

# ABCP-CDA Joint Webinar 17 June 2022

## Concepts for Health Care of the Future



# *Ageing & Longevity Research - From Cell to Society*

**Dr Richard Siow**

**Director, Ageing Research at King's College London**





FEBRUARY 23 / MARCH 2, 2015

SPECIAL  
HEALTH  
DOUBLE  
ISSUE

# TIME

THIS  
BABY  
COULD  
LIVE  
TO BE  
**142**  
**YEARS**  
**OLD**

Dispatches From the  
Frontiers of Longevity

time.com

DOUBLE ISSUE

FEBRUARY 26, 2015

START

# TIME

HOW TO  
**LIVE  
LONGER  
BETTER\***

END

THE ANTI-AGING SUPPLEMENT EXPERTS TAKE PAGE 72

PRAY! THE HEALTH BENEFITS OF FAITH PAGE 73

THE WORLD'S HEALTHIEST PLACES PAGE 53

\*AND STILL HAVE FUN



Ancestral cattle return to Europe's wild spots p. XXXX

Books to inspire budding scientists pp. XXXX & XXXX

High harmonics born of ultraviolet

# Science

\$10  
4 DECEMBER 2018

AAAS

SPECIAL ISSUE

## WHY WE AGE

What the U.S. elections mean for science p. 331

Dendrite turnover in Down syndrome neurons p. 397

Social networks drive success in art p. 415

# Science

\$15  
16 NOVEMBER 2018  
science.org

AAAS

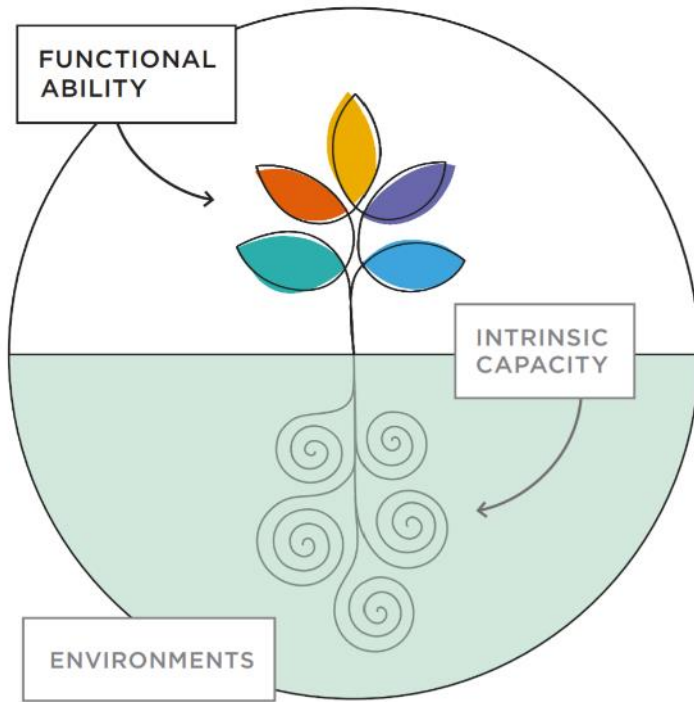
SPECIAL ISSUE

## DIET AND HEALTH

Optimizing human metabolism







# DECADE OF HEALTHY AGEING BASELINE REPORT SUMMARY



## AGEING and HEALTH



Between 2000 and 2050, the number of people aged 60 and over is expected to double

In 2050, more than 1 in 5 people will be 60 years or older.



By 2050, 80% of older people will be living in low- and middle-income countries.

### ▶ EVERY OLDER PERSON IS DIFFERENT



Some have the level of functioning of a 30 year old.



Some require full time assistance for basic everyday tasks.

Health is crucial to how we experience older age.

### ▶ WHAT INFLUENCES HEALTH IN OLDER AGE

#### INDIVIDUAL

#### ENVIRONMENT THEY LIVE IN



### ▶ WHAT IS NEEDED FOR HEALTHY AGEING

A change in the way we think about ageing and older people



Creation of age-friendly environments



Alignment of health systems to the needs of older people



Development of systems for long-term care



Healthy Ageing...being able to do the things we value for a long as possible  
#yearsahead



