Moonshot International Symposium

Dr Danny SOON

Executive Director
Biomedical Research Council (BMRC)
Agency for Science, Technology & Research (A*STAR), Singapore
Our Mission and Vision

MISSION
We advance science and develop innovative technology to further economic growth and improve lives

VISION
A global leader in science, technology and open innovation

- Biomedical Research Council (BMRC) - 13 Research Entities
- Science & Engineering Research Council (SERC) - 9 Research Entities
- ETPL Commercialisation
- A*STAR Graduate Academy Scholarships

>5,200 STAFF
>4,100 Researchers, Engineers and Technical Support Staff
40% of whom come from 64 countries
Singapore Research Framework 2016-2020

Challenges beyond 2020

- Food Security
- Climate change
- Circular economy
- Ageing population

Long term R&D strategies

- Tech Enablers and Platforms
- Industry Facing Research
- Use Inspired Basic Research

Years to value capture

1 3 5 7 >10
The Global Ageing Population Phenomenon

Accelerating Ageing Population in Asia Drives Healthcare Demand

Global

- U.S.: 9.1% (2019), 22.4% (2050)
- Europe: 18.8% (2019), 28.1% (2050)
- Asia: 8.6% (2019), 18.0% (2050)
- Global: 9.1% (2019), 15.9% (2050)

China

- 11.5% (2019), 26.1% (2050)

SEA

- 6.9% (2019), 16.7% (2050)


Singapore: 1 in 4 above 65 years old by 2030
Active and Confident Ageing – Three Key Thrusts

1. Lengthening of health span
   Delay onset of disease and disability

2. Productive longevity
   Enable learning and re-learning → Ageless work places

3. Ageing-in-place
   Live independent and autonomous lives despite physical frailty

Phase 1 – Short term Health Span
- Monitoring
- Analytics
- Population insights
- Behavioural e.g. treatment adherence and compliance

Phase 2 – Mid term Rehabilitation Mental health
- Stroke
- Performance
- Mental wellness
- Cognitive health

Phase 3 – Long term Musculoskeletal
- Sarcopenia
- Osteoarthritis
GUSTO is Singapore’s largest and most comprehensive birth cohort study

To study if mothers’ diet and lifestyle during pregnancy affect their babies’ growth after birth, with extended follow up into childhood

https://www.gusto.sg/one-in-5-mums-to-be-may-develop-diabetes/

https://www.gusto.sg/anxious-mothers-smaller-babies/
A*STAR tech – Human Augmentation & Neuro-modulation

Brain-Computer Interface (BCI) Rehabilitation for Stroke

Needs
• Stroke: leading cause of disabilities. Rehabilitation is labour intensive, expensive, lack of repeatability and objective measures

Technology
• Neurorehab trains the brain and limb

Advantages
• Induces activity-dependent brain plasticity in motor cortex

Clinical validation
• Completed 3 trials on chronic stroke
• Statistically & clinically significant improvement in patients with chronic stroke
Thank you