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**Loveland Living Planet Aquarium Penguins Focus of
First Gentoo Penguin Genetics Study**
DNA Sequencing Shows Surprising Results on Penguin Paternity

Draper, Utah (EMBARGOED until August 14, 2018) – Loveland Living Planet Aquarium's (LLPA) penguins are the focus of the first-ever study to sequence Gentoo penguin DNA to determine the paternity of eight chicks, as published electronically in the scientific journal, [Zoo Biology](#) (DOI 10.1002/zoo.21432).

"This research could change the way aquariums and zoos nationwide care for penguins," said Loveland Living Planet Aquarium founder and CEO Brent Andersen. "We're excited to be the first organization to have this groundbreaking research take place."

Animal care professionals frequently use observational techniques to monitor penguin mating behavior. The objective of the study was to determine if these observations matched DNA results. The study, performed by

Assistant Professor Eric Domyan, Ph. D. at Utah Valley University (UVU), along with his students Lauren Lee and Nathan Tirrell, concluded that behavioral observations were not always correct.



Gentoo penguin habitat at Loveland Living Planet Aquarium in Utah.

Based on observations, a penguin named Gossamer was thought to be the father of Poppy and Scamper, two chicks born at LLPA. DNA sequencing results showed a different story, as Roto is actually the father of these two birds. These findings indicate that while observations are helpful and generally correct, DNA provides hard evidence to prove relationships, allowing aquariums and zoos to ensure genetic diversity among penguins in their care.

"Genetic diversity is critical to maintain species viability over generations," said Domyan. "By having that viability, animals are more resistant to diseases and environmental changes."

Because this is the first time Gentoo penguin DNA sequencing was performed to determine paternity, UVU researchers had to sequence almost 200,000 locations in the penguin genome, identifying 38,000 differences that were used to determine the relationships between birds.

To conduct the study, UVU researchers collected blood samples from LLPA's 19 penguins as part of a routine veterinarian exam last year. Eleven of the penguins came to LLPA from Moody Gardens in Texas. Eight of the penguins were born at LLPA.



	Uno	Ava	Pebbles	Milo	Airn	Poppy	Scamper	Indy
Sampson	0.2303	0.2229	0	0	0	0	0	0
Roto	0	0	0.2236	0.217	0.2155	0.2136	0.2183	0.0392
Gossamer	0.0335	0.0237	0.0168	0.0264	0.0236	0	0	0
Ghost Rider	0	0.0149	0.0427	0.0315	0.0292	0	0	0.0653
Runner	0	0	0	0	0	0	0	0.2307
Fria	0.2324	0.2592	0.0683	0.0899	0.0816	0	0	0
Copper	0.0962	0.0981	0.1958	0.2198	0.2135	0	0	0
Coco	0	0	0	0	0	0.2018	0.226	0
Meg	0.084	0.0893	0	0	0	0	0	0
Nash	0	0	0	0	0	0	0.03	0.2288
Georgia	0	0	0.0332	0.005	0.0067	0.052	0.0391	0.1003

Study proves Roto is actually the father of five out of eight penguin chicks at Loveland Living Planet Aquarium in Utah.

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About Loveland Living Planet Aquarium

LLPA is a 501(c)(3) nonprofit organization that inspires people to Explore, Discover, and Learn about Earth's diverse ecosystems. A world-class facility, LLPA provides learning opportunities at all levels, interests, and ages. Since opening its new facility in Draper in March 2014, the Aquarium has welcomed four million visitors. Additionally, LLPA reaches more than 82,000 Utah students each year through its Outreach Education programs.

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About Utah Valley University

At 37,282 students and growing, Utah Valley University is the largest public university in the state of Utah and one of a few in the nation offering a dual-mission model that combines the rigor and richness of a first-rate teaching university with the openness and vocational programs of a community college. UVU's unique model, which focuses on student success, engaged learning, rigorous academic programs and faculty-mentored research, is transforming higher education by making it more affordable and accessible to students of all backgrounds.