



FALL 2023

THE BIO BUZZ

The Lowdown in BIO Town

Aaannnd, we're back.

Where does the time go?! Fall semester is fast coming to a close (4 weeks until graduation!), but BIO Town chugs along - crushing it, as usual!

We've had some arrivals and departures this semester. Our department chair, Dr. Sheryl Zajdowicz, received a job offer as a director of undergraduate research programs for the University of Wisconsin school system. We certainly miss her and wish her well! Dr. Jennifer Gagliardi-Seeley has since taken over as interim department chair and we look forward to the next chapter under her leadership. We also welcomed two new staff members to Team BIO this fall; Erin Rogers, our new academic advisor, and Dr. Johnny Hannan, our new Gen Bio lab coordinator assistant.

We had another successful turnout for the Welcome Back Open House with 90+ students stopping by to visit our lab spaces and see what our research faculty are up to. This was also another busy semester of conferences in which many of our students were able to attend along with their faculty mentors. And we would be remiss not to include a recap of the fun field experience courses that were offered this past summer. So much to see and do here in BIO Town, read on!

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**TEAM BIO
SAYS...**

welcome!



Erin Rogers Academic Advisor I

Hi! I'm Erin and I'm originally from a small town in central Kansas. I earned my BA and MA degrees in microbiology at The University of Kansas and have worked in higher education throughout my career. I joined the biology team at MSU Denver in 2019 as an affiliate faculty member and am transitioning to my new role as an academic advisor for the department this fall. I'm excited to continue supporting our awesome students in this new capacity!

When I'm not at work you can find me teaching a Jazzercise class, cheering for my beloved Jayhawks in college sports, or hanging out with my husband and three kids. We enjoy hiking, traveling, and watching The Amazing Race together. This summer I completed my goal of visiting all 50 states and, inspired by this show, my family and I hope to embark on some international adventures together soon.



**TEAM BIO
SAYS...**

welcome!



Dr. Jonathan Hannan
General Biology Laboratory Coordinator Assistant

Hi! I'm Johnny and I'm originally from Northern Ireland. I have a BS in Zoology, an MS in Biological Nuclear Magnetic Resonance, and a PhD in Bioinorganic Chemistry. I've previously held full-time faculty appointments at the University of Edinburgh and at CU Anschutz. I've also held affiliate positions at MSU Denver and Red Rocks Community College.

For the majority of my academic career, I've studied the structure-function relationships of proteins that under normal physiological conditions regulate the innate immune response, but which when modified by genetic mutations often associate with the development of autoimmunity.

In my spare time I like being outdoors as much as possible. I enjoy hiking, mountain-biking, paddleboarding, or just being out and about with my family.



HOT OFF the PRESS

Open-Source JL Olfactometer for Awake Behaving Recording of Brain Activity for Mice Engaged in Olfactory Tasks



**Dr. Daniel
Ramirez-Gordillo**

Authors: Nicole Arevalo, Laetitia Merle, Arianna Gentile-Polese, Andrew Moran, Andrew Parra, Michael Hall, Justin Losacco, Ming Ma, Connor McCullough, Barish Ozbay, Daniel Ramirez-Gordillo, Jose Rigüero, Fabio Simoes-de Souza, Kira Steinke, Ryan Williamson & Diego Restrepo

https://doi.org/10.1007/978-1-0716-3234-5_6

Automated olfactometers are used to study brain function in rodents engaged in olfactory behavioral tasks. In this chapter, we describe the JL olfactometer, an open-source olfactometer developed by our laboratory to record neural activity through electrodes or microscopic imaging in mice engaged in a variety of olfactory behavioral tasks. The JL olfactometer monitors the licks the mouse makes on a lick spout located within an odorant port and controls odorant application and delivery of water reward through the opening and closing of valves. Neural activity is recorded in head-fixed mice using multiphoton microscopy or neuropixels and in freely behaving mice using miniature microscopes, tetrodes, or multielectrode arrays. Mouse movement is recorded with a video camera. An INTAN RHD2000 evaluation system monitors the activity of the JL olfactometer and records other inputs such as sniff recording and signals synchronizing the video camera and other instruments such as the multiphoton microscope. The design is open source, and the MATLAB code can be modified to suit research goals. We discussed the use of olfactometry in the study of odorant perception in health and disease.





