate or Intensive) that apply customizable electrical impulses to the sweat glands in order to block their activity temporarily.

Web site:	drop.com
Number of Employees:	1-10
Founded in:	2017
Based in:	Singapore
Founders:	Tony Cueva, Omar Ruelas, Marco Garcia Casana
Funding To Date:	\$94K
Investors:	Startupbootcamp, SEED MG, Tony Cueva, Start-Up Chile, Omar Ruelas, Business Model Competition, Marco Garcia Casana

Engine Biosciences



Engine Biosciences is a biotech company that applies machine learning to genomics for drug discovery. Engine Biosciences is a venture-backed San Francisco- and Asia-based technology company pioneering network biomedicine. The company's proprietary and patented technologies oriented around deciphering the complexity of biology networks include both high-throughput wet lab experimentation and artificial intelligence algorithms for drug discovery and cellular reprogramming.

Web site:	enginebio.com
Number of Employees:	1-10
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Jeffrey Lu, Timothy Lu, Daphne Teo
Funding To Date:	\$10M
Investors:	EDBI, Baidu Ventures, DHVC, 6 Dimensions Capital, WI Harper Group, Goodman Capital, WuXi AppTec, Nest.Bio Ventures

FairMedOnline



FairMedOnline is a digital health platform. FairMedOnline is to improve people's lives by providing easy-to-use, accessible and transparent solutions to medical issues. The company was founded in Singapore in December 2015. They aim to improve people's lives by providing easy-to-use, accessible and transparent solutions to medical issues.

Web site:	fairmedonline.com
Number of Employees:	Undisclosed
Founded in:	2015
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Fullerton Healthcare Corporation



Fullerton Health is a leading vertically integrated healthcare platform in Asia Pacific. Founded in Singapore in 2011, today they own over 500 medical centres and have a large global network of medical providers across 8 markets in Asia. Fullerton Health's value proposition is the integration of healthcare service offerings with customized management and advisory capabilities, in line with its mission to transform Asian healthcare and make it affordable and accessible for enterprise clients.

Web site:	fullertonhealth.com
Number of Employees:	1001-5000
Founded in:	2011
Based in:	Singapore
Founders:	Michael Tan, Daniel Chan
Funding To Date:	CN¥800M
Investors:	Ping An

GlaxoSmithKline



GlaxoSmithKline had 3 global businesses that research, develop and manufacture innovative pharmaceutical medicines, vaccines and consumer healthcare products. Their goal is to be one of the world's most innovative, best performing and trusted healthcare companies.

Web site:	gsk.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	UK, Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Goldencare Group



Goldencare Group enables patients and family members access professional resources from healthcare societies. It was launched in April 2014 and is based in Singapore. Goldencare Group Day Care Centre aims to provide senior centred services at an affordable cost within a safe and conducive environment.

Web site:	goldencare.sg
Number of Employees:	11-50
Founded in:	2014
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	\$1M
Investors:	Undisclosed

HC Surgical Specialist



HC Surgical Specialists Limited (“HCSS”, and together with its subsidiaries, the “Group”) is a medical services group primarily engaged in the provision of endoscopic procedures, including gastroscopies and colonoscopies, and general surgery services with a focus on colorectal procedures across a network of clinics located throughout Singapore. Starting out almost a decade ago, HCSS’ vision is to build an organization dedicated to making private healthcare accessible to the broadest consumer base possible. Supported by a team of highly-qualified specialists, each with extensive experience, we currently have 12 clinics that are situated close to the public transportation network.

Web site:	hcsurgicalspecialists.com
Number of Employees:	Undisclosed
Founded in:	2015
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Healint



Healint helps the one billion people who suffer from migraine and other neurological conditions and is the developer of the world's largest migraine tracking and research platform Migraine Buddy®. Using deep analytics and machine learning, Healint generates real-world evidence for patients, physicians, and researchers to improve treatment outcomes and expedite clinical trials. Healint collaborates with the world's leading scientists to improve the diagnosis, treatment, and lives of patients suffering from multiple neurological conditions.

Web site:	healint.com
Number of Employees:	11-50
Founded in:	2013
Based in:	Singapore
Founders:	François Cadiou
Funding To Date:	\$1.4M
Investors:	Wavemaker Partners, GREE Ventures, National Research Foundation, Shin Ryoku Trust, JFDI.Asia

Health Management International



Health Management International Ltd is a growing regional private healthcare provider with presence in Singapore, Malaysia and Indonesia. The group owns two tertiary hospitals in Malaysia, a healthcare training centre in Singapore and a network of representative offices in Indonesia, Malaysia and Singapore.

Web site:	hmi.com.sg
Number of Employees:	1001-5000
Founded in:	1998
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	SGD11M
Investors:	Heliconia Capital Management

HealthSTATS



Healthstats International is a privately held Singapore-based technology company with principal activities in research & development, sales & marketing of innovative bio-monitoring devices for hypertension and related illnesses.

This approach has won the company several prestigious awards:

World Economic Technology Forum Technology Pioneer Award for Healthcare, Frost & Sullivan Asia Pacific Monitoring Technology of the Year, Frost & Sullivan Asia Pacific Healthcare Best Practice, Frost & Sullivan Most Important Technology Development in BioSciences, Times Higher Education Outstanding Contribution to Innovation & Technology and Asia's Influential Brands.

Web site:	healthstats.com
Number of Employees:	11-50
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Ting Choon Meng, Chua Ngak Hwee
Funding To Date:	Undisclosed
Investors:	Undisclosed

HistoIndex



Founded in April 2010, HistoIndex is a MedTech spin-off company from the Institute of Biotechnology and Nanotechnology (IBN), Agency of Science, Technology and Research (A*STAR), Singapore.

Web site:	histoindex.com
Number of Employees:	11-50
Founded in:	2010
Based in:	Singapore
Founders:	Dr Gideon Ho, Dr Dean Tai
Funding To Date:	Undisclosed
Investors:	Undisclosed

Hocoma



Hocoma is the global market leader for the development, manufacturing and marketing of robotic and sensors based devices for functional movement therapy. The Swiss based medical technology company was founded in the year 1996 as a limited liability company by the electrical and biomedical engineers Gery Colombo and Matthias Jörg and by the economist Peter Hostettler. Hocoma develops innovative therapy solutions working closely with leading clinics and research centers. Today, Hocoma has over 160 employees who work in the headquarters near Zurich and for the subsidiaries in the USA, Singapore and Slovenia. They are a truly international company and employ persons from 25 different countries.

Web site:	hocoma.com
Number of Employees:	51-200
Founded in:	2000
Based in:	Switzerland, Singapore
Founders:	Peter Hostettler
Funding To Date:	Undisclosed
Investors:	Undisclosed

Holmusk



Holmusk is a global digital health and data analytics company, focused on solving complex problems in healthcare for chronic diseases. It builds innovative, scalable and cost-effective digital behaviour change programs that combine cutting-edge clinical research, technology and design to nudge people towards sustainable changes for better health.

Web site:	holmusk.com
Number of Employees:	11-50
Founded in:	2015
Based in:	Singapore
Founders:	Nawal Roy
Funding To Date:	\$9.8M
Investors:	Heritas Venture Fund

HOYA Surgical Optics



HOYA Surgical Optics has been providing ophthalmologists with high-quality intraocular lenses for use in the treatment of cataracts for over 25 years and is one of the largest global intraocular lens companies. HOYA Surgical Optics is singularly focused on the needs of ophthalmic surgeons and how to support better outcomes for their patients and their ophthalmic practices.

Web site:	hoyasurgicaloptics.com
Number of Employees:	11-50
Founded in:	1987
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Hummingbird Bioscience



Hummingbird Bioscience was founded in 2014 to develop better ways of generating novel therapeutic antibody-based drugs. Using rational, systems biology approaches the aim of the company is to generate therapeutic antibodies which can be deployed in precision medicine. To further this goal the company is utilizing cutting edge single cell profiling coupled with expertise in high throughput sequencing, bioinformatics and structural biology to enable our drugs to be used in the right patient at the right time.

Web site:	hummingbirdbioscience.com/en
Number of Employees:	11-50
Founded in:	2014
Based in:	Singapore
Founders:	Piers Ingram, Jerome Boyd-Kirkup
Funding To Date:	Undisclosed
Investors:	Undisclosed

i-DNA Biotechnology



i-DNA Biotechnology Pte Ltd is a product and service-oriented company. With the headquarter and R&D laboratory facility located in Singapore, the primary focus of i-DNA is to develop, manufacture, market and distribute innovative products and services for applications in the area of life science, biotechnology and laboratory testing, i-DNA has an established i-DNA brand of life science research products, which is categorised into different research applications and areas to cover a wide range of research activities. In addition, i-DNA also distributes research products from many leading international brands, with the aim of bringing more diverse research tools and solutions to our customers.

Web site:	i-dna.sg
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

I3 Precision



I3 Precision is a medical technology company that evolved from a joint collaboration between I3 Precision founders and Advanced Digital Science Centre in 2011. The initiative came about when the I3 Precision founders realise that there is strong market demand for products that will improve safety and traceability in medication management. I3 Precision aims to use its flagship brand – MedSafe to enable safe medication management from hospitals-to-homes. MedSafe is a patented technology that has been developed to minimize medication errors at different stages of the pharmacy process and medication regime.

Web site:	i3precision.com
Number of Employees:	1-10
Founded in:	2011
Based in:	Singapore
Founders:	Teck Sin, Chueh Loo, Jeremy Yap, Hong Beng
Funding To Date:	SGD589K
Investors:	Red Dot Ventures

Innovfusion



Innovfusion was founded in 2013 in Singapore, based on novel pain management technology developed at, and licensed from, KK Women's and Children's Hospital, a leading maternity hospital in Southeast Asia. As an incubatee of The Biofactory, Innovfusion was able to accelerate the development and launch of smart infusion pumps for pain management during labour. Innovfusion mission is to incorporate smart algorithms into world-class sensing technologies to develop high-quality infusion pump systems that support personalized and safe pain management.

Web site:	innovfusion.com
Number of Employees:	Undisclosed
Founded in:	2013
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

iNova



iNova Pharmaceuticals develops and markets a range of over-the-counter and prescription medicines to Australia and New Zealand. iNova Pharmaceuticals focus is to improve human health and well-being by providing valued pharmaceutical products and services to patients and consumers.

Web site:	inovapharma.com
Number of Employees:	251-500
Founded in:	2006
Based in:	Australia, Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Institute of Mental Health



IMH's tradition of care started in 1928. They were the first mental hospital in Singapore, starting with some 1,000 patients. Since then, many advances have been made in treatment, training, and research. Their treatment integrates evidence-based therapies, supported by the departments of clinical psychology, nursing, occupational therapy, and medical social work, to provide holistic care for their patients. IMH is equipped with modern facilities, with 50 wards for inpatients and seven Specialist Outpatient Clinics.

Web site:	imh.com.sg
Number of Employees:	1,001-5,000
Founded in:	1928
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

InvitroCue



Invitrocue is a leading healthcare bio-analytic solutions provider including in-vitro cell-based testing technologies and image analytics software for use in digital pathology. Invitrocue has developed a unique 3D cell-based scaffolding technology that mimics any human organ for using in the field drug testing.

Web site:	invitrocue.com
Number of Employees:	11-50
Founded in:	2012
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

iX Biopharma



iX Biopharma Ltd is a Singapore public-listed late-stage specialty pharmaceutical company with a keen focus on the development and commercialisation of innovative therapies that improve the quality of life for those suffering from pain and other health conditions.

Web site:	ixbiopharma.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Jaga-Me



Jaga-Me decentralizes access to healthcare into homes and communities through our digital healthcare platform, which facilitates the delivery of healthcare services, health information, and medical goods.

Web site:	jaga-me.com
Number of Employees:	11-50
Founded in:	2015
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Jubilant Pharma



Jubilant Pharma Limited is a global integrated pharmaceutical company offering a wide range of products and services to our customers across geographies. Jubilant Pharma supply they products and services to customers in over 85 countries.