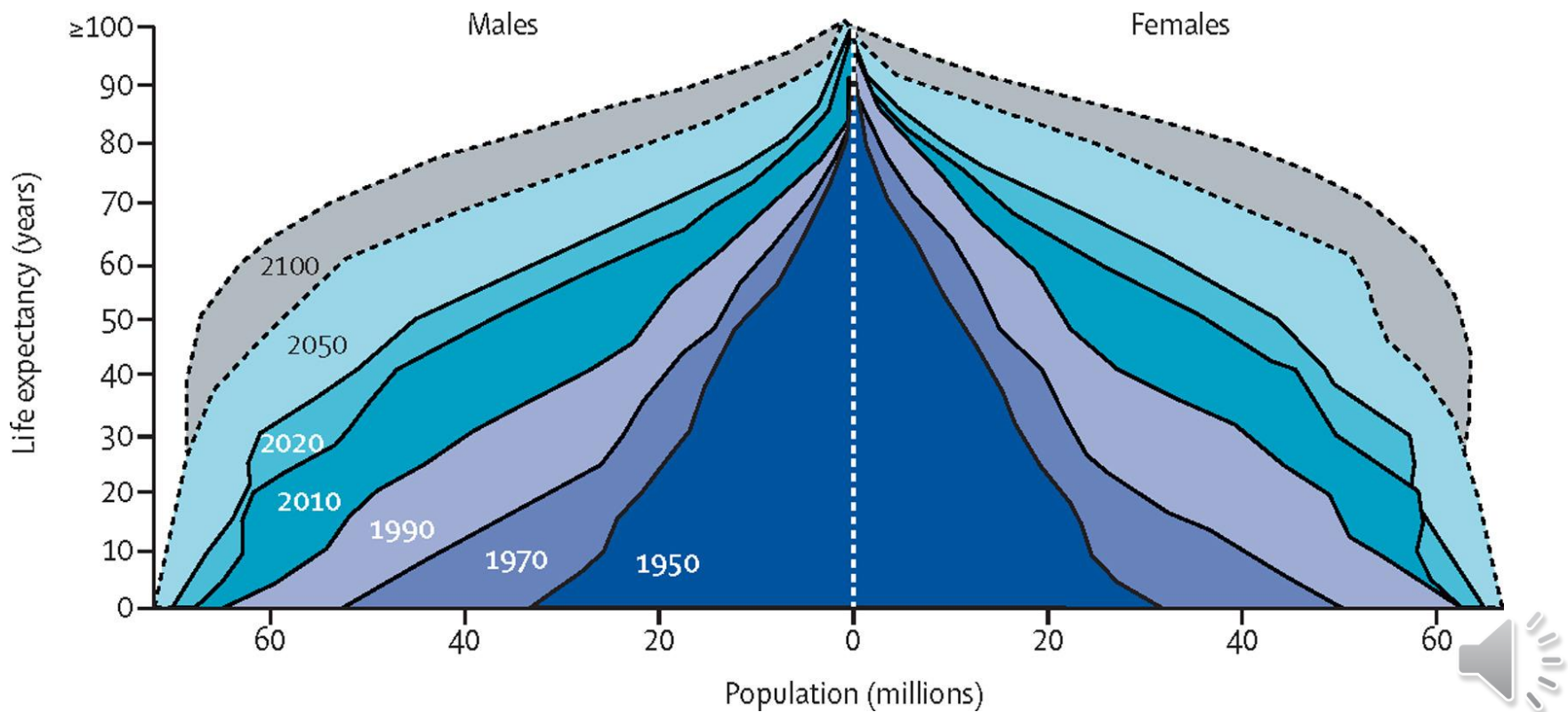


Health Policy

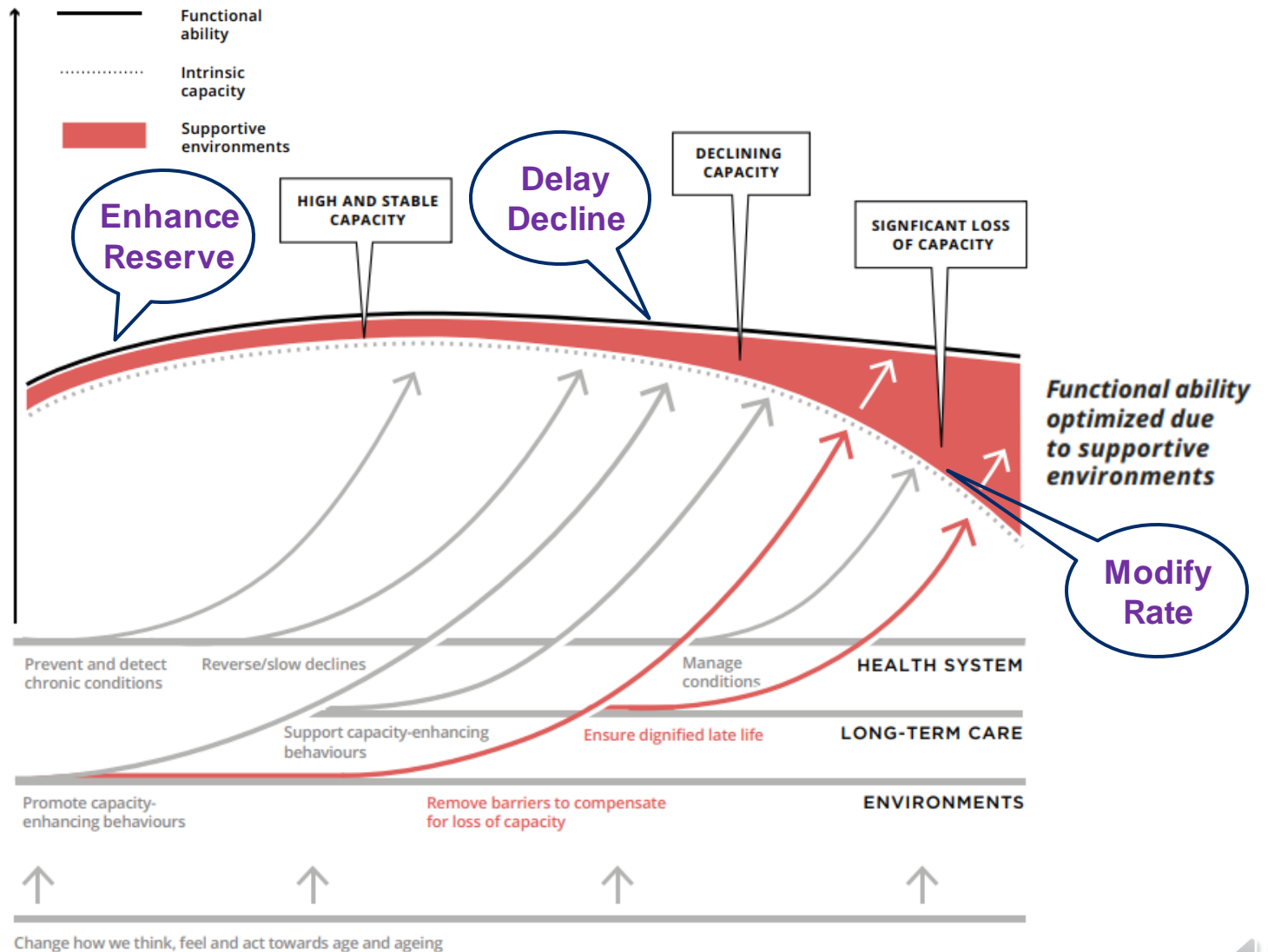
# The longevity society

Andrew J Scott

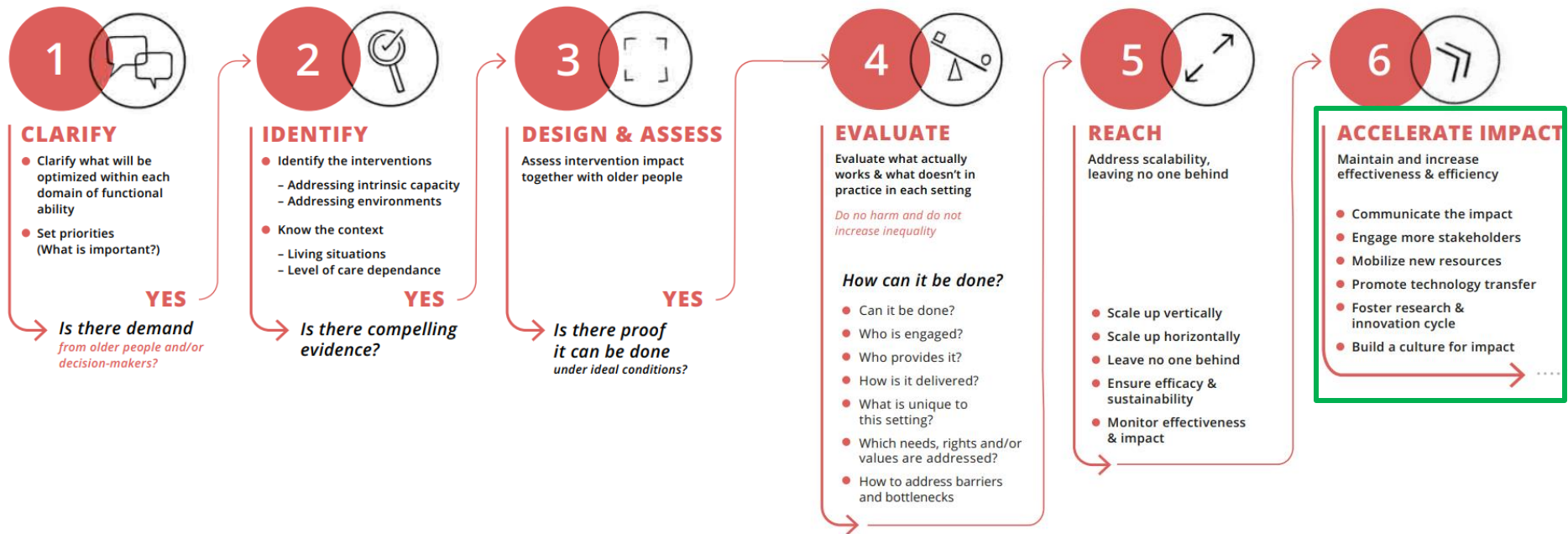
**UN estimates and projections for the global population between 1950 and 2100 by age**  
*Proportion of the world aged 65 years or older set to rise from 9.3% in 2020 to 22.6% by 2100*