Team BIO

OUT
'n'
about

BIO 39AC: Principles of Wildlife **Biology and Management**

By Dr. Jennifer Gagliardi-Seeley

In Summer 2023, Dr. Jennifer Gagliardi-Seeley taught Principles of Wildlife Biology & Management for the second year. Dr. Gagliardi-Seeley, Jordan Cashman (TA), and 12 students embarked on their 8-night trip to Yellowstone and Grand Teton National Park.

The first three days were spent at the North Entrance of Yellowstone in Gardiner, MT. They learned about bear management and the wolf reintroduction with Abby from Yellowstone Forever Institute. And, YES, they saw black bears, grizzly bears, and wolves eating a carcass!



They then spent 5 nights at the Murie Ranch with Teton Science School inside Teton National Park. They learned about the effects of climate change on the alpine environment, water rights, and Traditional Ecological Knowledge.



BIO 39AC: Principles of Wildlife **Biology and Management** *(continued)*

If you are interested in working in field research, fish and wildlife management, or national parks, this class will give you an excellent scope of what that work could look like. You get to meet people working in all kinds of positions and ask plenty of questions. You will have the opportunity to form your own research project and collect data - it's a great chance to dip your toes into field work. Not to mention spending part of your summer hiking, riding gondolas, canoeing, swimming, and exploring!

We will be accepting applications either at the end of this semester or the beginning of the spring semester. Please email Magee Headley at mheadley@msudenver.edu or Dr. Jennifer Gagliardi-Seeley at jgaglia1@msudenver.edu.





BIO 39AA: Reef Ecology & Research

By Dr. Bob Hancock

From the mountains to the reefs, Team BIO was in full adventure mode this past summer! Dr. Bob Hancock led a class of eleven lucky Roadrunners to the Florida Keys for a truly unique reef ecology and research experience.

The course required Open Water SCUBA certification and most of the students enrolled during the spring semester in courses from local dive shops. Home base was a large rental house in Marathon, Florida. They cooked, ate, attended lectures, planned dives, processed data and, of course, had a little bit of much needed down time.

All said, everyone completed 16 SCUBA dives on the Florida Coral Reef Tract: 2 of these were night dives, 2 were devoted to conservation by cleaning staghorn coral outplants at a large coral farm (prior to these dives students took a course and earned NAUI Coral Restoration Diver certifications) and the remaining 12 dives were devoted to intensive data collection for research projects and recreational diving. Several students are currently processing reef data for independent study and presentation at the MSU Denver Undergraduate Research Conference in April.





Under the Sea!





BIO 39AD: Colorado Plant Communities from Plains to Peaks

By Dr. Christopher Meloche

We had an excellent two weeks visiting a variety of different environments in our area. The wet spring we had this year threatened to make this class a test of fortitude but as luck would have it the rain stopped just a couple of days before class began and all the extra moisture made for a riot of color and plant diversity here in the Front Range.

We started at the Rocky Mountain Arsenal learning plant ID skills in the shortgrass steppe and then moved to dry mesa environments at Rocky Flats where we saw variations on the shortgrass steppe community. Next we headed to NCAR and the Boulder Mountain Parks where we observed ponderosa pine woodlands, riparian areas and some foothills meadow communities. We visited the extensive chaparral shrublands around Deer Creek in Jefferson County where we spent extensive time on preparing dried plant specimens for cataloging in an herbarium while also continuing to advance skills in plant identification and the use of dichotomous keys.