Web site:	jubilantpharma.com
Number of Employees:	1-10
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Juvo Labs



Juvo is the holistic sleep solution that both tracks AND actively manages your sleep to keep you happy, healthy and productive. Slip the sensor strip under your mattress to monitor your sleep and vitals. The SleepCoach app gives you personalized and timely recommendations to keep your sleep health in shape. Juvo even works with your smarthome devices to adjust your sleeping environment in real time.

Web site:	juvolabs.com
Number of Employees:	Undisclosed
Founded in:	2015
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Klinify



Klinify is a document management system that helps private specialist clinics manage patient records while preserving their existing workflow. It takes 20 minutes to set up our software, scanner, and tablets. The clinic can stop paper from entering the clinic by substituting paper processes with our tablet app – without any downtime. In Singapore alone this has the potential to be a \$10m/year business.

Web site:	klinify.com
Number of Employees:	1-10
Founded in:	2011
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	\$644K
Investors:	Zuellig Pharma China, Jungle Ventures, JFDI.Asia, Spring Singapore

Lab Me Analytics



Lab Me Analytics inception came out of coal face clinical scenarios where doctors were too pressed for time, overworked, and understaffed. The result was an incomplete analysis of patients most valued front line diagnostic – blood work. Lab Me Analytics set out with a drive to build high precision machine intelligence that could sift through the historical blood work of not only individuals but populations and provide solid actions to improve outcomes and reduce risk.

Web site:	labme.ai
Number of Employees:	1-10
Founded in:	2017
Based in:	Singapore
Founders:	Anthony Close, Gregg Lewis
Funding To Date:	\$350K
Investors:	Undisclosed

Leben Care Technologies Pte Ltd



Founded in late 2016, Leben Care offers automated medical image analysis algorithms that improve access and quality of diagnosis across areas of life sciences. Leben Care Technologies mission is to develop artificial intelligence products and solutions that improve access and quality of diagnosis across areas of life sciences.

Web site:	leben.ai
Number of Employees:	1-10
Founded in:	2016
Based in:	Singapore
Founders:	Nitin Srivastava, Theenathayalan Parthasarathy, Imran Akthar
Funding To Date:	Undisclosed
Investors:	Undisclosed

Leica Microsystems



Leica Microsystems GmbH designs and produces precision optics systems for the analysis of microstructures. The company offers microscopy, confocal laser scanning microscopy, imaging systems, specimen preparation, and medical equipment for microscopic imaging, measurement, and analysis. Its products include light microscopes, stereomicroscopes, surgical microscopes, confocal microscopes, macroscopes, histology systems, materials sectioning systems, imaging systems, camera systems, and electron microscopy sample preparation systems. The company offers its products for applications in education, clinical, life science research, industrials and materials, special systems, forensic, digital cameras, quality control, routine manuals, and research manuals, as well as in dental, ENT, gynaecologic, neurosurgery, ophthalmic, orthopedic, plastic/reconstructive, and veterinary surgeries.

Web site:	leica-microsystems.com
Number of Employees:	1,001-5,000
Founded in:	1997
Based in:	Wetzlar, Germany
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Lifescan Imaging



Lifescan Imaging is a radiology centre offering a comprehensive range of imaging related services. They are dedicated to providing patients and referring doctors with high quality diagnostic studies and imaging guided procedures. Spearheaded by an experienced and professional team of radiologists and healthcare professionals, Lifescan Imaging aim to deliver a holistic patient experience with compassion and efficiency, and are well-placed to support the needs of the medical community in Singapore and in the region.

Web site:	lifescanimaging.sg
Number of Employees:	Undisclosed
Founded in:	2015
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Lion TCR



They are a clinical-stage biotechnology company that develops TCR-T cell therapy for cancers and life-threatening infectious diseases in Asia. For the past decade, they have accumulated expertise covering the entire product development process, ranging from basic research, T cell engineering and development, and preclinical/clinical assessment. Led by industry and academic experts from their base in Singapore, they are dedicated to the commercialization and continued development of their immunotherapy products.

Web site:	liontcr.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Antonio Bertoletti, Lietao Li
Funding To Date:	\$20M
Investors:	Westlake Venture Partners, Yashang Capital

Lucence Diagnostics



Lucence Diagnostics is a genomic medicine company focused on personalizing cancer care. We invent a full spectrum of cancer diagnostics covering early-stage screening to late-stage treatment selection with a special focus on common cancers in Asia. Lucence Diagnostics headquarters is in Singapore and they had offices in Hong Kong and San Francisco.

Web site:	lucencedx.com
Number of Employees:	11-50
Founded in:	2016
Based in:	Singapore
Founders:	Min-Han Tan
Funding To Date:	Undisclosed
Investors:	Undisclosed

Lundbeck



Lundbeck is a global pharmaceutical company highly committed to improving the quality of life of people living with psychiatric and neurological disorders. For this purpose, Lundbeck is engaged in the research, development, production, marketing and sale of pharmaceuticals across the world. The company's products are targeted at the disease areas depression, schizophrenia, Parkinson's disease and Alzheimer's disease. Focus on R&D is the most important pillar in Lundbeck's ambition to improve treatment for people living with psychiatric and neurological disorders.

Web site:	lundbeck.com
Number of Employees:	5001-10000
Founded in:	1915
Based in:	Copenhagen, Denmark
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

MERCK PTE LTD



Merck Pte. Ltd. distributes pharmaceutical and chemical products. The company was incorporated in 1995 and is based in Singapore. Merck Pte. Ltd. operates as a subsidiary of Merck Holding GmbH.

It is a division of a truly global company, with around 51,000 employees in 66 countries working on breakthrough solutions and technologies. In 2017, it invested a total of € 2.1 billion in research and development.

Web site:	merckmillipore.com
Number of Employees:	200
Founded in:	1995
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

MerLion Pharma



MerLion Pharmaceuticals is a drug discovery and development company, engaged in the research and development of natural products. It operates through two business units, MerLion Research and MerLion Development. The MerLion Research unit is a contract services business, which provides access to natural product collections by offering sample/extract supply services, extract profiling and standardization, assay development, throughput screening, compound purification and structural identification, biocatalyst isolation, and strain improvement.

Web site:	merlionpharma.com
Number of Employees:	11-50
Founded in:	2002
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	\$50.5M
Investors:	Aurelia Private Equity, Heidelberg Capital Private Equity, EDBI, Aravis Ventures, Lacuna, Zürcher Kantonal Bank, Temasek Holdings

MiRXES



MiRXES is a privately held life science research tool provider and miRNA diagnostic test developer headquartered in Singapore. MiRXES is a spin-off from the Bioprocessing Technology Institute of the Agency of Science Technology And Research (A*STAR) and is supported by Exploit Technologies and the National University of Singapore.

Web site:	mirxes.com
Number of Employees:	11-50
Founded in:	2014
Based in:	Singapore
Founders:	Lihan Zhou
Funding To Date:	\$4M
Investors:	Venturecraft Group

Moleac



Moleac is a biopharmaceutical company based in Singapore. Moleac is headquartered in Singapore. Its operations and research are located in Biopolis, a world-class purpose built complex for biomedical.

Web site:	moleac.com
Number of Employees:	11-50
Founded in:	2002
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

myhCue



hCue, launched by Elixir Lab in June 2015, is the fastest growing Cloud Healthcare platform for Doctors, Clinics, Clinic Chains, Pharmacies, Pharmacy Chains, Medical Labs and Patients. The hCue platform integrates all aspects of healthcare, and democratizes the reach of affordable, cutting edge healthcare software to all.

Web site:	myhcue.com
Number of Employees:	51-100
Founded in:	2015
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Nova Satra Dx

Nova Satra Dx 

Nova Satra Dx is a molecular diagnostics company headquartered in Singapore. The company is committed to empowering patients and physicians through the research, development and commercialisation of novel blood based diagnostic tests.

These tests provide rapid and accurate detection of cancer using Asian-specific epigenetic biomarkers. Based on its clinically validated NovoTect™ technology developed by the University of Oxford, Nova Satra's diagnostic tests can detect and identify changes in gene expression which are linked to cancer.

The company is developing a pipeline of tests for breast, colon, prostate, stomach and lung cancers. For more information, please visit www.novasatra.com

Web site:	novasatra.com
Number of Employees:	11-50
Founded in:	2014
Based in:	Singapore
Founders:	Kane Black
Funding To Date:	\$2.5M
Investors:	Genting Berhad

Novena Heart Centre



At Novena Heart Centre, they believe that research is an integral part of clinical practise. It is necessary to help develop new capabilities and to remain at the forefront of medical science. It also challenges us to think out of the box and question our current practises in order to innovate and come up with better solutions for the patient.

Web site:	novenaheartcentre.com.sg
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Orange Valley



Orange Valley is an elderly care company in Asia and always has the Resident-First attitude. Orange Valley started with one nursing home operating 108 beds and has since grown to be one of Singapore's leading eldercare service providers offering convenient one-stop comprehensive eldercare services.

Web site:	orangevalley.sg
Number of Employees:	1-10
Founded in:	1993
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Osteopore



Osteopore International is a Singapore based corporation strategically poised to be a leading medical device company in this region. They are involved in designing, developing and marketing bioresorbable polymer implants for neurosurgical, orthopedic, and maxillofacial surgery use.

Web site:	osteopore.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Palico Biotech Pte Ltd

PALICO
Biotech Pte Ltd

One of Singapore's leading suppliers of biotechnology, life sciences equipment, Palico Biotech meets the needs of research institutes, biotechnology companies, universities and polytechnics. Besides comprehensive after-sale services, they also offer annual preventive maintenance service contracts to they customers to ensure optimum performance of their equipment.

Web site:	palicobio.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

PAN-MALAYAN PHARMACEUTICALS



Pan-Malayan holds the distinction of being the oldest established pharmaceuticals wholesaler in Singapore. Today, Pan-Malayan are the largest wholesaler in terms of they very extensive product range & customer/supplier network. Constant innovation & customer intimacy lie at the heart of they business philosophy.

Web site:	panmalayan.com.sg
Number of Employees:	51-200
Founded in:	Undisclosed
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

PATHNOVA LABORATORIES PTE



Pathnova Laboratories is a clinical service provider focused on the use of machine learning to scale the detection of nasopharyngeal cancer.

Web site:	N/A
Number of Employees:	2-10
Founded in:	2017
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

PrIME Biologics



PrIME Biologics is a Singapore-based biotech company that has developed a disposable therapeutic plasma manufacturing process based on PrIME technology – Preparative Isolation by Membrane Electrophoresis. PrIME is pioneering this technique in its plasma manufacturing plant in Singapore to address the US\$1 billion Asian plasma derivative market.

Web site:	primebiologics.com
Number of Employees:	11-50
Founded in:	2010
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	SGD16M
Investors:	Xeraya Capital, JP Asia Prime Capital, Pulau Manukan Ventures

PSC Biotech



PSC Biotech is global life sciences technology company serving customers in North America, Europe, Asia, South America and the Middle East. Their 400 plus employees provide professional technical services such as commissioning, qualification, project management, regulatory affairs, quality, compliance, conceptual engineering, business analysis, Information Technology, Information Systems, calibration, computerized system validation, etc., to life science, pharmaceutical and software companies.

Web site:	biotech.com
Number of Employees:	201-500
Founded in:	1996
Based in:	California, United States
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

QIAGEN Singapore



QIAGEN is the leading global provider of Sample to Insight solutions to transform biological materials into valuable molecular insights. QIAGEN sample technologies isolate and process DNA, RNA and proteins from blood, tissue and other materials. Assay technologies make these biomolecules visible and ready for analysis. Bioinformatics software and knowledge bases interpret data to report relevant, actionable insights. Automation solutions tie these together in seamless and cost-effective molecular testing workflows.

Web site:	qiagen.com
Number of Employees:	1,001-5,000
Founded in:	1984
Based in:	Venlo, Netherlands
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

QT Vascular



QT Vascular is a global company engaged in the development and commercialization of innovative devices for the minimally invasive treatment of vascular disease without the use of permanent implants (stents). QT Vascular is a Singapore-incorporated company focused on designing advanced therapeutic solutions for the treatment of complex vascular disease. Quattro Vascular was incorporated in 2010 to support the development of Chocolate® – the first interventional medical device developed in Singapore to receive FDA approval.