# Trajectories of healthy ageing: optimizing functional ability



# The pathway to optimise functional ability – Innovation





# HOW TO ENSURE TRANSFORMATION THAT ACCELERATES HEALTHY AGEING?



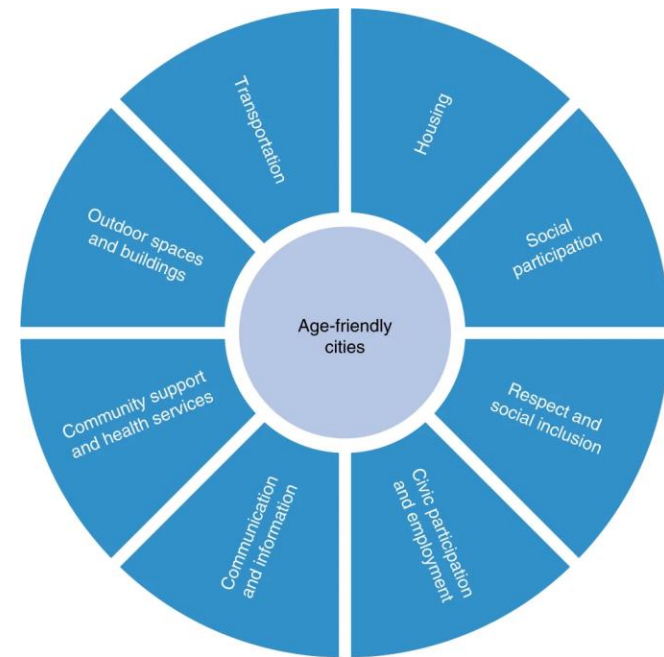
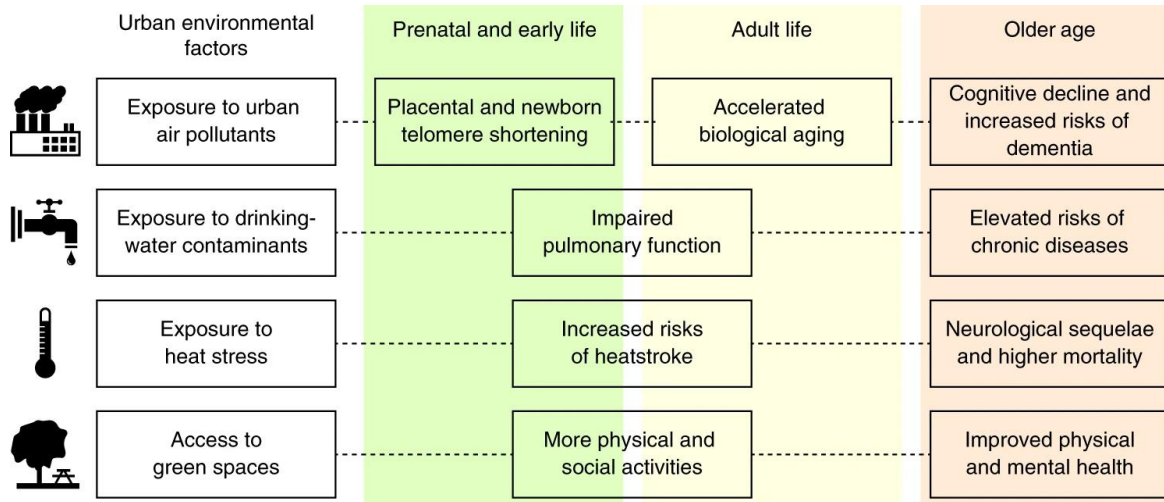
UK Research and Innovation

