Long Life Family Study Taps PacBio HiFi Sequencing to Unlock Genetic and Epigenetic Clues to Exceptional Longevity

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Up to 7,800 whole genomes and epigenomes to be sequenced on PacBio's Revio system, powering one of the largest studies of healthy aging to date

MENLO PARK, Calif., Oct. 08, 2025 (GLOBE NEWSWIRE) -- PacBio (Nasdaq: PACB), a leading provider of high-quality, highly accurate long-read sequencing solutions, today announced that the National Institute on Aging's Long Life Family Study (LLFS) selected PacBio technology to generate comprehensive genomic and epigenomic data from as many as 7,800 participants. The effort will employ PacBio's Revio systems to capture highly accurate HiFi long-read sequencing data designed to shed light on why longevity runs in families and what drives healthier aging.

"Long-read HiFi sequencing gives us the accuracy and resolution to see variants and methylation patterns missed by other technologies," said Dr. Michael Province, Professor at Washington University School of Medicine in St. Louis and contact Principal Investigator of the project. "By generating comprehensive genomes and epigenomes from extended pedigrees with multiple family members living to exceptional ages in LLFS, we expect to sharpen our ability to pinpoint pathways that influence healthy aging and exceptional longevity."

The Long Life Family study is a longitudinal multicenter study focused on identifying a range of factors that contribute to healthy aging and survival. This collaboration marks a next-generation upgrade to LLFS's existing genomic resources. To date, the study has enrolled 5,438 individuals across 539 three-generational pedigrees in the U.S. and Denmark and conducted three major rounds of in-home phenotypic visits spanning a period of nearly 20 years.[1] PacBio's HiFi long-read technology delivers highly accurate reads exceeding 15kb, enabling detection of structural variants, repeat expansions, insertions, and phased haplotypes often missed by short reads. Its methylation-aware protocols also permit direct profiling of 5-methylcytosine signatures in native DNA. By applying this approach across thousands of deeply phenotyped LLFS samples, the project aims to:

- Identify rare structural variants segregating with longevity phenotypes
- Link methylation differences to gene regulation, aging trajectories, or disease resistance
- Integrate findings with phenotypic and clinical data to generate new hypotheses for healthy aging

"LLFS is one of the most ambitious aging studies ever undertaken, and one of the first to apply long-read and epigenome sequencing at scale," said David Miller, Vice President of Global Marketing at PacBio. "We're proud to support this research with our Revio system, delivering the throughput, cost efficiency, and quality needed to make it possible to develop robust genomic insights."

Further understanding of the genetic and epigenetic foundations of exceptional longevity may open doors to precision geroscience, anti-aging therapeutics, and new biomarkers of resilience. The LLFS project was recently renewed by the National Institute on Aging for $80 Million dollars over 5 years (2U19AG063893-06), to perform this sequencing effort as well as recruit new families. PacBio and LLFS expect to begin sequencing in Q4 2025 at the McDonnell Genome Institute at WashU Medicine, with an initial tranche of ~5,500 samples, and the full ~7,800- sample program spanning five years.

For more information about the Long Life Family study, visit https://longlifefamilystudy.com.

Notes

[1] Long Life Family Study. (n.d.). Overview. longlifefamilystudy.com. Retrieved September 2025.
Mary K Wojczynski, Shiow Jiuan Lin, Paola Sebastiani, Thomas T Perls, Joseph Lee, Alexander Kulminski, Anne Newman, Joe M Zmuda, Kaare Christensen, Michael A Province, on behalf of the Long Life Family Study, NIA Long Life Family Study: Objectives, Design, and Heritability of Cross-Sectional and Longitudinal Phenotypes, The Journals of Gerontology: Series A, Volume 77, Issue 4, April 2022, Pages 717–727, https://doi.org/10.1093/gerona/glab333

About PacBio

PacBio (NASDAQ: PACB) is a premier life science technology company that designs, develops, and manufactures advanced sequencing solutions to help scientists and clinical researchers resolve genetically complex problems. Our products and technologies, which include our HiFi long-read sequencing, address solutions across a broad set of research applications including human germline sequencing, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications. For more information, please visit www.pacb.com and follow @PacBio.

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About the Province Lab

The Province Lab at the Department of Genetics at Washington University School of Medicine in St. Louis focuses on the development and application of statistical genetics analysis methods for human complex traits and diseases. This includes gene discovery and validation in genomic scans, pathway analysis, and the design of family/genetic observational studies and clinical trials. It is the Data Management and Coordinating Center for the LLFS study.

About the Long Life Family Study

LLFS began in 2006 with a first in-person phenotyping visit. Over the past 19 years, these participants from exceptional longevity families have annual follow-up interviews as well as up to 3 longitudinal in-person phenotyping visits, with selected longitudinal OMICs. The research sites are Washington

University (co-PIs Michael Province and Mary Wojczynski), Columbia University (co-PIs Stephanie Cosentino and Joseph Lee), Boston University (co-PIs Thomas Perls and Stacy Andersen), University of Pittsburgh (co-PIs Anne Newman and Joseph Zmuda), University of Southern Denmark (PI Kaare Christensen), Johns Hopkins University (PI Roland Thorpe), Georgia State University (PI Vonetta Dotson), University of Minnesota (PI Bharat Thyagarajan), Tufts University (PI Paola Sebastiani), and Duke University (PI Anatoliy Yashin).

Forward-Looking Statements

This press release may contain “forward-looking statements” within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, and the U.S. Private Securities Litigation Reform Act of 1995. All statements other than statements of historical fact are forward-looking statements, including statements relating to the uses, advantages, or quality or performance of, or benefits or expected benefits of using, PacBio products or technologies, in connection with the LLFS, number of sequenced genomes and related timing, impacts of the use of PacBio products to generate insights into longevity, healthy aging, aging trajectories and disease resistance, and other future events. You should not place undue reliance on forward-looking statements because they are subject to assumptions, risks, and uncertainties and could cause actual outcomes and results to differ materially from currently anticipated results, including, challenges inherent in longitudinal multicenter studies, sequencing a large number of genomes, and the difficulty of generating discoveries across various areas of research; potential product performance and quality issues; third-party claims alleging infringement of patents and proprietary rights or seeking to invalidate PacBio's patents or proprietary rights; and other risks associated with international operations. Additional factors that could materially affect actual results can be found in PacBio's most recent filings with the Securities and Exchange Commission, including PacBio's most recent reports on Forms 8-K, 10-K, and 10-Q, and include those listed under the caption "Risk Factors." These forward-looking statements are based on current expectations and speak only as of the date hereof; except as required by law, PacBio disclaims any obligation to revise or update these forward-looking statements to reflect events or circumstances in the future, even if new information becomes available.

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