Web site:	qtvvascular.com
Number of Employees:	Undisclosed
Founded in:	2010
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	SDG620K
Investors:	Undisclosed

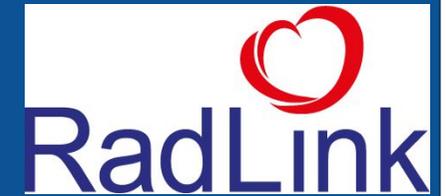
Quinxell



QuinXell Technologies Pte Ltd was founded in 2011 as a member of Quintech Life Sciences. QuinXell's core expertise lies in the emerging field of regenerative medicine, through her innovative cell culture technologies.

Web site:	quinxell.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

RadLink-Asia



RadLink is Singapore's leading private diagnostic and molecular imaging service provider, comprising eight Diagnostic Imaging centres, two PET centres and a Cyclotron facility. RadLink's group of Diagnostic Imaging centres includes the main facility RadLink Diagnostic imaging (S) Pte Ltd located at Paragon Medical in the heart of Orchard Road, providing radiology scans such as X-rays, Ultrasounds, Mammograms, Bone Mineral Densitometry (Dexa), MRI, and CT scans.

Web site:	radlink.com.sg
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Roche Singapore



Roche was one of the first companies to bring targeted treatments to patients. With they combined strength in pharmaceuticals and diagnostics, they are better equipped than any other company to further drive personalised healthcare.

Web site:	roche.co
Number of Employees:	10,001+
Founded in:	1896
Based in:	Basel, Switzerland
Founders:	Fritz Hoffmann-La Roche
Funding To Date:	Undisclosed
Investors:	Undisclosed

Scigen



SciGen is a high growth biopharmaceutical company that develops, manufactures and markets recombinant human health care biotechnology derived products. SciGen's focus is in the areas of endocrinology, gastroenterology and immunology. The company's portfolio consists of biosimilar products such as rhuman growth hormone, rhuman insulin and rhuman GCSF. All of SciGen's products have undergone substantial clinical development.

SciGen's strategy is to focus on biosimilars (follow-on proteins) in order to minimize the risk of early stage product development. SciGen also collaborates with strategic partners and institutions in order to continuously fill & improve its pipeline.

SciGen also in-licenses and distributes pharmaceutical products and medical devices.

Web site:	scigenltd.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Senescence



Senescence Life Sciences is a biotechnology company specializing in the field of cognitive health. We develop novel therapeutics and nutritional products to address age-related cognitive decline and associated neurodegenerative diseases.

Its work has pinpointed a specific enzymatic process through which cellular free radical damage is translated into functional changes in the brain. This discovery led to the identification of a cellular mechanism that, when properly manipulated, has been shown to restore classical neuronal indicators of age – including neuronal electrophysiology, and learning and memory performance.

Web site:	senescence.life
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Dr. Shawn Watson
Funding To Date:	Undisclosed
Investors:	Undisclosed

Sentec Pte Ltd



Sentec is a Singapore-based developmental stage in-vitro diagnostics (IVD) company targeting the large, high-growth market for Self-Monitoring of Blood Glucose (SMBG). The company is dedicated to the discovery, development and commercialization of technologies that enable diabetics to test their blood glucose levels more conveniently, and at a much lower cost.

Web site:	sentecscientific.com
Number of Employees:	1-10
Founded in:	2011
Based in:	Singapore
Founders:	Luis Hernando Blanco
Funding To Date:	\$800K
Investors:	Get2Volume

SG Meditech



SG Meditech Pte Ltd is a Singapore-based medical device company that has spent the past 10 years in research and development in the field of cord blood collection.

Lack of innovation in cord blood collection devices has limited the amount of stem cells that can be collected and this has been the main challenge faced by transplant physician. This limitation in stem cell number count is further exacerbated by the practice of delayed cord clamping .

The mission of the company is to revolutionize umbilical cord blood collection by increasing stem cell yields for better therapeutic outcomes.

Web site:	sgmeditech.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Singapore Medical Group (SMG)



Singapore Medical Group (SMG) is a private specialist and primary healthcare provider with a network of 30 specialties. The Group is committed to its promise of providing patient centred medical care and experience to every individual. The Group currently has a total of 23 clinics strategically located in Paragon, Mount Elizabeth Novena Specialist Centre, Parkway East Medical Centre, Raffles Place, Connexion and Gleneagles Medical Centre with a growing network of SMG Associates clinics across the island.

Web site:	smg.sg
Number of Employees:	50-200
Founded in:	2005
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Singapore Medical Innovative Technology



SMIT is a private stem cell bank in Singapore and we specialise in the processing, cryopreservation and storage of Mesenchymal Stem Cells (MSCs).

SMIT is a leader in providing services for the rapidly expanding field of regenerative medicine. Specifically, SMIT precisely separates, multiplies and stores adult adipose-derived mesenchymal stem cells for autologous use by physicians. This means that an individual's fat (adipose) is the source of their adult stem cells, which are used only for that individual and never for any other person.

Web site:	smitstemcell.com
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Singhealth



SingHealth is the eastern cluster of public healthcare institutions in Singapore. Each year, SingHealth institutions attend to over 3 million patients. SingHealth aims to provide Medical Excellence and Genuine Care, inspired by their core shared values of Clinical Excellence, Commitment and Collaboration. The cluster provides affordable, quality healthcare that is accessible, integrated and comprehensive.

Web site:	singhealth.com.sg
Number of Employees:	10001+
Founded in:	2000
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

SHINESeniors



Project SHINESeniors is a SMU-initiated effort to enable elderly Singaporeans to age-in-place, whereby the elderly can stay within the comfort of their homes and familiarity of their neighborhoods, and with minimal disruptions to their lives and activities. This is achieved by providing sensor-enabled homes and personalized home care for senior Singaporeans. With a sensor-enabled home, the physical environment (such as air quality, noise level, temperature and humidity) and daily living patterns of the elderly (such as his/her mobility patterns at home, medication adherence and sleep quality) can be monitored in an unobtrusive manner, without infringing the privacy and comfort of the elderly. Through sense-making and visualization of the real-time sensor data, anomalies in the living patterns of an elderly can be detected quickly. These unusual living patterns may include prolonged non-activity or prolonged dwell time in a particular area in the home, and thus requires prompt response by the respective caregivers. By watching for possible changes in an elderly's well-being, community caregivers be alerted and intervene in a timely manner..

Web site:	icity.smu.edu.sg/shinesenior-overview
Number of Employees:	Undisclosed
Founded in:	2013
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Smart Thermograph PTE LTD



Smart Arthritis is a technology developed to self-manage knee arthritis at home. It consists of a sensor attached to a smartphone and a software. Smart Arthritis can visualize inflammation level on a knee joint just in 10 seconds. Therefore, a user can take anti-arthritic pills or rub ointments proactively in order to avoid pain syndrome permanently and reduce inflammation level. A customer can identify the best personalized treatment\diet which has a maximum efficacy for him. Smart Arthritis has a similar usage model for people with knee arthritis as a glucometer for people in diabetes.

Web site:	smart-arthritis.com
Number of Employees:	1-10
Founded in:	2014
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Speedoc



Speedoc was founded in 2017 in Singapore with a mission to bring advanced medical care to home. With the aging population to address and improved access to technology, Speedoc built a complete end-to-end system for doctors and patients, so that house call doctor services can be provided with ease to people in the community. With Speedoc's emphasis on cost-effectiveness and modern medical devices, home medical services need not be limited to only immobile or bed-bound patients but to everyday people who may require GP or emergency services.

Web site:	speedoc.com
Number of Employees:	1-10
Founded in:	2017
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	SGD800K
Investors:	Undisclosed

Stem Med



Established in January 2015, Stem Med is the first private stem cell banking facility in Singapore that specialises in the processing, cryopreservation and storage of bone marrow and adipose (fat) tissue stem cells.

Founded and managed by a team of leading and experienced medical experts in the Internal Medicine faculty, Stem Med aims to be the leading stem cell bank in the industry for service excellence and expertise in stem cell research and therapy.

Web site:	stem-med.sg
Number of Employees:	Undisclosed
Founded in:	Undisclosed
Based in:	Undisclosed
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

STEMCELL Technologies



STEMCELL Technologies Inc. is a Canadian biotechnology company that develops specialty cell culture media, cell isolation systems and accessory products for life science research. Driven by science and a passion for quality, STEMCELL supports the advancement of scientific research around the world with our catalogue of more than 2000 cell biology research tools.

STEMCELL Technologies was launched in 1993 when founder and CEO Allen Eaves needed a way to meet the increasing demands for his standardized, cost-effective cell culture media for growing blood-forming stem cells. At the time, Eaves was a hematologist and cancer researcher heading the Terry Fox Laboratories (TFL) and head of clinical hematology at the University of British Columbia in Vancouver, Canada.

Web site:	stemcell.com
Number of Employees:	501-1000
Founded in:	Undisclosed
Based in:	Chennai, India
Founders:	Allen C Eaves
Funding To Date:	\$15M
Investors:	BDC Venture Capital, Transition Capital Partners

Steril Medical



Steril Medical Private Limited was incorporated in Singapore in November 1988.

The company manufactures a wide selection of medical disposables. Its manufacturing activity covers initial design, prototype testing and eventual mass production for in-house products as well as OEM products.

Steril Medical's products are used extensively in hospitals, clinics, nursing homes, dialysis centres and laboratories.

The company works with local and international distributors and agents to market their products while they concentrate on product research and design and improving their manufacturing process.

Web site:	sterilmedical.com
Number of Employees:	Undisclosed
Founded in:	1998
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Straits Biotech



Straits Biotech is an independent company with cutting-edge genomics laboratory and a team of experts in the field of biotechnology. They are strategically located in Singapore, a prime geographic location with global connectivity. Singapore has efficient procedures in place for biological material movement and intellectual property protection. Straits Biotech mission is to provide the scientific community with high quality genomics solution for their research needs.

Web site:	straitsbiotech.com
Number of Employees:	1-10
Founded in:	2016
Based in:	Singapore
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Supercraft3D



Supercraft3D is an additive manufacturer service bureau with focus on Healthcare and Medical applications. Supercraft3D is also the first company in Asia to be able to offer Additive Manufactured customized body implants made of bio-compatible titanium alloy.

Web site:	supercraft3d.com
Number of Employees:	1-10
Founded in:	2016
Based in:	Singapore
Founders:	Maltesh Somasekharappa, Srikrishna Prabhu
Funding To Date:	\$1M
Investors:	Undisclosed

Taiho Pharma



TAIHO PHARMA

Taiho Pharmaceutical Co., Ltd. is engaged in the research, development, production, distribution, and marketing of pharmaceutical products. The company develops drugs primarily in the area of oncology. It also develops other pharmaceuticals, controlled medical devices, designated quasi-drugs, second-class OTC drugs, designated second-class OTC drugs, and third-class OTC drugs.

Web site:	taiho.co.jp
Number of Employees:	Undisclosed
Founded in:	1963
Based in:	Tokyo, Japan
Founders:	Undisclosed
Funding To Date:	Undisclosed
Investors:	Undisclosed

Tessa Therapeutics



Tessa Therapeutics is a clinical stage biopharmaceutical company with the scientific vision of revolutionizing the treatment of cancer by redirecting the body's potent anti-viral immune response to recognize and kill cancer cells. Tessa's core virus-specific T cell (VST) platform has shown compelling results in the treatment of solid tumors, and the company is building a portfolio of therapies addressing a wide range of tumors by combining the qualities of its T cell platform with complementary technologies.

Web site:	tessatherapeutics.com
Number of Employees:	101-250
Founded in:	2011
Based in:	Singapore
Founders:	Andrew Khoo
Funding To Date:	\$130M
Investors:	Temasek Holdings, Heliconia Capital Management, EDBI, Karst Peak Capital

Tricog Health Pte Ltd.