Industrial Strategy Challenge Fund





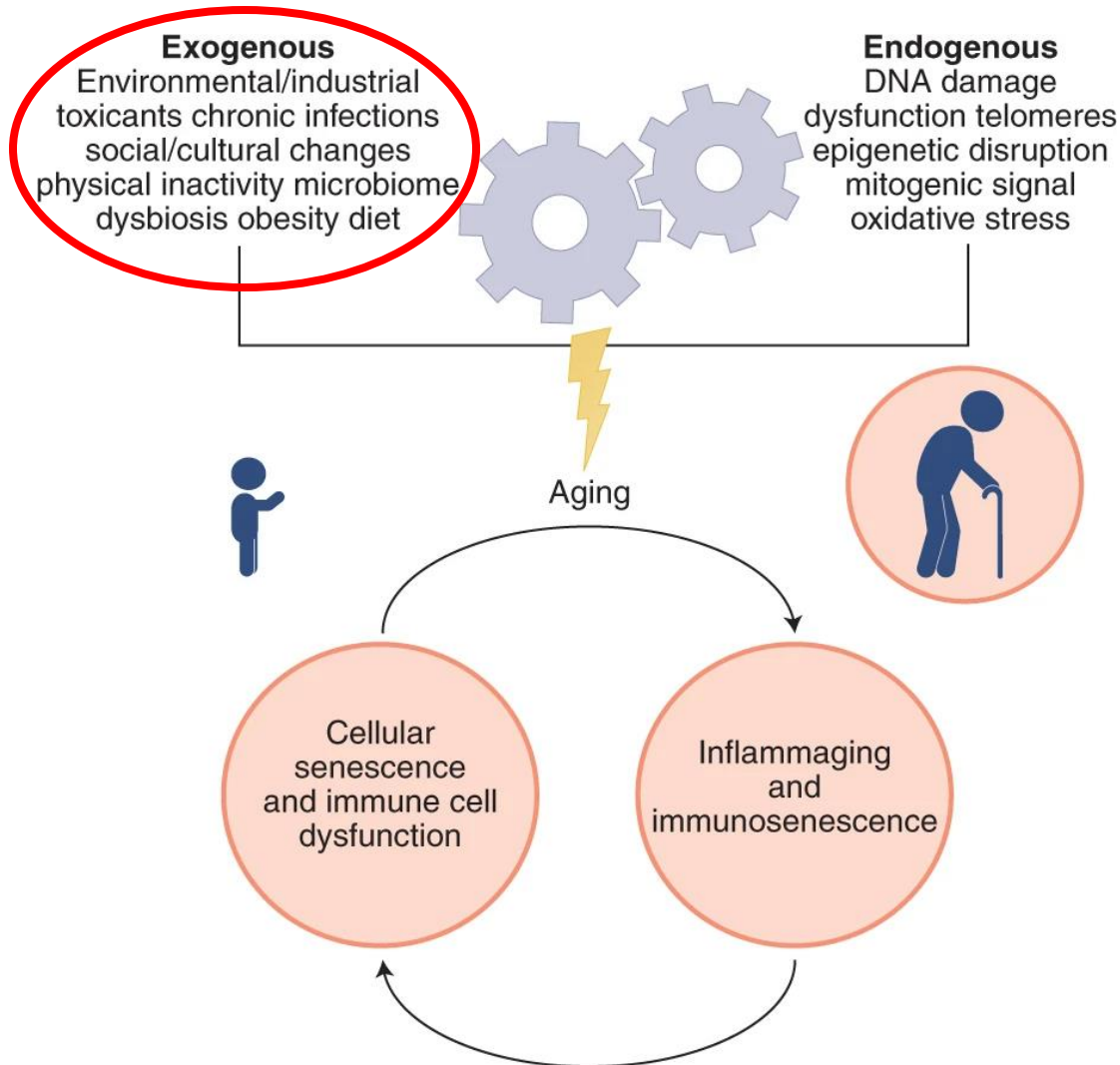
# Rethinking the urban physical environment for century-long lives: from age-friendly to longevity-ready cities



*Examples of physical environmental components shown here are air pollutants, drinking contaminated water, heat stress, and access to green spaces. Health outcomes may be promoted or hindered across several life stages.*



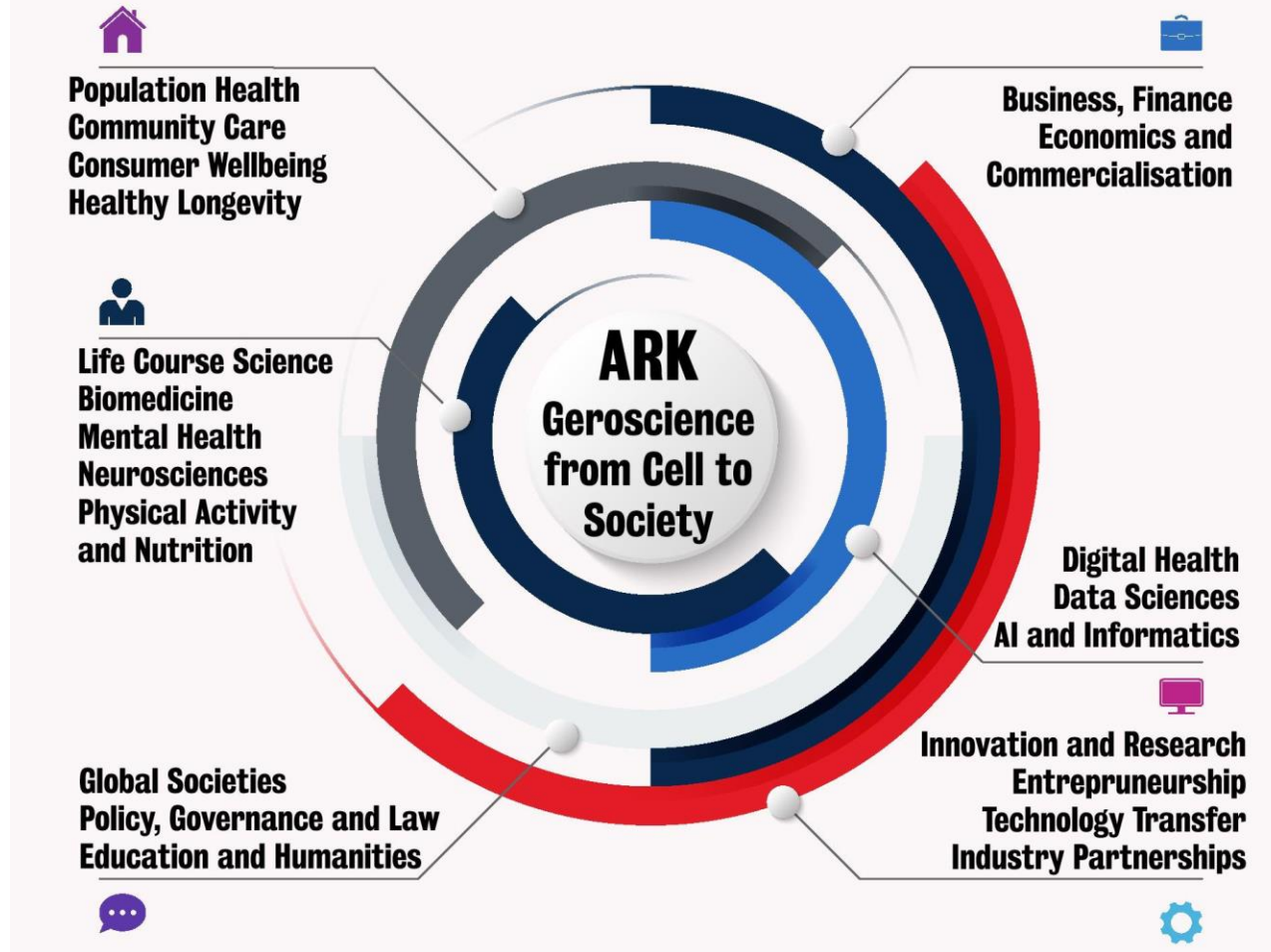
# SARS-CoV-2, COVID-19 and the aging immune system



