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Singapore develops algorithm-powered tests for new class of clinical ageing clocks

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A new way to test ageing intervention strategies

A few tubes of blood, a urine test and a health questionnaire to determine a person's biological age are all that is needed to indicate one's future risk of mortality. A new class of clinical ageing clocks using these tests has emerged – PCAge and LinAge – which outline the healthy and unhealthy ageing trajectories and provide a new way to test ageing intervention strategies.

The new class of clinical ageing clocks – developed by Associate Professor Jan Gruber from the Healthy Longevity Translational Research Programme at the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine) and Dr Fong Sheng from the Department of Geriatric Medicine at Singapore General Hospital (SGH) – goes one step further in helping researchers to tailor longevity interventions, bypassing exorbitant longitudinal studies to test the efficacy of longevity drugs or supplements.

As an algorithm that leverages machine learning, PCAge takes advantage of an analytical matrix factorisation technique that can reduce complex high-dimensional data into lower dimensions.

Assoc Prof Gruber who is also from NUS Medicine's Department of Biochemistry said, "The team is looking at repurposing existing prescription drugs to extend lifespan and health span. Using LinAge, we now have a way to measure a person's biological age from their clinical biochemistry. We can now distinguish their ageing trajectories early and customise specific interventions that would improve longevity and lifestyle biomarkers, which differs from one individual to the next."

Dr Fong Sheng from SGH added, "Work is ongoing to validate LinAge in various populations, including in Singapore. Further improvements to LinAge are also currently underway."