Tricog Health Services was founded in 2014 with the goal to save life through accurate & instant diagnosis of cardiac incidents. Tricog has done this by using Medical Expertise, Technology and Artificial Intelligence to scale to over half a million ECG diagnosis in 4 years. Tricog has a mission to help doctors in saving precious lives by use of Technology.

Web site:	tricog.com
Number of Employees:	50-200
Founded in:	2014
Based in:	Singapore
Founders:	Zainul Charbiwala, Udayan Dasgupta, Abhinav Gujjar, Dr Charit Bhograj
Funding To Date:	\$4.5M
Investors:	UTEC- University of Tokyo Edge Capital, Microsoft Accelerator Bangalore, Blume Ventures, Inventus Capital Partners

UCARE.AI



UCARE.AI's team of data scientists, technologists and doctors came together with one mission; to unlock the impossible for healthcare by creating the most advanced AI capable of making accurate predictions years into the future. Patients can obtain a personalized understanding of their lifetime risks so they can take preventive actions early. Providers can focus on those who need their expertise urgently while Payers can provide ideal coverage without increasing premiums.

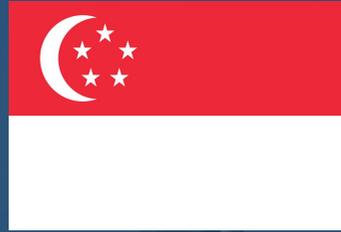
Web site:	ucare.ai
Number of Employees:	Undisclosed
Founded in:	2016
Based in:	Singapore
Founders:	Neal Liu, Christina Teo
Funding To Date:	SGD8.2M
Investors:	Great Eastern Holdings, WPGrowth Ventures, Walden International

Vela Diagnostics



Vela Diagnostics is a worldwide provider of integrated molecular diagnostics workflows that address individual testing needs. Established in 2011 with its global headquarters in Singapore, Vela Diagnostics provides innovative test and data reporting solutions for Real-Time PCR and Next-Generation Sequencing. Integrating both PCR and NGS solutions to test for infectious diseases and oncologic targets increases flexibility and efficiency of the workflow and enables laboratories to overcome complex diagnostic challenges.

Web site:	veladx.com
Number of Employees:	51-200
Founded in:	2011
Based in:	Singapore
Founders:	Michael Tillmann
Funding To Date:	Undisclosed
Investors:	Undisclosed



80 Longevity Investors

1. Accuron MedTech
2. Accuron Technologies
3. Adamas Finance Asia
4. Apax Partners
5. Aravis Ventures
6. Aurelia Private Equity
7. Aviva Ventures
8. Baidu Ventures
9. BioMedPartners
10. BioVeda Capital
11. BioVeda China Fund
12. Blume Ventures
13. btov Partners
14. Business Model Competition
15. Cenova Ventures
16. Creathor Ventures
17. Daiwa Corporate Investment
18. Dark Horse Investment
19. Data Collective
20. DHVC (Digital Horizon Capital)
21. EDBI
22. Eden Strategy Institute
23. Enabling Future
24. Genting Berhad
25. Get2Volume
26. Global Health Investment Fund (GHIF)
27. Great Eastern Holdings
28. GREE Ventures
29. Heliconia Capital Management
30. High-Tech Gründerfonds
31. HR Ventures
32. Inventus Capital Partners
33. JAFCO Asia
34. JFDI.Asia
35. Jungle Ventures
36. KfW
37. KGI Venture Capital
38. Lacuna
39. Luye Medical Group Co., Ltd
40. Microsoft Accelerator Bangalore
41. Milestone Capital China
42. Morningside Group
43. MVP Capital
44. National Research Foundation
45. Nest
46. Nest.Bio Ventures
47. Norwest Venture Partners
48. Novartis Venture Fund
49. NRW.BANK
50. Openspace Ventures
51. Ping An
52. Qualcomm Ventures
53. Red Dot Ventures
54. SEED MG
55. Shin Ryoku Trust
56. SparkLabs Global Ventures
57. SpesNet Pte. Ltd.
58. Spring SEEDS Capital
59. Start Up Peru
60. Start-Up Chile
61. StartUp Health
62. Startupbootcamp
63. Taya Ventures
64. Temasek Holdings
65. Tianda Pharmaceuticals
66. UTEC- University of Tokyo Edge Capital
67. Vectr Ventures
68. Venturecraft Group
69. Vickers Venture Partners
70. Walden International
71. Wavemaker Partners
72. Wellington Partners
73. Westlake Venture Partners
74. WI Harper Group
75. Womena
76. WuXi AppTec
77. Xeraya Capital
78. Y Combinator
79. Zuellig Pharma China
80. Zürcher Kantonal Bank

Accuron MedTech

Accuron *MedTech*

Summary:	Accuron MedTech is the largest, high growth medtech company in Southeast Asia with a well-established global footprint. Headquartered in Singapore, and ultimately wholly owned by Temasek Holdings, Accuron MedTech is a global medical technology leader with a core focus in urology devices and services.
Number of Investments:	2
Headquarters:	Singapore
Year Founded:	2014
Total Investments (USD):	\$13M
Stages:	Seed, Early Stage
Sectors:	Technology, Healthcare
Website:	accuronmedtech.com
Investments in Medical Technology companies: Advent Access, AWAK Technologies	
Advent Access - SGD2.6M (Seed Round) in December 2017 AWAK Technologies - \$11.2M (Series A) in December 2016	

Accuron Technologies



Summary:	Accuron Technologies (Accuron) is a global precision engineering and technology group, having core competencies in precision manufacturing, material processing, systems design and system integration. We aspire to be a leading player in niche segments of our industries
Number of Investments:	1
Headquarters:	Singapore
Year Founded:	1995
Total Investments (USD):	\$34M
Stages:	Undisclosed
Sectors:	Engineering, Technology
Website:	accuron.com
Investments in Medical Technology companies: ASLAN Pharmaceuticals	
ASLAN Pharmaceuticals - \$34M (Series C) in December 2015 with 5 investors (Tianda Pharmaceuticals, Sagamore Bioventures, Morningside Group, Cenova Ventures, BioVeda China Fund)	



Adamas Finance Asia



Summary:	Adamas Finance Asia is an Asian-focused diversified investment opportunity quoted in London, targeting above average income and capital growth. Our objective is to provide shareholders with unique access to a diverse portfolio of assets across a variety of sectors and geographies throughout Asia.
Number of Investments:	1
Headquarters:	Hong Kong
Year Founded:	2014
Total Investments (USD):	\$5.5M
Stages:	Undisclosed
Sectors:	Technology
Website:	adamasfinance.com
Investments in Medtech, Medical Devices, and Healthcare: DocDoc	
DocDoc - \$5.5M (Series B) in March 2018	



Apax Partners



Summary:	Apax Partners invests in leveraged and management buy-outs, growth capital and late venture funds.
Number of Investments:	186
Headquarters:	United Kingdom
Year Founded:	1969
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	apax.com
Investments in Medtech, Medical Devices, and Healthcare: Becton Dickinson	
Becton Dickinson (Private Equity Round) in March 2016	



Aravis Ventures



Summary:	Aravis is the first independent Swiss on-shore private equity house, an established investor in the renewable energy and life science spaces. Aravis Ventures are a "hands-on" investor taking leading positions and understanding the balance between finance, commercial assets and people.
Number of Investments:	31
Headquarters:	Switzerland
Year Founded:	2001
Total Investments (USD):	\$7M
Stages:	Early Stage Venture, Late Stage Venture
Sectors:	Biotechnology, Energy, Science
Website:	aravis.ch
Investments in Medtech, Medical Devices, and Healthcare: MerLion Pharma	
MerLion Pharma - \$7M (Series C) in October 2010 with 3 Investors (Heidelberg Capital Private Equity, EDBI, Aurelia Private Equity)	

Aurelia Private Equity



AURELIA PRIVATE EQUITY

Summary:	Aurelia Private Equity is focused on investments in early-stage technology companies in Germany. Intelligent capital is the mainstay of the venture capital business. As a classic early-stage financier and startup consultant, they are interested in fast-growing, technology-oriented companies with great future potential.
Number of Investments:	5
Headquarters:	Deutsch, Sachsen, Germany
Year Founded:	Undisclosed
Total Investments (USD):	\$7M
Stages:	Undisclosed
Sectors:	Biotechnology, Pharmaceutical
Website:	aurelia-pe.de
Investments in Medtech, Medical Devices, and Healthcare: MerLion Pharma	
MerLion Pharma - \$7M (Series C) in October 2010 with 3 investors (Heidelberg Capital Private Equity, EDBI, Aravis Ventures)	

Aviva Ventures



Summary:	Aviva Ventures operates as a venture capital firm. The Company invests in insurance companies. Aviva Ventures serves customers worldwide.
Number of Investments:	15
Headquarters:	United Kingdom
Year Founded:	Undisclosed
Total Investments (USD):	\$5M
Stages:	Undisclosed
Sectors:	HealthTech
Website:	digital.aviva.com
Investments in Medtech, Medical Devices, and Healthcare: Biofourmis	
Biofourmis - \$5M (Series A) in December 2017 with an investor (Openspace Ventures)	



Baidu Ventures

Baidu.ventures
百度风投

Summary:	We invest in deep tech companies pushing the frontiers that enable artificial intelligence (such as chips, sensors, cameras, communications, and algorithmic innovations) as well as companies building applications which were previously impossible without AI. BV is a financial investor focusing on the Seed, Series A, and Series B of companies across China, North America & Europe, with teams in all three geographies.
Number of Investments:	54
Headquarters:	Beijing, China
Year Founded:	2017
Total Investments (USD):	\$10M
Stages:	Early Stage Venture, Venture
Sectors:	Biotechnology, Healthcare
Website:	bv.ai
Investments in Medtech, Medical Devices, and Healthcare: Engine Biosciences	
Engine Biosciences - \$10M (Seed Round) January 2018 with 7 investors (WuXi AppTec, WI Harper Group, Nest.Bio Ventures, Goldman Capital, EDBI, DHVC (Digital Horizon Capital), 6 Dimensions Capital)	

BioMedPartners



Summary:	BioMedPartners is one of the leading European venture capital firms providing private equity and mezzanine financing to early- and mid-stage healthcare and human life science companies. They target the entire industry with special focus on pharmaceuticals, biotechnology, diagnostics and medical technology.
Number of Investments:	63
Headquarters:	Basel, Switzerland
Year Founded:	Undisclosed
Total Investments (USD):	\$2.6M
Stages:	Early Stage Venture, Late Stage Venture
Sectors:	Technology
Website:	biomedvc.com
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €2.3M (Series B) in December 2014	

BioVeda Capital



Summary:	BioVeda is a Singapore based firm. They invest in companies in the healthcare sector with leading market positions, proprietary technologies, and outstanding scientific and management talent. They are a crucial business and scientific bridge between companies in the East and West, linking business and technology between two very diverse markets.
Number of Investments:	9
Headquarters:	Singapore
Year Founded:	Undisclosed
Total Investments (USD):	\$6,3M
Stages:	Early Stage Venture
Sectors:	Healthcare
Website:	biovedavc.com
Investments in Medtech, Medical Devices, and Healthcare: Clearbridge Biomedics	
Clearbridge Biomedics - SGD8.7M (Series B) in March 2013 with 5 investors (Vertex Ventures Southeast Asia&India, Vertex Ventures, Spring SEEDS Capital, NUS Technology Holdings, Dark Horse Investment)	

BioVeda China Fund



Summary:	In 2005, Bvcf Became The First International Private Equity Firm To Come To China Dedicated To Investing In China'S Life Sciences. Dr. Zhi Yang Founded The Firm With The Vision That It Would Be The Key Investor In China'S Life Sciences Golden Age By Being First And Bringing Unmatched Domain Expertise.
Number of Investments:	10
Headquarters:	China
Year Founded:	2005
Total Investments (USD):	\$34M
Stages:	Early Stage Venture
Sectors:	Science, Healthcare
Website:	bvcf.com
Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals	
ASLAN Pharmaceuticals - \$34M (Series C) in December 2015 with 5 investors (Tianda Pharmaceuticals, Sagamore Bioventures, Morningside Group, Cenova Ventures, Accuron Technologies)	