BIO 39AD: Colorado Plant Communities from Plains to Peaks (continued)

We visited the foothills lodgepole pine community in Genesee thanks to Dr. Church where we noted the major impacts of slope, moisture, and sun exposure on the development of different plant communities.

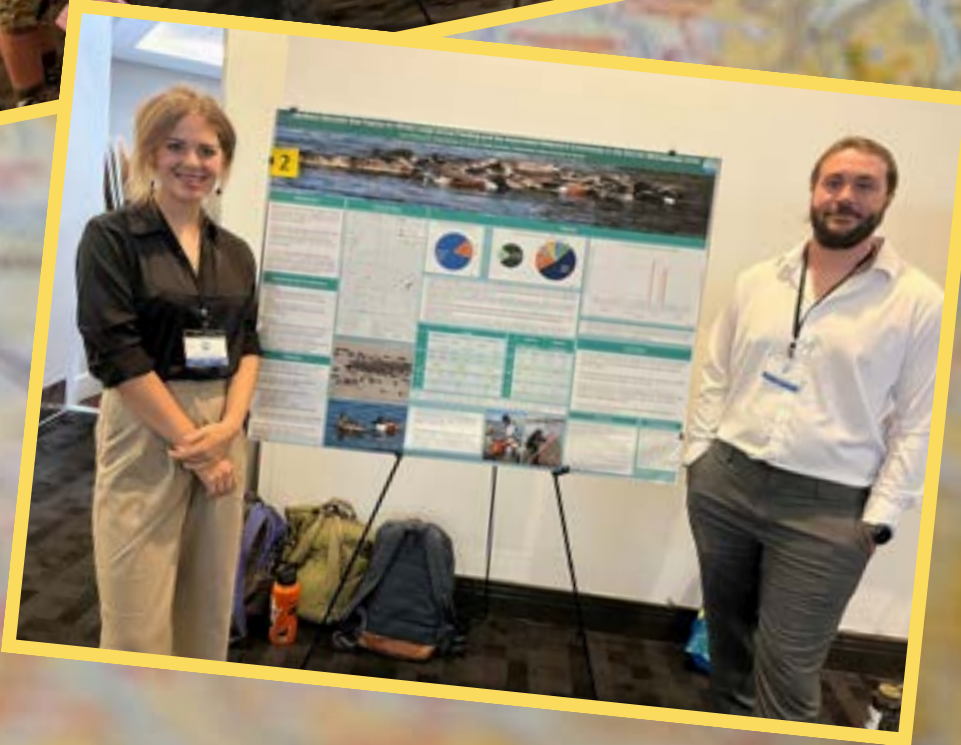
Finally, we spent a couple of days visiting the high altitude montane and alpine communities at Guanella Pass and Berthod Pass west of Idaho Springs, where almost everything blooms at once due to the short growing season.



BIOLOGY STUDENTS HIT THE ROAD FOR THE CONFERENCE CIRCUIT!



Students from Dr. Carello's research lab presented their findings on feeding behavior and food sources of the Northern Shoveler at the 47th Annual Waterbird Society Meeting in Fort Lauderdale, FL. The students engaged with faculty from other universities, representative from U.S. Fish and Wildlife Service, and other government agencies and non-profits.



Top Photo: Paige Rodriguez
Bottom Photo: Laura Farnsworth and Drew Bender



BIOLOGY STUDENTS PRESENT AT ANIMAL BEHAVIOR SOCIETY CONFERENCE



In July 2023, Dr. Jennifer Gagliardi-Seeley presented and accompanied four research students in Portland, Oregon at the international Animal Behavior Society meeting. Naomi Jacquez presented a poster titled, "Garter Snake (*Thamnophis* spp.) Exhibit Habitat Partitioning in A Sympatric Urban Population". Jordan Cashman and Leah Vitale presented their poster titled, "Sex Ratio Effects on Pair-bond Formation in the Convict Cichlid (*Amatitlania nigrofasciata*)". Caroline Rice, who is the research student of Dr. Jennifer Gagliardi-Seeley and Dr. Hsiu-Ping Liu, presented a poster on "Intraspecific variation of mating systems in the Convict Cichlid."

