

Epigenetic Aging and Cognitive Health: A Pilot Study

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Motivation

- People can be biologically older or younger than their chronological age (Fig 1), and this difference may predict important health outcomes, including cognition.
- Epigenetic biomarkers can be used to quantify biological age.

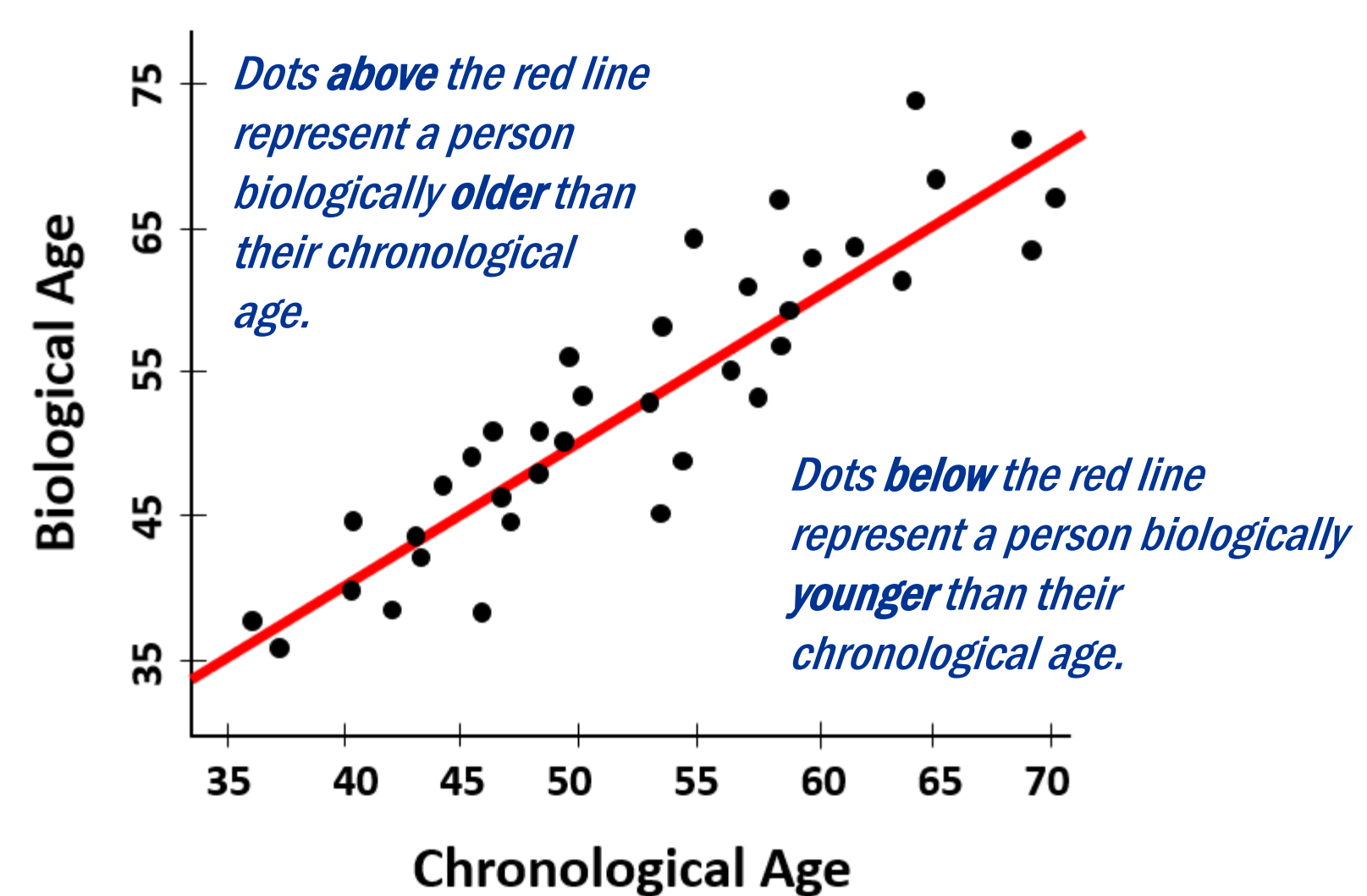
Project Description

- Leverage an existing longitudinal cohort of midlife adults (AHAB) with two waves of data collected 10-16 years apart.
- Establish whether and to what degree (1) cognitive function and (2) epigenetic age change over the length of the 10-16 year follow-up, and (3) provisionally test in a subset of adults whether changes in epigenetic age are associated with changes in cognitive function over the follow-up interval.

Context

- Previous investigations have been cross-sectional; primarily use “first-generation” clocks to estimate epigenetic age; and test a limited number of cognitive abilities.
- This study will use both first- and second-generation clocks to estimate epigenetic age and its effects on a range of cognitive functions in a longitudinal sample of middle-age adults.

Fig 1: Biological vs. Chronological Age



Does accelerated epigenetic aging over 10-16 years predict cognitive decline in middle-aged adults?

Project Deliverables

- By the end of the 1-year funding period, this pilot study will provide needed preliminary data for external NIH application, and will establish feasibility and key infrastructure for epigenetic age assays and calculation.
- Within 1-2 years after funding period has ended, pilot data will be used in future applications that investigate longitudinal links between accelerated biological aging and cognitive aging among midlife adults in the larger AHAB cohort.

Potential Impact

- Cognitive decline and dementia convey substantial health and financial costs, and individuals and their families place high value on maintaining cognitive functions as they age.
- Establishing epigenetic age as a biomarker of cognitive function in midlife can uncover **pre-clinical markers** that may identify individuals at increased risk for cognitive impairment and dementia in later life.

Acknowledgements

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