Blume Ventures



Summary:	Blume is one of India's leading tech-focused early stage VCs. Their strategy is to be ahead of the wave, to take calculated risks on emerging business models well before the market has caught the wave. They believe that building capital moats by themselves are, and will continue to be, an undifferentiated winning strategy.
Number of Investments:	132
Headquarters:	Mumbai, India
Year Founded:	2011
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Seed
Sectors:	Healthcare
Website:	blume.vc
Investments in Medtech, Medical Devices, and Healthcare: Tricog Health Pte Ltd.	
Tricog Health Pte Ltd. (Series A) in August 2016 with an investor (Inventus Capital Partners)	

btov Partners



Summary:	btov Partners is a European venture capital firm focused on early stage investments in digital and industrial technology companies. We invest institutional funds, managed partner funds and offer direct investment opportunities to private investors.
Number of Investments:	106
Headquarters:	Saint Gallen, Switzerland
Year Founded:	2000
Total Investments (USD):	\$10.2M
Stages:	Early Stage Venture, Late Stage Venture, Seed, Venture
Sectors:	Technology, Healthcare
Website:	btov.vc
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €9M (Series B) in July 2014 with 5 investors (Wellington Partners, Nrw.Bank, KfW, HR Ventures, Creathor Ventures)	

Business Model Competition



Summary:	The International Business Model Competition is the first and largest lean startup competition in the world. Their primary objectives are to inspire and educate student entrepreneurs to launch validated ventures that last.
Number of Investments:	1
Headquarters:	Undisclosed
Year Founded:	Undisclosed
Total Investments (USD):	\$24K
Stages:	Undisclosed
Sectors:	Education, Technology
Website:	businessmodelcompetition.com
Investments in Medtech, Medical Devices, and Healthcare: Drop Technologies	
Drop Technologies - \$24K (Grant Round) in November 2015 with 4 investors (Tony Cueva, Start Up Peru, Omar Ruelas, Marco Garcia Casana)	



Cenova Ventures



Summary:	The healthcare industry in China is one of the largest and the fastest growing in the world. What's more, it is expected to undergo significant structural changes in the coming years. Headquartered in Shanghai, China, Cenova focuses on strategic areas with innovation and high growth potential, including pharmaceuticals, biotech, medical devices, diagnostics, and healthcare services in China.
Number of Investments:	10
Headquarters:	Shanghai, China
Year Founded:	Undisclosed
Total Investments (USD):	\$34M
Stages:	Undisclosed
Sectors:	Healthcare, Pharmaceuticals
Website:	cenovaventures.com
Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals	
ASLAN Pharmaceuticals - \$34M (Series C) in December 2015 with 5 investors (Tianda Pharmaceuticals, Sagamore Bioventures, Morningside Group, BioVeda China Fund, Accuron Technologies)	

Creathor Ventures



Summary:	Creathor Ventures invests in technology-oriented companies that are driving the automation of industry and business as well as the personalization and digitalization of the healthcare sector. The regional focus is on Germany and Switzerland.
Number of Investments:	74
Headquarters:	Bad Homburg, Hessen, Germany
Year Founded:	2003
Total Investments (USD):	\$10.2M
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	creathor.com
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €9M (Series B) in July 2014 with 5 investors (Wellington Partners, NrW.Bank, KfW, HR Ventures, btov Partners)	

Daiwa Corporate Investment

大和企業投資
Daiwa Corporate Investment

Summary:	Daiwa Corporate Investment operates as a private equity investment firm. The company invests primarily in stocks, convertible bonds, and warrants of domestic and foreign private companies. Daiwa Corporate Investment operates in Japan.
Number of Investments:	10
Headquarters:	Tokyo, Japan
Year Founded:	2013
Total Investments (USD):	\$23M
Stages:	Early Stage Venture
Sectors:	Healthcare, Pharmaceuticals
Website:	daiwa-inv.co.jp
Investments in Medtech, Medical Devices, and Healthcare: Aslan Pharmaceuticals	
Aslan Pharmaceuticals - \$23M (Series D) in July 2016 with 5 investors (TopTaiwan, Taya Ventures, Taiwan institutional funds, Milestone Capital China, KGI Venture Capital)	



Dark Horse Investment



Summary:	Dark Horse Investment Holdings Limited is headquartered in Hong Kong. The group is made up of sophisticated and accredited investors, who are former and current CEOs, serial entrepreneurs, investment bankers, active private equity investors and business consultants.
Number of Investments:	2
Headquarters:	Hong Kong
Year Founded:	2008
Total Investments (USD):	\$6,3M
Stages:	Early Stage Venture, Seed
Sectors:	Technology
Website:	darkhorseinvest.com
Investments in Medtech, Medical Devices, and Healthcare: Clearbridge Biomedics	
Clearbridge Biomedics - SGD8.7M (Series B) in March 2013 with 5 investors (Vertex Ventures Southeast Asia&India, Vertex Ventures, Spring SEEDS Capital, NUS Technology Holdings, BioVeda Capital)	

Data Collective



Summary:	Data Collective is a venture fund with a unique team of experienced venture capitalists, technology entrepreneurs and practicing engineers, investing together in seed and early stage big data and IT infrastructure companies.
Number of Investments:	337
Headquarters:	San Francisco, California, United States
Year Founded:	2011
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	HealthTech
Website:	dcvc.com
Investments in Medtech, Medical Devices, and Healthcare: AlemHealth	
AlemHealth (Seed Round) in May 2015 with 2 investors (Enabling Future, Womena)	



DHVC (Digital Horizon Capital)



Summary:	Danhua Capital is a venture capital fund that invests primarily in early stage and growth stage companies with disruptive technologies or innovative business models, big market opportunities and strong management team.
Number of Investments:	147
Headquarters:	Palo Alto, California, United States
Year Founded:	2013
Total Investments (USD):	\$10M
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	dh.vc
Investments in Medtech, Medical Devices, and Healthcare: Engine Biosciences	
Engine Biosciences - \$10M (Seed Round) January 2018 with 7 investors (WuXi AppTec, WI Harper Group, Nest.Bio Ventures, Goldman Capital, EDBI, Baidu Ventures, 6 Dimensions Capital)	

EDBI



Summary:	Headquartered in Singapore, they invest to shape the future industries of Singapore in the knowledge and innovation-intensive sectors of Information & Communication Technology, Emerging Technology, Healthcare and select industry clusters under our Strategic Growth Programme.
Number of Investments:	88
Headquarters:	Singapore
Year Founded:	1991
Total Investments (USD):	\$93.5M
Stages:	Early Stage Venture, Late Stage Venture
Sectors:	Technology, Healthcare
Website:	edbi.com
Investments in Medtech, Medical Devices, and Healthcare: Tessa Therapeutics	
Tessa Therapeutics - \$80M (Venture Round) in December 2017 with 3 investors (Temasek Holdings, Karst Peak) MerLion Pharma - \$13.5M (Series A) in October 2002 with 5 investors (Temasek Holdings, Novartis Venture Fund)	

Eden Strategy Institute

eden
strategy
institute

Summary:	Eden Strategy Institute collaborates with the world's most successful organizations on the sustainability of their growth strategies. Their work frequently immerses in the areas of economic development, education, environmental conservation, global health, resource efficiency, and trade.
Number of Investments:	2
Headquarters:	Singapore
Year Founded:	2010
Total Investments (USD):	\$1,72M
Stages:	Undisclosed
Sectors:	Healthcare
Website:	edenstrategyinstitute.com
Investments in Medtech, Medical Devices, and Healthcare: Biofourmis	
Biofourmis - \$72K (Angel Round) in December 2015 Biofourmis - \$1M (Seed) in August 2016 with an investor (SpesNet Pte. Ltd.)	



Enabling Future



Summary:	Enabling Future is a venture capital firm specializing in early stage investments. The firm does not invest in box tech-solutions. The firm seeks to invest in business to business and business to consumer sectors.
Number of Investments:	20
Headquarters:	Dubai, United Arab Emirates
Year Founded:	2016
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Seed
Sectors:	Finance
Website:	enablingfuture.com
Investments in Medtech, Medical Devices, and Healthcare: AlemHealth	
AlemHealth (Seed Round) in May 2015 with 2 investors (Womana, Data Collective DCVC)	



Genting Berhad



Summary:	Genting Berhad, an investment holding company, engages in leisure and hospitality, oil palm plantations, power generation, oil and gas, property development, life sciences, and biotechnology activities in Malaysia and internationally.
Number of Investments:	3
Headquarters:	Kuala Lumpur, Malaysia
Year Founded:	1965
Total Investments (USD):	\$2M
Stages:	Undisclosed
Sectors:	Healthcare
Website:	genting.com
Investments in Medtech, Medical Devices, and Healthcare: Nova Satra	
Nova Satra - \$2M (Seed Round) in April 2017	



Get2Volume



Summary:	Get2Volume, headquartered in Singapore, invests in, mentors and helps grow innovative startup companies. Get2Volume offers global capabilities, capital and connections to enable success. Get2Volume invests in and helps grow innovative technology companies in Singapore. Our company brings global capabilities, capital and connections in Silicon Valley and Singapore to provide mentorship and operational and execution expertise.
Number of Investments:	13
Headquarters:	Singapore
Year Founded:	2004
Total Investments (USD):	\$800K
Stages:	Early Stage Venture, Seed
Sectors:	Technology
Website:	g2vaccelerator.com
Investments in Medtech, Medical Devices, and Healthcare: Sentec Pte Ltd	
Sentec Pte Ltd - \$800K (Venture Round) in January 2015	

Global Health Investment Fund (GHIF)



Summary:	The Global Health Investment Fund (GHIF) is a \$108 million social impact investment fund designed to provide financing to advance the development of drugs, vaccines, diagnostics and other interventions against diseases that disproportionately burden low- and middle-income countries.
Number of Investments:	11
Headquarters:	New York, United States
Year Founded:	2012
Total Investments (USD):	\$15M
Stages:	Debt, Late Stage Venture, Post-Ipo, Private Equity
Sectors:	Biotechnology, Science, Healthcare
Website:	ghif.com
Investments in Medtech, Medical Devices, and Healthcare: Becton Dickinson	
Becton Dickinson - \$15M (Post-IPO Equity) in August 2015	



Great Eastern Holdings



Summary:	Great Eastern has provided millions of people with peace of mind. Today, they are one of the leading insurance companies in Asia.
Number of Investments:	1
Headquarters:	Singapore
Year Founded:	1908
Total Investments (USD):	\$5.9M
Stages:	Undisclosed
Sectors:	Healthcare
Website:	greateasternlife.com
Investments in Medtech, Medical Devices, and Healthcare: UCARE.AI	
UCARE.AI - SGD8.2M (Series A) in May 2018 with 3 investors (Walden International, WPGrowth Ventures, Peter Lim)	



GREE Ventures



Summary:	GREE Ventures focuses on investing in early stage (seed to Series A) internet and mobile companies. It seeks out companies in Japan, Southeast Asia, and India with top notch management teams and strong market potential. It is not tied to strategic investments for GREE Inc. and leverages its pan-Asia expertise for guiding its portfolio in an engaged, hands-on role.
Number of Investments:	65
Headquarters:	Tokyo, Japan
Year Founded:	2011
Total Investments (USD):	\$1M
Stages:	Early Stage Venture
Sectors:	Healthcare
Website:	greeventures.com
Investments in Medtech, Medical Devices, and Healthcare: Healint	
Healint - \$1M in March 2015 with 2 investors (Wavemaker Partners, National Research Foundation)	



Heliconia Capital Management

HELICONIA

Summary:	Heliconia Capital Management Pte Ltd is an investment firm that focuses on growth-oriented companies.
Number of Investments:	4
Headquarters:	Singapore
Year Founded:	Undisclosed
Total Investments (USD):	\$80M
Stages:	Undisclosed
Sectors:	Technology, Healthcare
Website:	heliconiacapital.com
Investments in Medtech, Medical Devices, and Healthcare: Tessa Therapeutics	
Tessa Therapeutics - \$80M (Venture Round) in December 2015 with 3 investors (Temasek Holdings, Karst Peak Capital, EDBI)	