Lastly, Dr. Jennifer Gagliardi-Seeley gave a talk on the "The Correlation in Male Aggression and Variation in Social Monogamy in the Convict Cichlid". Not only did Dr. Gagliardi-Seeley and her research students present at an international conference, but they were able to see other up-and-coming research, network with researchers from other universities, and explore a little of Portland.



Pictured from L to R: Caroline Rice, Dr. Jennifer Gagliardi-Seeley, Leah Vitale, Naomi Jacquez, Jordan Cashman

ROCKY MOUNTAIN CONFERENCE OF PARASITOLOGISTS

Seven MSU Denver students and faculty attended the 54th annual meeting of the Rocky Mountain Conference of Parasitologists at Cedar Point Biological Station (near Lake McConaughy; Ogallala, Nebraska). One of the highlights of the meeting was Dr. Bob Hancock's keynote address. Dr. Hancock took us on a fascinating journey to London in search of bedbugs.

RMCP is a gathering of parasitologists, veterinarians, students, and other devotees of parasitology who share a fascination with the subject and recognition of its importance. It is a venue where graduate and undergraduate students can come together to share a range of novel findings in parasite biology and establish new networks of friends and collaborators. This year's meeting was held September 7-9, 2023, and included participation by approximately 40 students and faculty from colleges and universities within the Rocky Mountain region.



Pictured on L: Dr. Bob Hancock gives keynote to kick off RMCP conference
Pictured on R: MSU Denver students enjoy some downtime at the conference .

LOOKING AHEAD...

EVENTS, ANNOUNCEMENTS, AND SUNDRY

Team
AWESOME

Dr. Hsiu-Ping Liu and Dr. Kristy Duran received a 5-year, \$1.7 million National Institutes of Health (NIH) grant to fund a Genomic Research Experience for Undergraduates (GREU) Program. The program is currently reviewing applications for the first cohort of students. Participants will receive tuition, health insurance, and paid opportunities in genomic research. Congratulations to Dr. Duran and Dr. Liu! Well done!



Dr. Kristy Duran
Director of Undergraduate
Research & Professor of Biology



Dr. Hsiu-Ping Liu
Director of Center for Advanced
STEM Education & Professor of
Biology



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For more information and to apply:



For Questions: Dr. Kristy Duran (kdurant16@mcneese.edu) or Dr. Hsiu-Ping Liu (hliu1@mcneese.edu)

LOOKING AHEAD...

EVENTS, ANNOUNCEMENTS, AND SUNDRY

READY FOR YOUR
CLOSE UP?!



**CALLING ALL
GRADUATING BIOLOGY
SENIORS!**

**CLAIM YOUR SENIOR SWAG
BAG AND GET YOUR SELFIE ON
IN OUR PHOTO BOOTH!!**

DECEMBER 11TH - 14TH
BIOLOGY CONFERENCE ROOM
SI 2042C



IN NEED OF SOME ANIMAL THERAPY?

Meet
GIZMO!



Dr. Arijana Barun is pleased to introduce everyone to Gizmo, the Leopard Gecko! He lives in Dr. Barun's office during the semester and is happy to greet all of you, especially students.

Gizmo is very happy when he gets crickets (to chase around his cage) or mealworms. Fun facts about Gizmo: he can live a long time (28 years is not unusual) and he licks his eyeballs with his very large tongue to moisten/clean them because he does not have movable eyelids.

Come say hi to Gizmo in SI 2034!

**A LONG TIME AGO (FALL 2022) IN A
GALAXY FAR, FAR AWAY (NOT REALLY)...**

Episode III The Return of the Fur Babies

**It was the beginning of this program coordinator's solo tenure
into newsletter duty.**

**Master Z had entrusted her with the role of 'town crier', spreading
the news of BIO Town's greatness, near and far.**

The pressure was immense.