Factors that contribute to inflammaging and immunosenescence



# Ageing and Longevity Ecosystem at King's College London



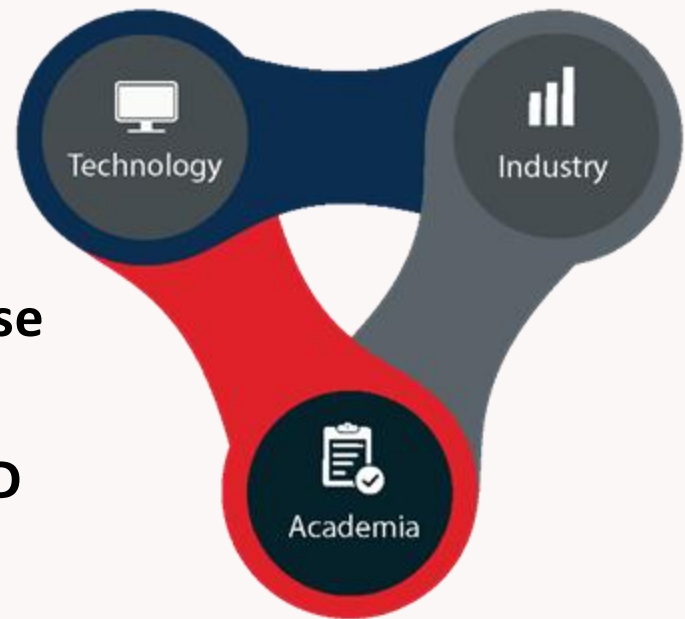
 KING'S HEALTH PARTNERS





# ARK Multidisciplinary Academic-Industry Hub

- Academia and industry advisory board
- Longevity Entrepreneur-in-Residence
- Academic and industry technology expertise
- Investors / Venture Philanthropy
- Health, Policy and Consumer Wellness R&D
- Corporate partnerships

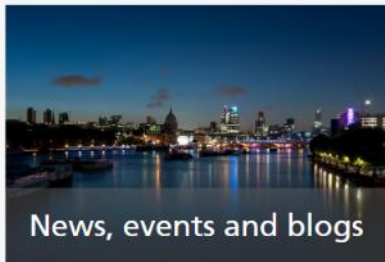




We translate cutting-edge research into excellent patient care through world-class education and training.



Achieving excellence



News, events and blogs



Innovation Impact  
Innovation Impact Stories

Clinical academic collaborations improving the lives of our patients.