High-Tech Gründerfonds



Summary:	High-Tech Gründerfonds (HTGF) is a powerful engine that drives the success of high-tech start-ups. Armed with expertise, entrepreneurial spirit and passion, the experienced team of investment managers and start-up experts guide top companies on their journey from launch to success.
Number of Investments:	500
Headquarters:	Berlin, Germany
Year Founded:	2005
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Seed
Sectors:	Biotechnology, Technology
Website:	high-tech-gruenderfonds.de
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems (Series A) in September 2012 with 2 investors (Wellington Partners, HR Ventures)	

HR Ventures



Summary:	HR Ventures is an early-stage venture capital firm, which is part of the HahnAir Group. HR Ventures is based near Frankfurt am Main in Germany. HR Ventures is also an EVCA member, the European private equity & venture capital association.
Number of Investments:	26
Headquarters:	Dreieich, Germany
Year Founded:	2012
Total Investments (USD):	\$10.2M
Stages:	Undisclosed
Sectors:	Healthcare
Website:	hrventures.de
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €9M (Series B) in July 2014 with 5 investors (Wellington Partners, Nrw.Bank, KfW, Creathor Ventures, btov Partners)	

Inventus Capital Partners



Summary:	Inventus Capital Partners is a US-India venture firm managed by successful entrepreneurs and industry operating veterans who have guided and financed nearly 100 entrepreneurs with operations in India and/or Silicon Valley.
Number of Investments:	72
Headquarters:	Silicon Valley, United States
Year Founded:	2008
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Healthcare
Website:	inventuscap.com
Investments in Medtech, Medical Devices, and Healthcare: Tricog Health Pte Ltd.	
Tricog Health Pte Ltd. (Series A) in August 2016 with an investor (Blume Ventures)	

JAFCO Asia



Summary:	Since its establishment in 1990, JAFCO Asia has grown to become a leading brand in the venture capital industry in the Asia Pacific region. Currently, JAFCO Asia has offices in Singapore, Hong Kong, Taipei, Seoul and Beijing.
Number of Investments:	104
Headquarters:	Singapore
Year Founded:	1990
Total Investments (USD):	\$13.5M
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Biotechnology, Pharmaceutical
Website:	jafcoasia.com
Investments in Medtech, Medical Devices, and Healthcare: MerLion Pharma	
MerLion Pharma - \$13.5M (Series A) in October 2002 with 5 investors (Temasek Holdings, Novartis Venture Fund, EDBI, BioVeda Capital, Aravis Ventures)	



JFDI.Asia



Summary:	Joyful Frog Digital Incubator (JFDI.Asia) is a Singapore-based seed accelerator modelled on Techstars that has 60% success taking start-up businesses from idea to \$600k seed investment in 100 days. JFDI. Asia's focus is on mobile and digital products and services made in Asia, for Asia.
Number of Investments:	52
Headquarters:	Singapore
Year Founded:	2010
Total Investments (USD):	\$20K
Stages:	Early Stage Venture, Grant, Seed
Sectors:	Technology
Website:	jfdi.asia
Investments in Medtech, Medical Devices, and Healthcare: Klinify	
Klinify - \$20K (Angel Round) in January 2013	



Jungle Ventures



Summary:	Jungle Ventures is a Singapore-based venture capital firm that primarily focuses on Series A investments in the Southeast Asian region.
Number of Investments:	57
Headquarters:	Singapore
Year Founded:	2010
Total Investments (USD):	\$604K
Stages:	Early Stage Venture
Sectors:	Healthcare
Website:	jungle-ventures.com

Investments in Medtech, Medical Devices, and Healthcare: Klinify

Klinify - \$604K (Seed Round) in February 2014






Summary:	KfW Bankengruppe gives impetus to economic, social and ecological development worldwide. KfW is a public law institution. Our official promotional mission is anchored in the Law concerning KfW.
Number of Investments:	134
Headquarters:	Frankfurt, Germany
Year Founded:	1948
Total Investments (USD):	\$10.2M
Stages:	Debt, Early Stage Venture, Late Stage Venture, Seed
Sectors:	Healthcare
Website:	kfw.de
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €9M (Series B) in July 2014 with 5 investors (Wellington Partners, Nrw.Bank, Creathor Ventures, btov Partners, HR Ventures)	

KGI Venture Capital



Summary:	KGI Venture Capital is a leading venture capital firm. The company provides early state capital to private companies and advisory services to its portfolio companies, which benefit from its value-added networks across the Greater China region. KGI Venture Capital's mission is to assist its portfolio companies in becoming market-leading enterprises.
Number of Investments:	1
Headquarters:	Undisclosed
Year Founded:	Undisclosed
Total Investments (USD):	\$23M
Stages:	Undisclosed
Sectors:	Technology, Healthcare, Pharmaceuticals
Website:	kqi.com

Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals

ASLAN Pharmaceuticals - \$23M (Series D) in July 2016 with 5 investors (TopTaiwan, Taya Ventures, Taiwan institutional funds, Milestone Capital China, Daiwa Corporate Investment)

Lacuna



Summary:	LACUNA is an independent investment company run as a business which has offices in Germany and Switzerland. They develop and market novel fund concepts which are implemented in collaboration with DZ-Bank International S.A.
Number of Investments:	5
Headquarters:	Bayern, Germany
Year Founded:	Undisclosed
Total Investments (USD):	\$30M
Stages:	Early Stage Venture
Sectors:	Pharmaceutical, Technology
Website:	lacuna.de
Investments in Medtech, Medical Devices, and Healthcare: MerLion Pharma	
MerLion Pharma - \$30M (Series B) in March 2007 with an investor (Zürcher Kantonal Bank)	



Luye Medical Group Co., Ltd



Summary:	Headquartered in Singapore, Luye Medical is the regional healthcare services arm of Luye Life Sciences Group. Through strategic acquisitions and partnerships with leading healthcare organizations, we adopt and develop world-leading technology as well as operational and management systems.
Number of Investments:	1
Headquarters:	Shanghai, China
Year Founded:	Undisclosed
Total Investments (USD):	Undisclosed
Stages:	Undisclosed
Sectors:	Healthcare, Technology
Website:	luyemedical.cn
Investments in Medtech, Medical Devices, and Healthcare: Novena Heart Centre	
Novena Heart Centre (Corporate Round) in April 2018	

Microsoft Accelerator Bangalore



Summary:	Microsoft Accelerator Bangalore offers startups and entrepreneurs with an accelerator platform that provides consulting services; technology and infrastructure support; and opportunities to connect with investors and customers.
Number of Investments:	121
Headquarters:	Bangalore, Karnataka, India
Year Founded:	2012
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	microsoftaccelerator.com
Investments in Medtech, Medical Devices, and Healthcare: Tricog Health Pte Ltd.	
Tricog Health Pte Ltd. (Non Equity Assistance) in June 2017	

Milestone Capital China



Summary:	Milestone Capital Management Limited is a venture capital and private equity firm specializing in expansion and acquisition investments. It seeks to invest in consumer and Internet industry. The firm prefers to invest in companies based in China.
Number of Investments:	14
Headquarters:	Shanghai, Shanghai, China
Year Founded:	2002
Total Investments (USD):	\$23M
Stages:	Early Stage Venture, Late Stage Venture
Sectors:	Biopharmaceuticals
Website:	mcmchina.com
Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals	
ASLAN Pharmaceuticals - \$23M (Series D) in July 2016 with 5 investors (TopTaiwan, Taya Ventures, Taiwan institutional funds, KGI Venture Capital, Daiwa Corporate Investment)	



Morningside Group



Summary:	The Morningside Group Limited is a private equity and venture capital firm specializing in early stage. It seeks to make investments in machinery manufacturing, high-tech, life science companies formed around new technologies, media, the Internet, biotechnology, telecommunication, life science, entertainment, consumer, education, and cleantech sectors.
Number of Investments:	153
Headquarters:	Hong Kong
Year Founded:	1986
Total Investments (USD):	\$34M
Stages:	Early Stage Venture, Late Stage Venture, Private Equity, Seed
Sectors:	Biotechnology, Pharmaceuticals
Website:	morningside.com

Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals

ASLAN Pharmaceuticals - \$34M (Series C) in December 2015 with 5 investors (Tianda Pharmaceuticals, Sagamore Bioventures, Morningside Group, BioVeda China Fund, Accuron Technologies)



MVP Capital



Summary:	MVP Capital Partners is a private equity firm focused on buyout and growth equity investments in lower middle market growth companies located in the United States. MVP has consistently and successfully applied this investment approach for over 20 years.
Number of Investments:	3
Headquarters:	Pennsylvania, United States
Year Founded:	1985
Total Investments (USD):	\$9M
Stages:	Early Stage Venture
Sectors:	Technology
Website:	mvpcapital.com
Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals	
ASLAN Pharmaceuticals - \$9M (Series C) in January 2016	



National Research Foundation

NATIONAL
RESEARCH
FOUNDATION

Summary:	National Research Foundation (NRF) seeks to strengthen Singapore's R&D capabilities, encourage greater innovation and nurture the growth of technology-based enterprises in Singapore. This will help Singapore to remain competitive and create high value jobs and prosperity for Singaporeans.
Number of Investments:	27
Headquarters:	Singapore
Year Founded:	2006
Total Investments (USD):	\$1M
Stages:	Early Stage Venture, Seed
Sectors:	Technology
Website:	nrf.gov.sg
Investments in Medtech, Medical Devices, and Healthcare: Healint	
Healint - \$1M (Seed Round) in March 2015 with 2 investors (Wavemaker Partners, GREE Ventures)	



Nest



Summary:	Nest runs corporate accelerator programmes, invests in high-growth startups, and is building a global entrepreneurial community called Mettā. With all the things they are doing, Nest has built an innovation ecosystem to connect the fast growing markets of Asia, the Middle East, and Africa. Nest aims is to help entrepreneurs, corporates and governments to connect, collaborate and scale.
Number of Investments:	16
Headquarters:	Hong Kong
Year Founded:	2010
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Seed
Sectors:	Finance, Technology
Website:	nest.vc
Investments in Medtech, Medical Devices, and Healthcare: AlemHealth	
AlemHealth (Seed Round) in April 2016	



Nest.Bio Ventures



Summary:	Nest.Bio is a venture creation and venture capital firm focused on leveraging technological breakthroughs to develop, fund, and commercialize next-generation therapeutics globally, especially across North America and China.
Number of Investments:	9
Headquarters:	Massachusetts, United States
Year Founded:	2016
Total Investments (USD):	\$10M
Stages:	Early Stage Venture, Late Stage Venture, Private Equity, Seed
Sectors:	Healthcare
Website:	nest.bio
Investments in Medtech, Medical Devices, and Healthcare: Engine Biosciences	
Engine Biosciences - \$10M (Seed Round) in January 2018 with 7 investors (WuXi AppTec, WI Harper Group, Goodman Capital, EDBI, DHVC (Digital Horizon Capital), Baidu Ventures, 6 Dimensions Capital)	

Norwest Venture Partners

NORWEST
VENTURE PARTNERS

Summary:	Norwest Venture Partners is a venture capital and private equity arm of Wells Fargo Investment Group, Inc. specializing in seed/startup, early, mid, late venture, growth equity, and later stage investments in both listed and unlisted companies.
Number of Investments:	575
Headquarters:	Palo Alto, California, United States
Year Founded:	1961
Total Investments (USD):	\$16M
Stages:	Debt, Early Stage Venture, Late Stage Venture, Private Equity, Seed
Sectors:	Technology, Healthcare
Website:	nvp.com
Investments in Medtech, Medical Devices, and Healthcare: Attune Technologies	
Attune Technologies - \$6M (Series A) in December 2012 Attune Technologies - \$10M(Series B) in November 2015 with 2 investors (Qualcomm, Qualcomm Ventures)	