Could she take it to the next level?

Would it be possible to inject some humor?

**Would her esteemed colleagues put up with things like profiles
of...BIO fur babies?**

Yes. Yes, they would.

Rest assured, the Force IS strong in BIO Town.

Without further ado...

BIO FUR BABIES...PART 2!!!!

HRH



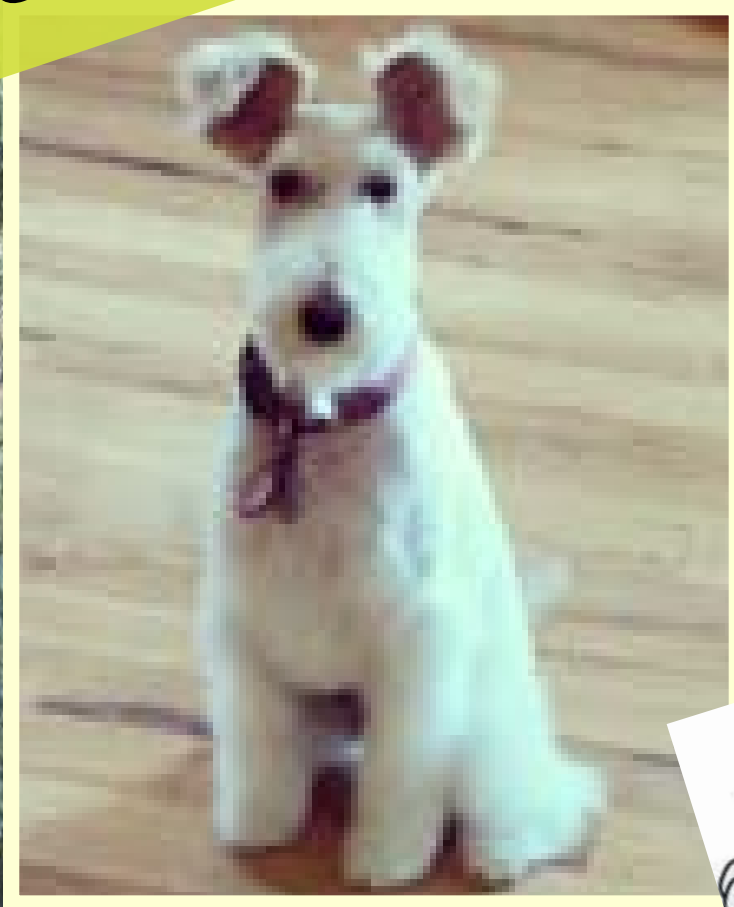
BRENIN



Brenin is our cheeky Cardigan Welsh Corgi. His breed is different from the Pembroke Corgi in that he's a little bigger, slightly less feisty, but more goofy (in a good way). His name is Welsh and means "King." He arrived to us as a pup in August 2020 and is a thoroughly fun part of our family. Some of the best things about him are his facial expressions, which run the full-gamut of emotions, but excel at the cute ones (including what I consider to be total sarcasm).

**BRENIN'S STORY AS TOLD BY HIS HUMAN
DR. CHARLIE BUTTERWORTH**

Willow



Willow is a Wire Fox Terrier and a sweet pup that we rescued when she was six months old. Even though she is 9 years old, she is completely healthy and doesn't act her age. She still loves to go on walks, car rides, and camping, but her favorite thing to do is play ball. She also loves coming to school to help reduce student's stress during an exam. If you ever see her on campus, come say hi to her. She loves people and other pups!

