



Director's Note

At the UC Davis VGL, our mission is to provide exceptional DNA testing services while advancing research and education on animal genetics.

Since its inception, the VGL has always been an active participant in the International Society of Animal Genetics (ISAG). This society evolved from a series of workshops that compared methods for detecting red cell antigens, which was really the foundation for basic and applied molecular genetics in animals.

Still today, the society supports exchange of research ideas and methodology for parentage testing from scientists from around the globe. In this newsletter, we share some more details about this important society in our field and our involvement in helping advance DNA testing in animals.

We are also proud to share some of the research that has been keeping us busy, and excited to highlight the educational and outreach efforts we are so passionate about.

I continue to hope that with each newsletter you learn something new about our laboratory and the exciting field of animal genetics. If there is something you are specifically interested in learning about, please reach out to our customer service team and let us know.

Sincerely,

Rebecca Bellone

Rebecca Bellone, PhD
Director, Veterinary Genetics Laboratory

VGL Selected as Duty Lab for the 2023 International Society for Animal Genetics (ISAG) Comparison Testing



Photo caption: Dr. Rob Grahn, Jennifer Grahn, Nathan Tatar, Leslie Bickel, and Dr. Rebecca Bellone at the ISAG conference.

The [International Society for Animal Genetics \(ISAG\)](#) is a professional society that promotes high quality and accurate genetic testing for animals. Every two years, ISAG organizes comparison tests, and participation by member institutions is voluntary.

This year, VGL was selected as the duty laboratory for both horses and cats. Duty laboratories are responsible for identifying animals to be tested, isolating DNA to send to participating laboratories all over the world, and reviewing and presenting the compilation of results at the conference held in early July.

The VGL always participates in parentage testing comparisons for various species (horses, donkeys, dogs, cats, cattle, sheep, goats, pigs, camels, and alpacas/llamas), and has always achieved the **highest ranking of #1**, which corresponds to a 98-100% testing accuracy. We should know the results of this year's comparison testing very soon and will post them on [our website](#).

Importantly, this year **Dr. Rebecca Bellone** gave an invited talk to share results of the international collaborative study she is leading to develop a single nucleotide polymorphism (SNP) panel that can be used for parentage testing in the horse. This study involved researchers from all over the world as well as many of our team at the VGL. The SNP panel suggested by Dr. Bellone and colleagues was approved this year as the official ISAG horse SNP panel. In two years there will be an unofficial comparison test performed using this panel.

Explore the hundreds of genetic tests available from the VGL for 20+ species

VGL and Higher Education

Part of the mission of the VGL is to support education in Animal Genetics. To fulfill this goal, our faculty and researchers welcome undergraduate student interns who assist in ongoing research projects as they learn about genetics and what it means to be a scientist.

At the end of April, two of our students presented posters with preliminary results of their studies:

VGL Outreach and Community Engagement

VGL faculty and staff have been busy with several outreach opportunities over the past few months. Fulfilling the mission of the laboratory, VGL hosted a group of middle schoolers from the **Sierra Expeditionary Learning School** who were interested in learning a bit about genetics and its application in enhancing animal

Anna Grulikowski is an Animal Science major and presented a poster entitled "A Whole Genome Sequencing Study to Identify Variants Associated With Deafness in Blue-eyed White Alpacas (*Vicugna pacos*)."

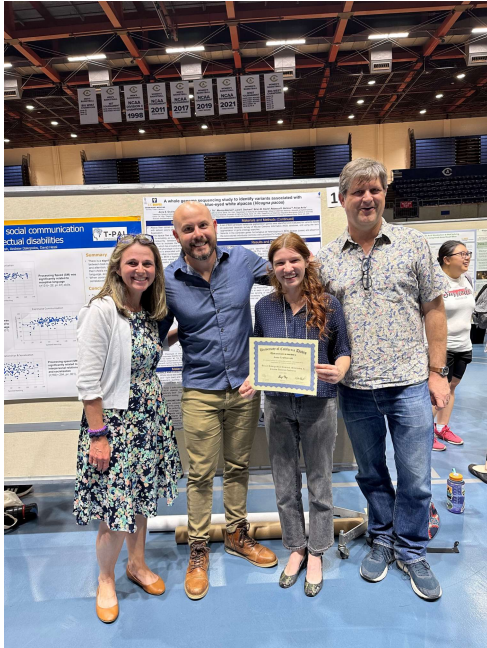


Photo caption: (left to right) Dr. Rebecca Bellone, Dr. Felipe Avila, Anna Grulikowski and Dr. Bradley Till.

Kathleen Pinder is an Animal Biology major and presented a poster entitled "Investigating the Genetic Mechanism of Rabicano Coat Pattern in Horses."

health and wellbeing. Students were also engaged in an activity that helped them understand how parentage testing works in horses.



Photo caption: Mona Christiansen explains how VGL tests are run using polymerase chain reaction and answers great questions the students had about the process.



Photo caption: Drs. Rebecca Bellone and Liza Gershony help students apply their knowledge about genetics and inheritance to perform a parentage verification and solve the mystery of a stolen horse.

109th UC Davis Picnic Day



Photo caption: Kathleen Pinder and her parents.

Both Anna and Kathleen have recently graduated from UC Davis and we are proud to have been a part of their education.

Human Footprint Documentary

PhD student, **Tali Caspi**, from the Mammalian Ecology and Conservation Unit was invited to participate in a new PBS science documentary called [Human Footprint](#). The documentary, which premiered July 5, follows Princeton biologist Dr. Shane Campbell-Staton as he explores human impact throughout the globe. Tali's research on urban coyotes in San Francisco will be featured in episode 5, entitled "The Urban Jungle". The episode is set to air on Wednesday, August 2, at 9 p.m. ET and a preview of the episode can be found [here](#).