Novartis Venture Fund



Summary:	Novartis Venture Funds is a private equity and venture capital arm of Novartis AG specializing in investments in early startup companies, seed, growth capital, Series A, and later stage investment.
Number of Investments:	190
Headquarters:	Basel, Switzerland
Year Founded:	1996
Total Investments (USD):	\$13.5M
Stages:	Early Stage Venture, Late Stage Venture, Post-Ipo, Secondary Market, Seed
Sectors:	Biotechnology, Healthcare, Biopharma
Website:	nvfund.com
Investments in Medtech, Medical Devices, and Healthcare: MerLion Pharma	
MerLion Pharma - \$13.5M (Series A) in October 2002 with 5 investors (Temasek Holdings, JAFCO Asia, EDBI, BioVeda Capital, Aravis Ventures)	

NRW.BANK



Summary:	NRW.BANK provides banking products and services in Germany. It operates through Programme-based Promotion, Other Promotion/Liquidity Management, and Staff/Services segments. The company offers low-interest promotion loans, as well as equity financing and advisory services.
Number of Investments:	42
Headquarters:	Düsseldorf, Germany
Year Founded:	2002
Total Investments (USD):	\$10.2M
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	nrwbank.de
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €9M (Series B) in July 2014 with 5 investors (Wellington Partners, KfW, Creathor Ventures, btov Partners, HR Ventures)	

Openspace Ventures



Summary:	Openspace Ventures makes investments in early-stage technology companies based in Southeast Asia. They typical investments are at Round A or B stage, where revenue traction is building and capital is required to drive rapid growth. Our existing portfolio covers B2C and B2B technologies who are accessing local, regional and global markets.
Number of Investments:	34
Headquarters:	Singapore
Year Founded:	2014
Total Investments (USD):	\$5M
Stages:	Early Stage Venture
Sectors:	Technology, Healthcare
Website:	openspace.vc
Investments in Medtech, Medical Devices, and Healthcare: Biofourmis	
Biofourmis - \$5M (Series A) in December 2017 with an investor (Aviva Ventures)	



Ping An



Summary:	Ping An Insurance (Group) Company of China, Ltd. ("Ping An" or the "Company" or the "Group") was established in 1988 in Shekou, Shenzhen. The Group is the first insurance company in China to adopt a shareholding structure. Today, it has developed into a personal integrated financial services group with three core businesses of insurance, banking and investment, enjoying parallel growth of its traditional and non-traditional financial businesses.
Number of Investments:	1
Headquarters:	Shenzhen, Guangdong, China
Year Founded:	1988
Total Investments (USD):	\$115,8M
Stages:	Undisclosed
Sectors:	Healthcare
Website:	pingan.com
Investments in Medtech, Medical Devices, and Healthcare: Fullerton Healthcare	
Fullerton Healthcare - CN¥800M (Venture Round) in November 2017	

Qualcomm Ventures



Summary:	QUALCOMM Ventures is a venture capital arm of QUALCOMM Incorporated, specializing in seed, series A, start-up, early stage, growth stage, mid stage, late stage, and expansion stage investments.
Number of Investments:	323
Headquarters:	San Diego, California, United States
Year Founded:	2000
Total Investments (USD):	\$10M
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Healthcare, Technology
Website:	qualcommventures.com
Investments in Medtech, Medical Devices, and Healthcare: Attune Technologies	
Attune Technologies - \$10M (Series B) in November 2015 with 2 investors (Qualcomm, Norwest Venture Partners)	

Red Dot Ventures



Summary:	Red Dot Ventures was established by Leslie Loh in 2012 as a seed-stage venture capital firm focused on Singapore-based high-tech startups. It was selected as an official startup incubator under the National Research Foundation's Technology Incubation Scheme (TIS) with the Singapore Prime Minister's Office. Since incorporation, the team has adopted an aggressive investment strategy, averaging 1 investment per month. Its investment portfolio exceeds 20 startups.
Number of Investments:	14
Headquarters:	Singapore
Year Founded:	2012
Total Investments (USD):	\$427K
Stages:	Seed
Sectors:	Technology, Healthcare
Website:	reddotventures.com
Investments in Medtech, Medical Devices, and Healthcare: I3 Precision	
I3 Precision - SGD589K (Seed Round) in March 2014	

SEED MG



Summary:	The SEED – Startups and Entrepreneurship Ecosystem Development is a startup acceleration program for entrepreneurs around the world who want to develop their business in Minas Gerais. SEED is Brazil's only publicly-available accelerator and leverages the interaction, networks, and knowledge and skills transfer between supported entrepreneurs and the local ecosystem.
Number of Investments:	8
Headquarters:	Minas Gerais, Brazil
Year Founded:	2013
Total Investments (USD):	\$23K
Stages:	Seed
Sectors:	Technology, Healthcare
Website:	seed.mg
Investments in Medtech, Medical Devices, and Healthcare: Drop Technologies	
Drop Technologies - \$23K (Grant Round) in May 2017	



Shin Ryoku Trust



Summary:	Shin Ryoku is an Australian-domiciled discretionary investment trust with a focus on entrepreneurship and taking small but far-sighted actions to make the world a better place.
Number of Investments:	1
Headquarters:	Sydney, Australia
Year Founded:	2007
Total Investments (USD):	\$120K
Stages:	Undisclosed
Sectors:	Technology
Website:	shinryoku.com
Investments in Medtech, Medical Devices, and Healthcare: Healint	
Healint - \$120K (Seed Round) in November 2013 with an investor (JFDI.Asia)	



SparkLabs Global Ventures



Summary:	SparkLabs Global Ventures is a venture capital firm that offers seed-stage investment services to firms in the SaaS, healthcare, education, IoT, fintech, mobile, commerce, HR, gaming, security, and VR industries.
Number of Investments:	67
Headquarters:	Palo Alto, California, United States
Year Founded:	2013
Total Investments (USD):	\$8.6M
Stages:	Early Stage Venture, Seed
Sectors:	Healthcare, Education
Website:	sparklabsglobal.com
Investments in Medtech, Medical Devices, and Healthcare: DocDoc	
DocDoc - \$8.6M (Series A) in April 2015 with 2 investors (Vectr Ventures)	



docdoc

SpesNet Pte. Ltd.



Summary:	SpesNet Pte. Ltd. provides technology products and services for medical healthcare practitioners and practice staff to manage their operational and business aspects.
Number of Investments:	2
Headquarters:	Undisclosed
Year Founded:	2000
Total Investments (USD):	\$1,5M
Stages:	Undisclosed
Sectors:	Healthcare, Technology
Website:	spesnet.co.za
Investments in Medtech, Medical Devices, and Healthcare: Biofourmis	
Biofourmis - \$1M (Angel Round) in August 2016 with an investor (Eden Strategy Institute) Biofourmis - \$500K (Seed Round) in May 2017	



Spring SEEDS Capital



Summary:	SPRING SEEDS Capital Pte Ltd is the venture capital arm of SPRING Singapore that specializes in start up investments. The firm focuses on the medical technology sector.
Number of Investments:	19
Headquarters:	Singapore, Singapore
Year Founded:	Undisclosed
Total Investments (USD):	\$6,3M
Stages:	Early Stage VeHealthcarenture
Sectors:	Technology, Healthcare
Website:	enterprisesg.gov.sg
Investments in Medtech, Medical Devices, and Healthcare: Clearbridge Biomedics	
Clearbridge Biomedics - SGD8.7M (Series B) in March 2013 with 5 investors (Vertex Ventures Southeast Asia & India, Vertex Ventures, Dark Horse Investment, NUS Technology Holdings, BioVeda Capital)	

Start Up Peru



Summary:	StartUp Peru is an initiative of the Peruvian State led by the Ministry of Production, which aims to promote the emergence and consolidation of new Peruvian companies that offer innovative products and services, with high technological content, of projection to international markets and that imply the generation of quality jobs.
Number of Investments:	16
Headquarters:	Buenos Aires, Argentina
Year Founded:	Undisclosed
Total Investments (USD):	\$24K
Stages:	Undisclosed
Sectors:	Technology
Website:	start-up.pe
Investments in Medtech, Medical Devices, and Healthcare: Drop Technologies	
Drop Technologies - \$24K (Grant Round) in November 2015	



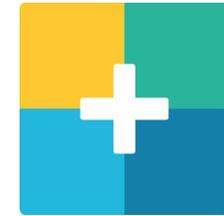
Start-Up Chile

ST>RT-UP
CHILE

Summary:	Start-Up Chile is a groundbreaking initiative of the Chilean Government, created by the Ministry of Economy, executed by CORFO via InnovaChile, that seeks to attract foreign, high-potential entrepreneurs to come to Chile to bootstrap their businesses with the end goal of converting Chile into the innovation and entrepreneurial hub of Latin America.
Number of Investments:	839
Headquarters:	Santiago, Chile
Year Founded:	2010
Total Investments (USD):	\$33K
Stages:	Early Stage Venture, Grant, Private Equity, Seed
Sectors:	Technology
Website:	startupchile.org
Investments in Medtech, Medical Devices, and Healthcare: Drop Technologies	
Drop Technologies - \$33K (Grant Round) in April 2016 with 3 investors (Tony Cueva, Omar Ruelas, Marco Garcia Casana)	



StartUp Health



Summary:	StartUp Health, LLC owns and operates an online community for healthcare professionals. It offers long-term coaching programs and network; and stakeholder community of investors, customers, and advisors to help companies grow through every stage of their lifecycle.
Number of Investments:	257
Headquarters:	New York, New York, United States
Year Founded:	2011
Total Investments (USD):	Undisclosed
Stages:	Crowdfunding, Early Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	startuphealth.com
Investments in Medtech, Medical Devices, and Healthcare: AlemHealth	
AlemHealth (Venture Round) in January 2015	



Startupbootcamp



Summary:	Startupbootcamp is a global network of industry-focused startup accelerators that provides investment and mentorship services. Startupbootcamp was founded in 2010 and operates in cities such as Amsterdam, Barcelona, Berlin, Copenhagen, Miami, New York, Cape Town, Dubai, Istanbul, London, Chengdu, Rome and Mumbai.
Number of Investments:	499
Headquarters:	London, England, United Kingdom
Year Founded:	2010
Total Investments (USD):	\$14K
Stages:	Seed
Sectors:	Technology, Healthcare
Website:	startupbootcamp.org
Investments in Medtech, Medical Devices, and Healthcare: Drop Technologies	
Drop Technologies - \$14K (Grant Round) in July 2017	



Taya Ventures



Summary:	Taya Ventures is a seed-stage venture fund. They support founders in bringing their innovation and creativity to life through mentoring, industry knowledge, and access to our network of industry experts.
Number of Investments:	8
Headquarters:	Tel Aviv, Israel
Year Founded:	2015
Total Investments (USD):	\$23M
Stages:	Seed
Sectors:	Technology
Website:	tayaventures.com

Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals

ASLAN Pharmaceuticals - \$23M (Series D) in July 2016 with 5 investors (TopTaiwan, Taiwan institutional funds, Milestone Capital China, KGI Venture Capital, Daiwa Corporate Investment)



Temasek Holdings

TEMASEK
HOLDINGS

Summary:	Temasek Holdings (Private) Limited is a sovereign wealth fund of the Government of Singapore specializing in growth capital, restructuring, and divestiture transactions. The firm also invests in private equity and debt funds, such as buyout and growth capital funds, mezzanine funds, debt funds, technology venture capital funds, and life sciences venture capital funds.
Number of Investments:	182
Headquarters:	Singapore
Year Founded:	1974
Total Investments (USD):	\$80M
Stages:	Undisclosed
Sectors:	Technology, Healthcare
Website:	temasek.com.sg
Investments in Medtech, Medical Devices, and Healthcare: Tessa Therapeutics	
Tessa Therapeutics - \$80M (Venture Round) in December 2015 with 3 investors (Heliconia Capital Management, Karst Peak Capital, EDBI)	

