WELCOME TO ZOONOMICS NEWS!

This newsletter, compiled by the Center for Zoonomics based at Zoo New England, is your place to share and learn about the exciting work accredited zoos and aquariums are doing in the fields of genetics and biobanking.

To keep this newsletter as dynamic and relevant as possible, **we'd love to hear from you!** Whether you're working on a new project, have a recent publication to share, or want to highlight upcoming events or activities, let us know. We're here to celebrate and share your contributions with the community.

Send your updates and questions to us at zoonomics@zoonewengland.org. We can't wait to hear from you!

NEWS AND UPDATES

Symposium commemorates the Frozen Zoo's® 50th anniversary

On September 17-18, the San Diego Zoo Wildlife Alliance (SDZWA) and IUCN SSC CSS-Biodiversity Biobanking group hosted a symposium to mark the 50th anniversary of the SDZWA's Frozen Zoo®. Global biobanking leaders gathered to honor its legacy, share groundbreaking work in the field, and vision a collaborative future of conservation biobanking. You can read more about the Frozen Zoo® here.

AZA's Population Management Center celebrates 25th anniversary

The Association of Zoos and Aquariums' (AZA) Population Management Center (PMC) at Chicago's Lincoln Park Zoo is celebrating its 25th anniversary. Since 2000, the PMC has provided vital scientific support to ensure healthy, genetically diverse, and sustainable animal populations across AZA-accredited institutions. Read the full story here.

EAZA Biobank reaches 30,000 sample milestone

Thanks to the dedicated efforts of European Association of Zoos and Aquaria (EAZA) zoos and aquariums, the EAZA Biobank now holds over 30,000 biological samples as of August 2025. To date, 58 projects have been approved by the EAZA Biobank Working Group, and samples received from zoos and aquariums are already being made available to 34 projects. Each sample is uniquely valuable, linked to comprehensive animal records via the ZIMS Sample Module, ensuring full traceability and research potential. You can learn how to start using the ZIMS Sample Storage Module here.

AZA signs a memorandum of understanding with Revive & Restore on biobanking and genomics

AZA has signed a Memorandum of Understanding (MOU) with Revive & Restore, committing to cooperating in facilitating the use of biobanking and genomics to advance species conservation. The agreement focuses on preserving existing genetic diversity and exploring innovative conservation strategies through biobanked materials. You can read the full MOU here.

Biobanking roundtable at AZA 2025 Annual Conference

Linda Penfold (South-East Zoo Alliance for Reproduction & Conservation; AZA Biological Banking Advisory Group [BBAG]) and Lauren Howard (Peel Therapeutics) hosted a Biobanking Roundtable at the AZA 2025 Annual Conference, attended by 17 participants. The discussion highlighted current activities, gaps, and opportunities in the U.S. zoo-based biobanking community. As an immediate outcome, the group has established an email string to keep in touch and has an intermediate goal of compiling a list of what taxa are currently being biobanked and where, which is one of the BBAG's strategic objectives. To join the ongoing discussion, please email Lauren Howard at lhoward@peeltx.com.

Center for Zoonomics collaborates with Darwin's Ark to test fur-based sequencing for conservation

The Center for Zoonomics is working with the non-profit Darwin's Ark to learn whether state-of-the-art fur-based DNA sequencing can be used as a non-invasive way to study population health for wildlife conservation. Read the full article here.

PUBLICATIONS

Zoos and aquariums are making great contributions to genetics research and biobanking, and we're eager to keep you informed about this progress. If you have a recent publication, please e-mail us at zoonomics@zoonewengland.org so we can include it in our next newsletter.

Fitness benefits of genetic rescue despite chromosomal differences in an endangered pocket mouse
A new study published in *Science* highlights the successful genetic rescue of the Pacific pocket mouse, showing that genetic rescue can improve fitness in inbred populations even when facing outbreeding depression. Notably, researchers used low-coverage whole genome sequencing (~1x) combined with pedigree data to accurately assign genotypes—without needing a reference panel of previously known genotypes. This cost-effective method (requiring ~10% or less of typical costs) offers a valuable tool for other conservation breeding programs with well-documented pedigrees. Read more in Science.

The evolution of conservation biobanking: A literature review and analysis of terminology, taxa, location, and strategy of wildlife biobanks over time
With nearly one-third of species at risk of extinction, the use of wildlife biobanks is growing. A recent study compared "biobanks" and "genome resource banks," analyzing terminology, species focus, global distribution, and practices. Findings show "biobank" is becoming the preferred term, with a surge in related publications since 2020. While genome resource banks have focused heavily on mammals, biobanking efforts are more taxonomically diverse but still underrepresented in key biodiversity hotspots. The study highlights the need for expanded biobanking across regions and species, alongside the development of reproductive technologies to support long-term conservation. Read the full story in Biopreservation and Biobanking.

Genomic infrastructure for cetacean research and conservation: reference genomes for eight families spanning the cetacean tree of life
The Cetacean Genomes Project (CGP), launched in 2020, aims to generate high-quality, chromosome-level reference genomes for all cetacean species. Using Vertebrate Genomes Project (VGP) standards, the CGP has produced 13 new reference genomes across eight of 14 cetacean families. Analysis of 18 total genomes reveals conserved ancestral karyotypes, with a few lineage-specific exceptions. These improved genomes enhance gene annotation, demographic insights, and understanding of genetic health, providing critical tools for cetacean research and conservation. Read more in Frontiers in Marine Science.

Long runs of homozygosity are reliable genomic markers of inbreeding depression

A new study introduces ID_{risk}, a novel statistic that uses long runs of homozygosity (ROH) and non-ROH heterozygosity to predict the risk of inbreeding depression in a population. ID_{risk} was applied across 24 bird and mammal populations, and offers a powerful method to assess inbreeding risk—especially valuable for conservation efforts when direct fitness data are lacking. Read more in Trends in Ecology & Evolution.

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