One of the most anticipated events of the year, [Picnic Day](#) gives VGL a chance to fulfill its mission of promoting knowledge and education in animal genetics by meeting people of all ages that visit UC Davis on Picnic Day and exposing them to a bit of what we do. This year, VGL's wonderful volunteers offered three different activities: a DNA decoding activity that explained how DNA is read to make proteins in an easy and fun way; a horse coat color activity that explained how genes interact to produce some of the basic coat colors in horses; and a dog breeding activity that gave young visitors a chance to understand how traits are passed on from parent dogs to their puppies.



Photo caption: Staff and students volunteering at the VGL booth at Picnic Day.



Photo caption: A coyote glancing at the city of San Francisco from the top of a hill.



Photo caption: Mammalian Ecology and Conservation PhD student, Tali Caspi, outside San Francisco.

Research Highlights

VGL staff and faculty have contributed four new scientific publications since March.

Drs. Ben Sacks and Mark Statham, from the Mammalian Ecology and Conservation Unit collaborated on [a project that surveyed salt marsh harvest mice](#) using a non-invasive genetic technique and concluded that their patterns of patch occupancy were consistent with the area-isolation paradigm, enabling



Photo caption: We had activities for all ages! VGL staff helps a young visitor understand the basics of inheritance with a dog breeding activity.

National Pedigree Livestock Council Meeting

The VGL was a sponsor of this year's [National Pedigreed Livestock Council \(NPLC\)](#) meeting and VGL staff typically participate in these meetings to answer questions and contribute thoughts on genetics within the industry. The NPLC consists of executive officers from various nonprofit breed associations of dairy and beef cattle, horse and pony, sheep, goat, and swine species. The organization meets annually to share and discuss livestock industry issues as well as strategies to advance the industry. This year's meeting took place in April and was hosted by the [American Paint Horse Association \(APHA\)](#).

American Quarter Horse

them to focus future studies on collecting samples from of well-connected restoration sites to guide salt marsh harvest mouse habitat conservation.

Dr. Ben Sacks collaborated on a study that combined 12 years of data collection to develop a [population density and distribution model](#) for the endangered Sierra Nevada Red Fox. The results of the study will serve as a baseline for the development and evaluation of future conservation and management efforts.



Photo caption: Sierra Nevada Red Fox in a grassy field.

Dr. Rob Grahn collaborated on two studies assessing preimplantation genetic testing (PGD) of equine embryos. The [first study](#) genetically surveyed 91 *in vitro*-produced horse embryos and concluded that the efficacy of PGD for disease-causing genes in such embryos can be improved by a second biopsy and refreezing of the embryo while exhibiting no detrimental effect to posterior *in vivo* embryo development. The [second study](#)

Association (AQHA)

Dr. Rebecca Bellone enjoyed her visit to the [American Quarter Horse Association \(AQHA\)](#) headquarters this April, getting to meet many of the team at the AQHA. The VGL is proud to be the official laboratory providing testing for the AQHA since the early 1960's.



Photo caption: Dr. Rebecca Bellone and AQHA registrar Tammy Canida in front of the AQHA headquarters in Amarillo, Texas.

California Rural Crime Prevention Task Force

Dr. Rob Grahn gave an invited presentation to the [California Rural Crime Prevention Task Force](#) on May 1-3 at Lake Tahoe, CA. The 1.5 hour presentation covered the different types of evidence that VGL can use in forensic analyses, and the power of the evidence we can provide for

assessed different methods for PGD on equine embryos and also showed that equine embryos can be safely subjected to two biopsy procedures without apparent detrimental effects to embryonic size. The abstracts for these studies were presented at the [13th International Symposium on Equine Reproduction](#) held July 10-14 in Brazil.

evidentiary purposes.

Texas Mini Milkers - Dairy Goat Breeders Association

Dr. Stefanie Oppenheim gave an invited talk to the [Texas Mini Milkers](#) members on the importance of DNA testing in goats. This 2-part series titled "DNA testing in Goats - How and why we do it" was held via Zoom on June 22 and June 29 with the purpose of helping dairy goat breeders better understand genetic testing and how it can be used to improve their herds. Part 1 focused on parentage testing and analysis, while part 2 discussed the available goat diagnostic tests: Freemartin testing, Scrapie susceptibility, G6S, and Alpha Casein.

UC Davis Horse Barn 30th Annual Production Sale

This year's [UC Davis' Horse Barn Production Sale](#) took place as an on-line auction on June 24-25, with and an in person sale showcase being held on June 24. The VGL held a booth at the event to share information about genetic testing in horses at the showcase. This year's sale generated over \$78,000, which is used to support the undergraduate program teaching many aspects of breeding and training horses. The VGL was excited to be a part of this sale as we love doing anything that

supports undergraduate education.



Photo caption: Elizabeth Esdaile and Dr. Rebecca Bellone at the VGL booth.

KSFR Public Radio Interview

Dr. Liza Gershony was [interviewed](#) by Mary Lou Cooper for a KSFR public radio story on canine DNA testing. The story focused on the pros and cons of commercially available DNA tests and sheds light into the different tests available, their benefits and limitations.

Support VGL Research



Copyright © 2023 Veterinary Genetics Laboratory, All rights reserved.

Want to change how you receive these emails?
You can [update your preferences](#) or [unsubscribe from this list](#).