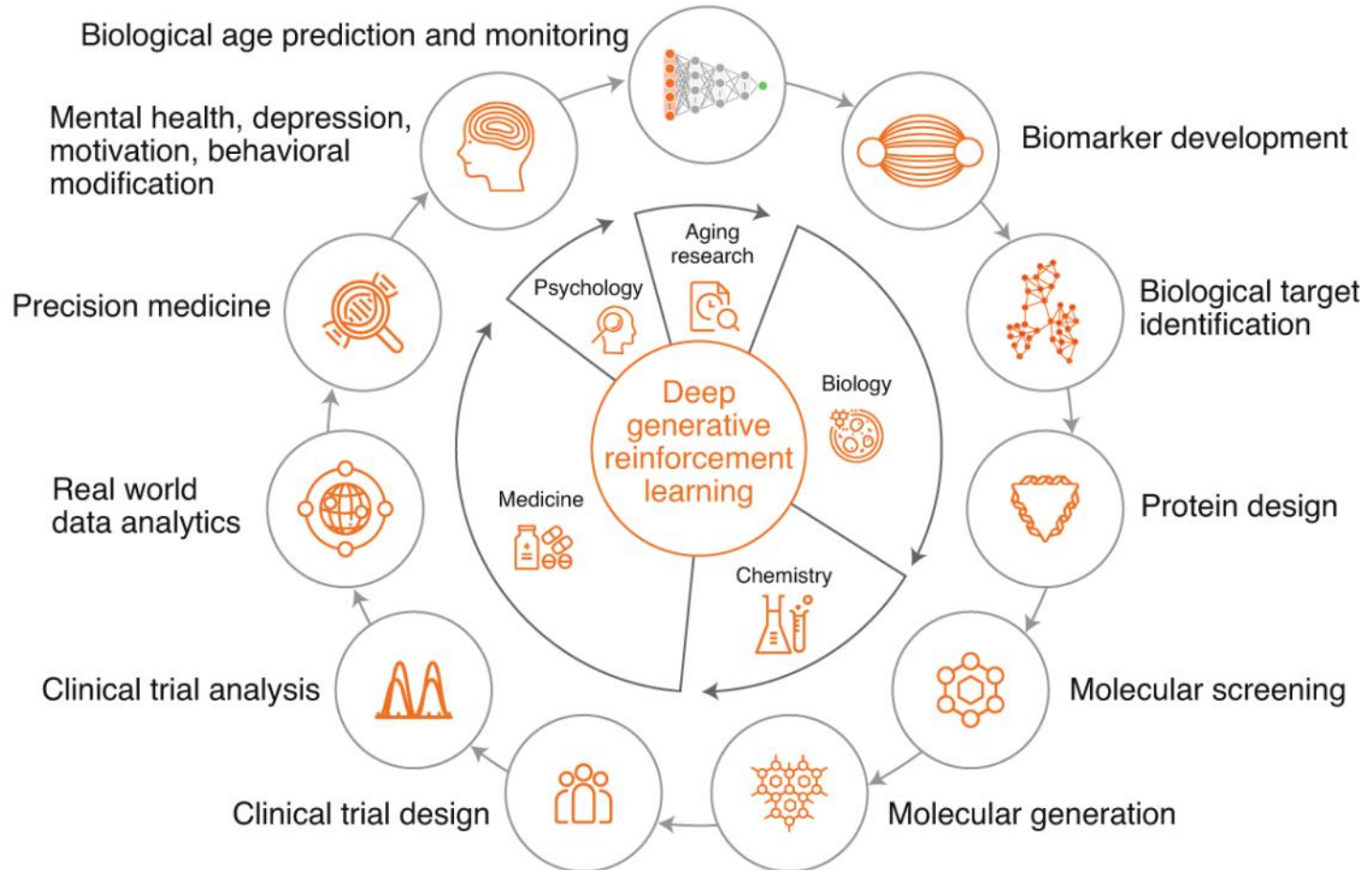
Mind & Body



## Artificial intelligence in longevity medicine

Alex Zhavoronkov , Evelyne Bischof & Kai-Fu Lee

**a**





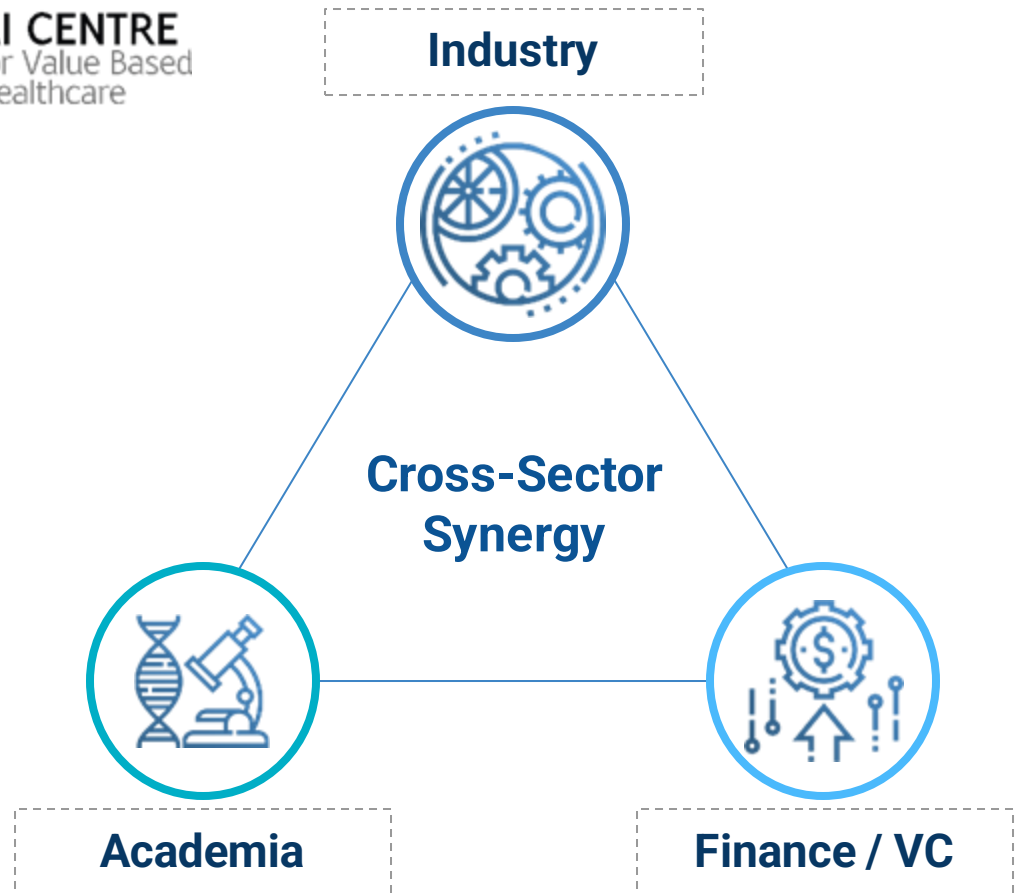
# Leveraging AI Synergies in Academia, Industry and Finance



Leveraging AI for Longevity Research at KCL as an industry-academic hub for AI-driven personalized preventive diagnostics, prognostics and therapeutics.

The main concept of precision medicine is providing health care which is individually tailored on the basis of a person's genes, lifestyle and environment.

Advances in AI for genetics, epigenetics and multiomics with the availability of health data, present an opportunity to make personalized consumer and workforce wellness and longevity a reality.





## King's College London and NVIDIA Build UK's First AI Platform for NHS Hospitals

Thursday, May 9, 2019

Boosting effectiveness and data privacy, NVIDIA DGX-2 AI systems power federated learning infrastructure for local creation, adaptation and deployment of AI in medical imaging in hospitals.

Aiming to simplify and speed up complicated radiology workflows, NVIDIA and King's College London today announced they are partnering to build an AI platform that will in the near future allow specialists in the U.K.'s National Health Service (NHS) to train computers to automate the most time-consuming part of radiology interpretation.

The collaboration is part of King's London Medical Imaging & AI Centre for Value-Based Healthcare, an ongoing project intended to transform 12 clinical pathways in oncology, cardiology and neurology, as well as improve diagnoses and patient care in the NHS.

The work could lead to breakthroughs in classifying stroke and neurological impairments, determining the underlying causes of cancers and recommending the best treatments for patients.