**OZZIE, ODIN, AND FREYA'S STORY AS
TOLD BY THEIR HUMAN
REBECCA BRYAN**



Ozzie



Freya



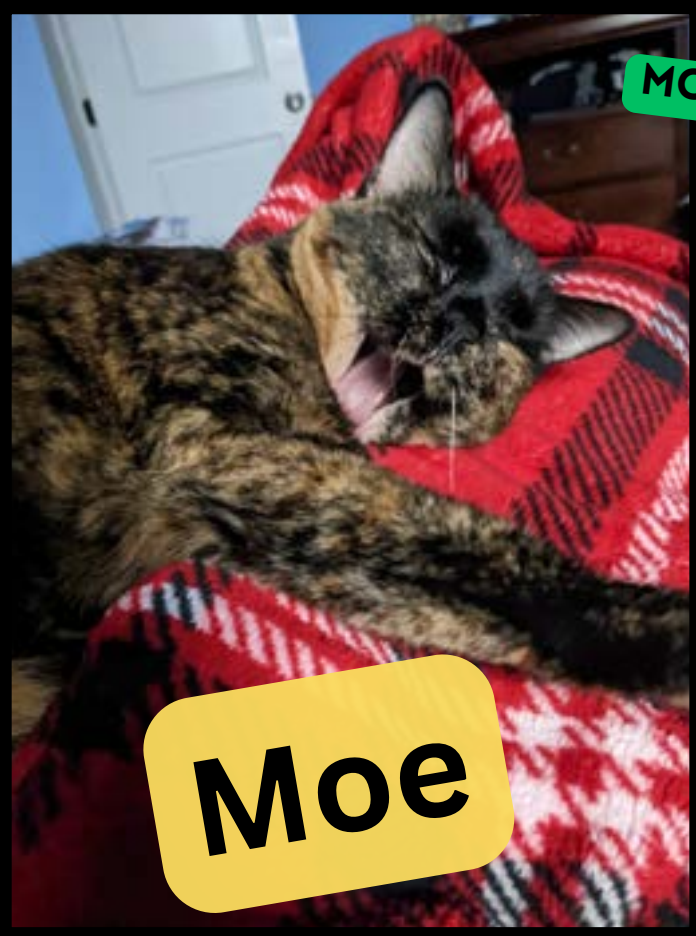
Odin

Odin showed up on our doorstep around Christmas 2015. He just sat there and meowed at us. Nobody claimed him from the signs around the neighborhood or from the Longmont Humane Society, so after his lost and found hold was over I went and adopted him for real. He's a "special" kitty, with one eye, probably about 2 brain cells, and a lot of love to give.

His sister **Freya** is new to the household, but is settling in well. Her biggest personality trait? She loves food. Any kind of food. All kinds of food.

We could say the same about **Ozzie**, but he will *sometimes* forgo food if there is a tennis ball involved. He is our professional stick-inspecting, toy-"improving" tennis ball connoisseur. He has slowly developed into a very good dog; he is 3 years old, and though he still has some really silly habits he's come a long way. Our little pandemic shark – I mean puppy (by the way, quick piece of advice: don't get a puppy during a pandemic – just saying.)

**MOE AND CINNABON'S STORY AS TOLD BY
DR. ELIZABETH MEDINA**



Moe



**Cinnabon
(aka Blondie)**

Moe is a feisty 3-year-old tortoiseshell cat I adopted from the Boulder Humane Society when she was a kitten. She loves to ride on my shoulder, and when she's hangry she claws the crap out of my foot. My sister and I have taught her a few tricks like sit, beg, high five, and down. She is also extremely possessive and growls at any other animal that tries to get my attention.

On the weekends she loves to visit her best friend Cinnabon (whom I call Blondie). My niece rescued him about 7 years ago when he was abandoned at an apartment complex. He is very sweet and a total push over. Don't be fooled by his cute appearance though. If you leave any food unattended, he will make off with it. He doesn't really like to sit with people unless they are trying to use the toilet, which I find a bit disturbing.



My doggo is named Sif, after Norse mythology's wife of Thor (or Lady Sif from Marvel's Thor). I usually call her Siffy Doo. She's a 3 year old COVID puppy and big goofy mixed breed. She a good girl! (most of the time).

