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Letter to the Editor

An OLD DOG teaching us new tricks in ageing biology

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Dear Editor,

We read with great interest the recent paper about the OLD-DOG Project, a prospective 30-month initiative in companion dogs designed to identify and validate biomarkers of aging [1]. Companion dogs occupy a distinctive translational niche in geroscience research: unlike laboratory rodents, they age within complex shared human environments while retaining lifespans short enough for longitudinal aging trajectories to be studied within feasible timeframes [2,3]. Their shared environmental exposures and naturally occurring disease patterns position them as a valuable intermediary model between traditional laboratory animals and humans. In this context, the OLD-DOG Project represents an important contribution toward developing multidimensional measures of biological aging within a One Health framework [4]. The study strives to address one of the key limitations in ageing research: the use of chronological age as a surrogate for biological aging.

Although human geroscience has increasingly adopted multidomain biomarkers integrating clinical, molecular, and functional parameters, comparable veterinary models remain underdeveloped. The authors' integration of clinical assessment, physical and cognitive performance measures, inflammatory markers, microbiome analysis, and longitudinal biospecimen collection represents a methodological advance. This multimodal approach may facilitate a more comprehensive characterization of biological aging than methods based solely on chronological age or isolated biomarkers. The use of a single veterinarian for all assessments is also noteworthy, as it reduces interobserver variability, a recognized limitation in longitudinal aging studies [1].

We appreciate the authors' acknowledgement of the relatively low proportion of non-neutered females as a limitation. However, the inclusion of a larger proportion of neutered females may also present an opportunity for subgroup analyses that may offer insights relevant to post-menopausal women. Given the wide range of age-related diseases associated with the post-menopausal period in humans, this could provide particularly valuable insights. Similarly, the genetic heterogeneity of the cohort may be viewed as a strength rather than a limitation, as it more closely reflects human populations. Indeed, limited population diversity has become a recognised limitation in many studies, particularly genome-wide association studies, because of concerns regarding the generalisability of findings across populations [5]. Replication of this study in different geographical settings would be advantageous and help determine the extent to which these findings are consistent across cohorts with differing environmental, lifestyle, and genetic influences.

A further strength is the longitudinal nature of the cohort. While many aging studies remain cross-sectional, the prospective design provides a valuable opportunity to characterise trajectories of biological and functional aging over time. Coupled with longitudinal biospecimen collection, this resource may continue to generate insights as novel biomarkers and analytical approaches emerge. It will be interesting to see whether future iterations of the OLD-DOG Project consider extending follow-up beyond the initial 30-month period, further enhancing its ability to characterise long-term aging trajectories and age-related outcomes.

Overall, the OLD-DOG Project represents an important step toward establishing companion dogs as robust translational models for biological aging research. By integrating environmental, clinical, functional, and molecular dimensions of aging within a real-world setting, this work provides a valuable foundation for future efforts to develop biologically informed measures of healthspan and frailty relevant to both veterinary and human medicine.

Declaration of the use of generative AI and AI-assisted technologies in scientific writing and in figures, images and artwork

Nil

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Declaration of competing interest

Nil

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Nil

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