# UK's most powerful supercomputer launched to accelerate research in AI and healthcare

NVIDIA's Cambridge-1, the UK's most powerful supercomputer dedicated to healthcare and life sciences research, has been launched today with key partners including King's College London and Guy's and St Thomas' NHS Foundation Trust.



Cambridge-1 is NVIDIA's first supercomputer that has been designed and built for external research access. It enables scientists and healthcare experts to use the powerful combination of AI and simulation to carry out groundbreaking research to the benefit of patients.

As founding partners of Cambridge-1, King's College London and Guy's and St Thomas' NHS Foundation Trust are using the supercomputer to teach AI models to generate synthetic brain images by learning from tens of thousands of MRI brain scans, from patients of various ages and with different medical conditions.







# ARK - Unilever Ageing & Longevity R&D Partnership



## Unilever Framework Agreed

September 2016

Unilever, one of the world's largest consumer goods companies, and King's College London have signed a Framework Agreement to formalise their long-term partnership

This strategic relationship will make King's College London a key partner for Unilever's research collaborations in a number of scientific fields.



14 January 2020

## New King's and Unilever Bioscience Innovation Hub launched

In order to stimulate scientific ideas and commercial innovations, a newly established Innovation Hub has been launched between King's College London and Unilever.



# DEPARTMENT OF TWIN RESEARCH & GENETIC EPIDEMIOLOGY

ABOUT US

COLLABORATIONS

CONTACT US

RESEARCH GROUPS

TWINSUK



## SECRET LIFE OF TWINS UNCOVERING GENETICS THROUGH TWIN RESEARCH



TWINS UK



HOW TO VOLUNTEER?



GENES FOR OBESITY & DIABETES



FOR TWINS

ABOUT US

OUR RESEARCH

RESOURCES FOR RESEARCHERS

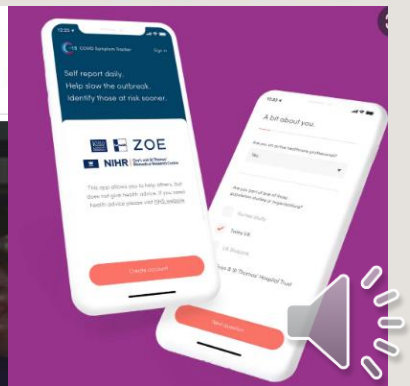
NEWS & BLOG

MEDIA & ENGAGEMENT



## COVID-19 Symptom Tracker App FAQs

[Home](#) > [Our Research](#) > [COVID-19](#) > COVID-19 Symptom Tracker App FAQs



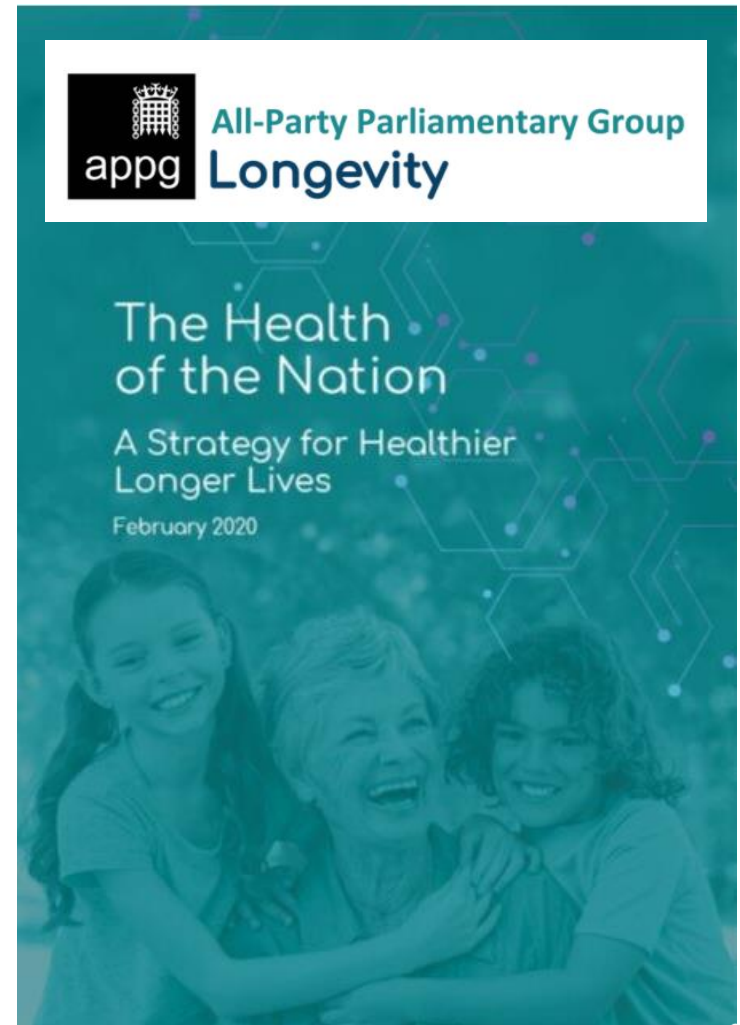


# All Party Parliamentary Group for Longevity

*The Health of the Nation – Launch of the National Strategy 12 Feb 2020*



Health Secretary, Rt Hon. Matt Hancock MP  
***“Adding years to life and life to years: our plan to increase healthy longevity”***





COMMENT | [VOLUME 2, ISSUE 5, E238-E239, MAY 01, 2021](#)

# Open Life Data to support healthy longevity for all

[Damian Green](#) • [James O'Shaughnessy](#) • [Gavin Starks](#) • [Richard Sloggett](#) • [Iain Buchan](#) • [Tina Woods](#)

[Show all authors](#)

[Open Access](#) • Published: April 08, 2021 • DOI: [https://doi.org/10.1016/S2666-7568\(21\)00081-7](https://doi.org/10.1016/S2666-7568(21)00081-7)

- Explore how better use of data and data-enabled technologies could make a positive contribution to the health, wellbeing and life chances of all people equitably.
- Propose solutions for innovating, scaling-up and leveraging these technologies across the private, public and academic sectors.
- Ensure that digital health infrastructure and innovation support is fairly distributed and resilient, reducing inequalities in co-creation, access and outcomes.
- Build public trust in the use of data for individual and collective health and social care purposes.