Smudge is her geriatric snuggle buddy and best feline friend. He is about 13 years old and is a lover. He digs attention from everyone and everything and is well known on my block for hanging out on the sidewalk in front of my house and soliciting pets from random people walking by. He is not above wandering to my neighbors houses in search of lovin'. Fortunately, they all seem to enjoy him!

Kuno



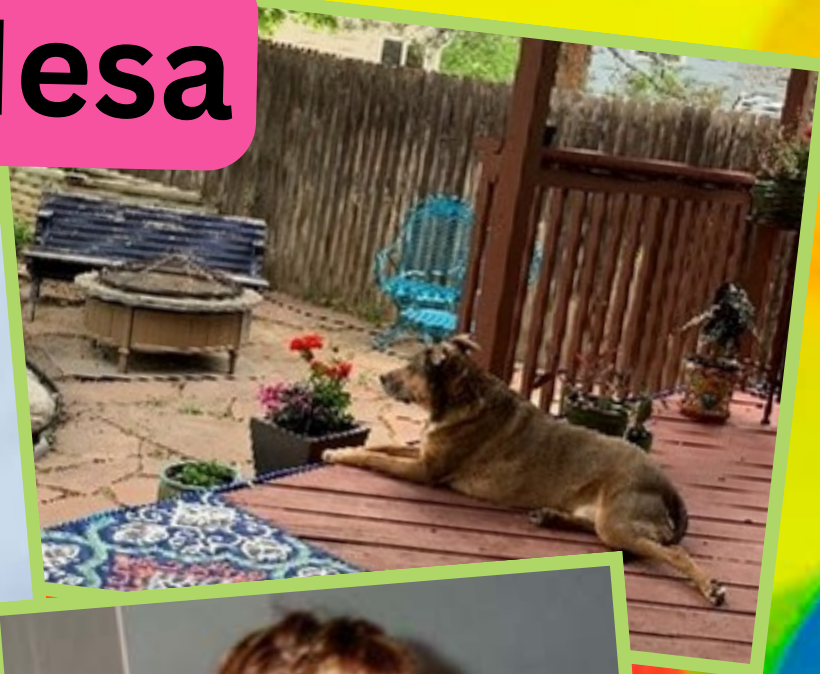
Kuno's pedigree is uncertain but based on his herding tendencies we suspect he has a bit of border collie in him! He was a kennel puppy and didn't have an owner until he was about two years old, when he was taken in by my sister-in-law. He didn't get along with her other dog, so we agreed to take him into our family!

When we first had him he barely knew how to "dog", acting very confused when we took him on walks and not quite getting the whole point of it, but he quickly came into his own. He's fast like a greyhound and hilariously loves to jump at squirrels in trees. He could easily jump our 6-foot fence if he ever really wanted to. He's just excitable, holding onto his puppy energy even though he's now 8 years old - we suspect his body will give out long before his spirit does. At the end of the day, he just wants to be near his people and will happily spend the evenings curled up on the couch next to either one of us.

**KUNO'S STORY AS TOLD BY HIS HUMAN
DR. DAVID MERRIAM**

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Mesa



**MESA AND LARRY BIRD'S STORY AS
TOLD BY THEIR HUMAN
LORRAINE MALOOF**



Larry Bird

My rescue dog, Mesa Cabeza, is a sweet trainwreck. If I had the opportunity to clone this dog, I. Would. NOT. But we love her to death. She's a cutie, too. Which is why she survived the animal shelter and made it to our house. She's a little fattie now. The first photo was taken about 7 years ago. Mesa and I hang out on the back porch when I'm not on the computer or commuting. See? She's a little fattie now.

And here's my favorite picture from back in the day. These were my cockatiels. "Larry Bird" liked to step into my mouth and pick at my teeth. I'm so glad I could control how hard I laughed when he did this!