Tianda Pharmaceuticals



Summary:	Tianda Pharmaceuticals Ltd ("Tianda Pharmaceuticals") is engaged in the research and development, manufacture and sales of pharmaceutical, biotechnology and healthcare products.
Number of Investments:	1
Headquarters:	Hong Kong
Year Founded:	1992
Total Investments (USD):	\$34M
Stages:	Undisclosed
Sectors:	Technology, Pharmaceuticals, Healthcare
Website:	tiandapharma.com
Investments in Medtech, Medical Devices, and Healthcare: ASLAN Pharmaceuticals	
ASLAN Pharmaceuticals - \$34M (Series C) in December 2015 with 5 investors (Sagamore Bioventures, Morningside Group, Cenova Ventures, BioVeda China Fund, Accuron Technologies)	



UTEC- University of Tokyo Edge Capital



Summary:	The University of Tokyo Edge Capital Co., Ltd. is the venture capital arm of The University of Tokyo specializing in investments in seed, startup and early stage companies formed from universities. The firm primarily invests in but not limited to technologies, clean tech, software and service sectors, physical science, advanced material, robotics, and personalized medicine.
Number of Investments:	19
Headquarters:	Tokyo, Tokyo, Japan
Year Founded:	2004
Total Investments (USD):	\$4M
Stages:	Early Stage Venture
Sectors:	Healthcare, Technology
Website:	ut-ec.co.jp
Investments in Medtech, Medical Devices, and Healthcare: Tricog Health Pte Ltd.	
Tricog Health Pte Ltd. - \$4M (Series A) in January 2018	

Vectr Ventures



Summary:	Vectr is a venture firm based in Hong Kong. They combine investment, creation and growth to deliver game-changing impact to teams ready to tackle global issues, transform industries and improve the lives of millions.
Number of Investments:	30
Headquarters:	Hong Kong
Year Founded:	2014
Total Investments (USD):	\$8.6M
Stages:	Debt, Early Stage Venture, Secondary Market, Seed
Sectors:	Healthcare
Website:	vectr.co
Investments in Medtech, Medical Devices, and Healthcare: DocDoc	
DocDoc - \$8.6M (Series A) in April 2015 with 2 investors (SparkLabs Global Ventures)	



Venturecraft Group



Summary:	Venturecraft Holdings, trading as Venturecraft Group, is a private investment group and venture capital platform that provides working capital, market access assistance, entrepreneurial talent and other essential resources to innovative companies across all stages of development, from startups to mature enterprises.
Number of Investments:	3
Headquarters:	Singapore
Year Founded:	2015
Total Investments (USD):	\$4M
Stages:	Undisclosed
Sectors:	Technology, Healthcare
Website:	venturecraft.vc
Investments in Medtech, Medical Devices, and Healthcare: MiRXES Pte Ltd	
MiRXES Pte Ltd - \$4M (Seed Round) in December 2016	

Vickers Venture Partners



Summary:	Vickers Venture Partners is a venture capital firm focused on angel investments in Asia and beyond. The firm's portfolio covers life sciences, technology, media, and telecommunications as well as consumer and financial services.
Number of Investments:	22
Headquarters:	Singapore
Year Founded:	2005
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture
Sectors:	Technology
Website:	vickersventure.com
Investments in Medtech, Medical Devices, and Healthcare: Samumed	
Samumed - \$438M (Series A) in August 2018 with an investor (Starling group)	

Walden International



Summary:	Walden International is a venture capital firm with over \$1.6 billion in investments, Walden international had offices globally and invests in four sectors: communications, electronics/digital consumer, software & IT services, and semiconductors.
Number of Investments:	189
Headquarters:	California, United States
Year Founded:	1987
Total Investments (USD):	\$5.9M
Stages:	Early Stage Venture, Late Stage Venture, Private Equity, Seed
Sectors:	Technology
Website:	waldenintl.com
Investments in Medtech, Medical Devices, and Healthcare: uCare.ai	
uCare.ai - SGD8.2M (Series A) in May 2018 with 3 investors (WPGrowth Ventures, Peter Lim, Great Eastern Holdings)	



Wavemaker Partners



Summary:	Wavemaker Partners is an early-stage venture capital firm founded in 2003 dual headquartered in Los Angeles and Singapore. Wavemaker invests in exceptional entrepreneurs creating superior value by leveraging technology to deliver high-impact Automation, Analytics & Intelligence.
Number of Investments:	345
Headquarters:	Los Angeles, California, United States
Year Founded:	2003
Total Investments (USD):	Undisclosed
Stages:	Early Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	wavemaker.vc
Investments in Medtech, Medical Devices, and Healthcare: Juvo Labs	
Juvo Labs (Seed Round) in June 2016	

Wellington Partners

wellingtonpartners
VENTURE CAPITAL

Summary:	Since the 1990s we have been delighted to support the global ambitions of Europe's best entrepreneurs and to help them become global leaders in their businesses. We work with the best in two dedicated sectors: Technology, Life Sciences.
Number of Investments:	180
Headquarters:	Munich, Germany
Year Founded:	1998
Total Investments (USD):	\$10.2M
Stages:	Debt, Early Stage Venture, Late Stage Venture, Private Equity, Seed
Sectors:	Technology, Healthcare
Website:	wellington-partners.com
Investments in Medtech, Medical Devices, and Healthcare: AYOXXA Biosystems	
AYOXXA Biosystems - €9M (Series B) in July 2014 with 5 investors (NRW.BANK, KfW, Creathor Ventures, btov Partners, HR Ventures)	

Westlake Venture Partners



Summary:	Westlake Venture Partners invests in technology companies through capital investments and private equity. The firm was created and is managed by the original, four founders of NetZero, and was founded in 2001.
Number of Investments:	3
Headquarters:	California, United States
Year Founded:	2001
Total Investments (USD):	\$20M
Stages:	Early Stage Venture
Sectors:	Technology
Website:	westlakevp.com
Investments in Medtech, Medical Devices, and Healthcare: Lion TCR	
Lion TCR - \$20M (Series A) in May 2018 with an investor (Yashang Capital)	

WI Harper Group

美国中经合集团

WI HARPER GROUP

SAN FRANCISCO | TAIPEI | BEIJING

Summary:	WI Harper is a pioneer in cross-border investments with offices in Beijing, Taipei, and San Francisco. For nearly three decades, they have backed visionary entrepreneurs in both US and Greater China. Since inception, they have invested in over 350 companies and have seen more than 100 successful liquidity events.
Number of Investments:	139
Headquarters:	California, United States
Year Founded:	1993
Total Investments (USD):	\$15M
Stages:	Early Stage Venture, Late Stage Venture, Seed
Sectors:	Healthcare, Technology
Website:	wiharper.com
Investments in Medtech, Medical Devices, and Healthcare: EdiGENE	
EdiGENE - \$15M (Series A) in August 2018 with 3 investors (Lilly Asia Ventures, IDG Capital, Huagai Capital)	

Womena

womena®

Summary:	Womena® is a platform dedicated to encouraging gender diversity and inclusion in the regional entrepreneurship ecosystem. Founded in 2014, womena has spent years building an award-winning Angel Investment group that facilitated over 3 million AED in funding into 10 companies.
Number of Investments:	9
Headquarters:	Dubai, United Arab Emirates
Year Founded:	2014
Total Investments (USD):	Undisclosed
Stages:	Seed
Sectors:	Undisclosed
Website:	womena.com

Investments in Medtech, Medical Devices, and Healthcare: AlemHealth

AlemHealth (Seed Round) in May 2015 with 2 investors (Enabling Future and Data Collective DCVC)



WuXi AppTec



Summary:	WuXi AppTec (药明康德) is a global pharmaceutical, biopharmaceutical, and medical device outsourcing company with operations in China and the United States. It provides a broad and integrated portfolio of services throughout the research, development, manufacturing, and regulatory process.
Number of Investments:	5
Headquarters:	Shanghai, Shanghai, China
Year Founded:	2000
Total Investments (USD):	\$10M
Stages:	Undisclosed
Sectors:	Healthcare
Website:	wuxiapptec.com.cn
Investments in Medtech, Medical Devices, and Healthcare: Engine Biosciences	
Engine Biosciences - \$10M (Seed Round) in January 2018 with 7 investors (WI Harper Group, Nest.Bio Ventures, Goodman Capital, EDBI)	

Xeraya Capital



Summary:	Xeraya Capital Sdn Bhd. is a private equity and venture capital firm. It primarily invests in all life sciences related areas such as medical technologies, healthcare biotech, bio renewables, and bio industrials.
Number of Investments:	11
Headquarters:	Kuala Lumpur, Malaysia
Year Founded:	2012
Total Investments (USD):	\$11.6M
Stages:	Undisclosed
Sectors:	Science, Biotech
Website:	xeraya.com
Investments in Medtech, Medical Devices, and Healthcare: PrIME Biologics	
PrIME Biologics - SGD16M (Venture Round) in October 2014	

Y Combinator



Summary:	Y Combinator Management LLC is an accelerator specializing in incubation, seed, and later stage funding for early stage startups. It also makes later-stage venture and growth capital investments in startups that graduate from the Y Combinator accelerator.
Number of Investments:	1,972
Headquarters:	California, United States
Year Founded:	2005
Total Investments (USD):	\$120K
Stages:	Debt, Early Stage Venture, Seed
Sectors:	Technology, Healthcare
Website:	ycombinator.com
Investments in Medtech, Medical Devices, and Healthcare: AlemHealth	
AlemHealth - \$120K (Seed Round) in March 2017	



Zuellig Pharma China



Summary:	Zuellig Pharma is one of the largest healthcare services groups in Asia and our purpose is to make healthcare more accessible. They provide world-class distribution, digital and commercial services to support the growing healthcare needs in this region.
Number of Investments:	1
Headquarters:	Guangdong, China
Year Founded:	1922
Total Investments (USD):	Undisclosed
Stages:	Undisclosed
Sectors:	Healthcare, Technology
Website:	zuelligpharma.com
Investments in Medtech, Medical Devices, and Healthcare: Klinify	
Klinify (Venture Round) in May 2017	



Zürcher Kantonal Bank



Summary:	Zürcher Kantonalbank – as an independent, incorporated public-law institution – is wholly owned by the canton of Zurich. The basis for ZKB's business activity is its public service mandate. Enshrined in law, it governs the bank's economic, social and environmental commitment.
Number of Investments:	67
Headquarters:	Zürich, Zurich, Switzerland
Year Founded:	1870
Total Investments (USD):	\$30M
Stages:	Undisclosed
Sectors:	Pharmaceutical, Technology
Website:	zkb.ch
Investments in Medtech, Medical Devices, and Healthcare: MerLion Pharma	
MerLion Pharma - \$30M (Series B) in March 2007 with an investor (Lacuna)	



AGING ANALYTICS AGENCY

www.aginganalytics.com | info@aginganalytics.com

Aging Analytics Agency is dedicated to the production of industry analytical reports on the topics of Longevity, Personalised and Preventive Medicine. It is the only analytical agency focused exclusively on Ageing, Geroscience and Longevity. Operating for over five years, we began producing in-depth reports on Longevity long before it emerged as an industry. In 2014 we successfully predicted the boom in industry development and financing rounds in 2017, at a time when the vast majority of investors, business analysts, and even geroscientists believed its emergence to be in the next decade. The company also provides strategic consulting in the fields of Longevity, Preventive Medicine and Advanced Biomedicine.



LONGEVITY INTERNATIONAL

www.longevity.international | info@longevity.international

Longevity.International is an online interactive database of longevity scientists, companies, and investors. This platform allows different stakeholders in the longevity industry to connect, network, research and analyze.

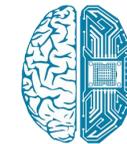
On the next stage this platform will also employ cutting-edge data visualization software and a networking section where various stakeholders within the longevity industry can connect and collaborate, where longevity companies are matched with the right investors, and where scientists can make contributions.



LONGEVITY.CAPITAL

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



DEEP KNOWLEDGE ANALYTICS

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Deep Knowledge Analytics - the analytical arm of Deep Knowledge Ventures, specialising in forecasting on the convergence of technological megatrends, conducting special case studies and producing advanced industry analytical reports on AI, DeepTech, Blockchain and Invest Tech.



AGING ANALYTICS AGENCY

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