# The Exposome in Longevity Research & Innovation

## Ecosystems

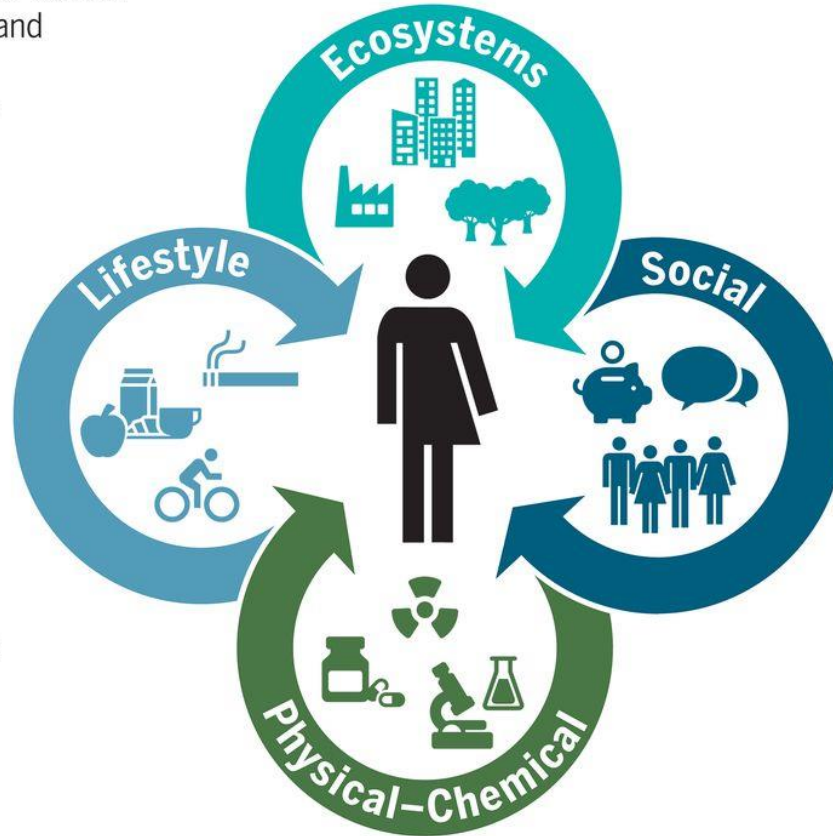
- Food outlets, alcohol outlets
- Built environment and urban land uses
- Population density
- Walkability
- Green/blue space

## Lifestyle

- Physical activity
- Sleep behavior
- Diet
- Drug use
- Smoking
- Alcohol use

## Social

- Household income
- Inequality
- Social capital
- Social networks
- Cultural norms
- Cultural capital
- Psychological and mental stress



## Physical-Chemical

- Temperature/humidity
- Electromagnetic fields
- Ambient light
- Odor and noise
- Point, line sources, e.g., factories, ports
- Outdoor and indoor air pollution ←
- Agricultural activities, livestock
- Pollen/mold/fungus
- Pesticides
- Fragrance products
- Flame retardants (PBDEs)
- Persistent organic pollutants
- Plastic and plasticizers ←
- Food contaminants ←
- Soil contaminants
- Drinking water contamination
- Groundwater contamination
- Surface water contamination
- Occupational exposures ←



KING'S HEALTH PARTNERS





# ARK – Longevity Innovation Hub



## Investors

Identifying high-potential undervalued innovation projects in longevity



## Corporate

Funding and market access (customers, market opportunity etc)



## Networks and processes

Networks: leverage teams and minimise distractions, Industry consortia, funding applications.  
Operational: marketing, branding, PR, tax planning, Due diligence



## Tech infrastructure

Leveraging technology in the form of data and AI infrastructure to create a unique platform for longevity innovation industry.





# ARK: Global healthy ageing through R&D and 'longevity valley' innovation ecosystems

- Lifecourse approach to ageing populations: Healthy longevity vs. age-related diseases
- Improved resilience at the consumer / society level requires longevity innovation hubs
- Venture philanthropy and investment for healthy longevity
- Academic research integrated with technology transfer, industry expertise and policy change



THINKSTOCK



## King's Business School

[Undergraduate](#) | 
 [Postgraduate](#) | 
 [Executive education](#) | 
 [Research & expertise](#) | 
 [Our connections](#) | 
 [About us](#) | 
 [News & comment](#) | 
 [Events](#) | 
 [Contact](#)

Overview

Open courses

Masterclasses

Custom solutions



## The Business of Healthy Ageing (and a Longer Life)

**An ageing population presents a number of challenges at the collective and individual levels, but it also opens up an abundance of business and organisational opportunities.**

This short course explores the scope of those opportunities, providing context for the emerging phenomenon of the everyday centenarian and provides the frameworks and research insights to help delegates and their host organisations turn a changing demographic and customer base into a valuable asset.

The course will be taught using unique data on the healthy ageing market, a mix of case-studies developed for the class, guest speakers, lectures and group working. You will explore topics such as the challenges of a long life, the age tech and healthy ageing sector, identifying business opportunities in these markets and the art of marketing.

This course will be delivered in-person, but we have remote delivery options available. Contact us for more details.

## In partnership with...





FEBRUARY 27, 2010

**Afghanistan:**  
Racing to  
Save Lives

**Toyota:**  
The Fall of  
An Icon



**Reality TV:**  
Why It's Better  
Than You Think

**The Oscars:**  
The Year's Best  
Performances

# TIME

## The Science of Living Longer

SPECIAL  
22-PAGE  
HEALTH  
SECTION



THREE  
GENERATIONS  
Laila, 71; mother  
Kristina, 37;  
grandmother Laila, 65

WWW.TIME.COM

APRIL 21, 2010

**The Chinese  
Artist Who  
Scares Beijing**

**Nigeria:**  
Turning  
the  
corner

**The euro**  
is safe—  
for now

**Style:**  
Royal  
wedding  
swag

# TIME

## Forever Young

More people are behaving  
as if they'll never grow old  
Is that such a good idea?

BY CATHERINE MAYER



WWW.TIME.COM







*“We don’t stop playing because we grow old, we grow old because we stop playing”*

**George Bernard Shaw**

