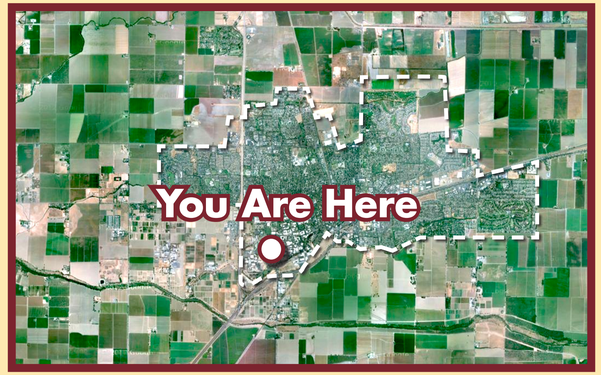
living on the edge

Agriculture/Urban Interface

Billy Hathorn



Daniel R. Blume

Farms benefit urban areas by providing:

- Fresh, local food and a sense of connection to food sources
- Employment and economic vitality
- Open space for aesthetic enjoyment
- Wildlife habitat
- Flood mitigation

Farms can impact urban areas by:

- Affecting water quality with animal waste, fertilizer, and pesticide runoff
- Generating dust, odors, noise, and chemical drift
- Competing for water supplies
- Slowing traffic by driving farm equipment on roads

Farms → | ← Cities

Surrounded by farms, Davis is in the ag/urban interface.

California is the most populous state in the U.S. and the biggest agricultural producer. Tensions can arise where farms and cities share boundaries.

Cities benefit farms by providing:

- Services and amenities such as emergency services, transportation infrastructure, medical and educational facilities
- Supplemental employment opportunities
- Better access to markets and consumers

Cities can impact farms by:

- Converting and fragmenting useable farmland
- Raising property values, resulting in increased taxes and development pressure
- Generating traffic congestion and smog
- Increasing surface runoff and water pollution
- Competing for water supplies

How can farms be better neighbors?

How can you improve the ag/urban interface?

How can cities be better neighbors?

Produce your own

Many city-dwellers enjoy producing their own fruit, vegetables, herbs, eggs, poultry, and honey in urban gardens and farms. The UC Master Gardener program can provide science-based advice for helping home gardeners improve their yields.

Become a partner

Community Supported Agriculture (CSA) is a popular way for consumers to buy local, seasonal food directly from a farmer. Consumers purchase a membership or subscription, and in return receive a box of seasonal produce or other farm products each week. CSAs may include vegetables, fruit, eggs, dairy products, meat, herbs, honey, cut flowers and other farm products

Enjoy a farm visit

Many working farms and ranches host visitors for special events that generate extra income. These can include tours, classes, fairs, festivals, farm stays, guest ranches, and more. For information on visiting local farms:

capayvalleygrown.net
sacriverdeltagrown.org
calagtour.org
yolocvb.net/farm-tours

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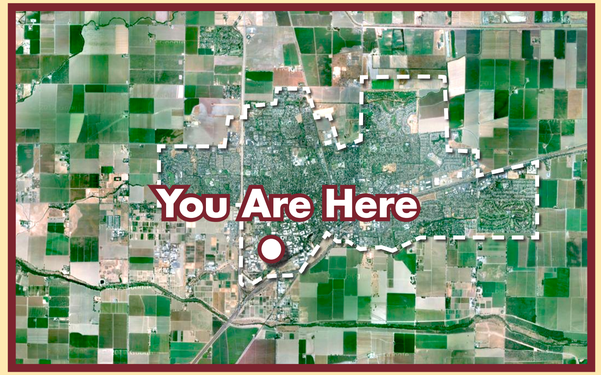

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Farm

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- Gene
- Comp
- Slowi

A UC Davis graduate student takes a stream water sample to monitor the effects of cattle grazing on water quality.

- Keep animals and polluted runoff out of waterways.
- Properly manage manure.
- Invite visitors for tours, festivals, farm stays, and other hands-on activities.
- Use farmers markets and other opportunities to educate and encourage urban dwellers to support farmlands.

Farms→ | ←Cities

Surrounded by farms, Davis is in the ag/urban interface.

Agricultural Sustainability Institute, UC Davis

Participants at a UC Davis agricultural field day gathered at a sunflower field.

- Shop at local farmers markets and ask your supermarkets to stock local food and farm products.
- Learn more by visiting local farms, talking to farmers, participating in 4-H, or attending county fairs.
- Support legislation to create open-space buffer zones between farmland and cities.
- Respect farm boundaries as private property.

Cities benefit farms by providing:

- Services and amenities such as emergency services, transportation infrastructure, medical and educational facilities
- Supplemental employment opportunities
- Better access to markets and consumers

Cities can impact farms by:

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Patty Gimvald/Davis Farmers Market Assoc.

The Davis Farmers Market features local eggs, produce, meat, and other food products.

- Invest in infrastructure to keep urban contaminants out of waterways.
- Support farmers markets and other opportunities to connect urbanites and farms.
- Use smart growth principles to contain growth and limit the effects of development on farmland.

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How Do we care For Our horses?

Grooming

Student interns groom the horses daily and take them out for exercise walks. Grooming horses with special brushes and combs keeps skin in good condition, allows close health monitoring, and helps accustom the horse to human handling.

Feeding

Horses are fed a mixture of grass hay, alfalfa hay, and wheat hay. The hay is grown on the UC Davis campus.

Breeding

Many of the horses here started life in the Horse Barn. The barn provides a clean, sheltered space for pregnant mares and newborn foals. Students facilitate breeding, semen collection, and artificial insemination.

Safety: The horse in the pen in front of you is a stallion, which means he is a male horse used for breeding. Stallions are separated from other horses for safety reasons.

Preventing Pollution

This corral is designed to prevent water pollution from animal waste runoff.
Look for the four methods used here:

1 Removal
Animal pens are cleaned regularly and solid waste is composted.

2 Diversion
A rain gutter collects and diverts rain water to keep it from being polluted in the pen.

3 Containment
A berm (ridge of soil) prevents water from flowing downhill into the Arboretum Waterway.

4 Filtering
A swale (low area) collects runoff and vegetation growing around the pen filters out pollutants.

Why are there horses here?

The UC Davis Animal Science Department Horse Barn is a teaching, research, and outreach facility. About 45 horses, donkeys, and mules live here at the Horse Barn facilities and on five acres of irrigated pasture located south of the Arboretum.

Under the direction of a faculty advisor and a professional barn manager, UC Davis student interns learn through hands-on experience about best practices in breeding, raising, and caring for horses. In the course of their learning, the students provide most of the labor for running the Horse Barn facility.

Where can I see more horses on campus?

The UC Davis School of Veterinary Medicine Teaching Hospital is located on Garrod Drive north of the Arboretum Gazebo.

The Campus Recreation Equestrian Center, located west of the Arboretum off Garrod Drive, boards private horses and offers riding lessons to the public year round.

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Living weed whackers

Using animals to Control Invasive Plants

Who eats what? Different species of livestock can be used to target specific invasive plant species.

Scott Bauer

Cattle graze mainly on grasses

Invasive plant species that could be controlled include:

Brett Bingham

Medusahead
Taeniatherum caput-medusae
Mediterranean native; one of the most invasive weeds in the western U.S. It infests about 2.5 million acres of western rangeland.

Soft Chess
Bromus hordeaceus
Out-competes native grasses and is commonly eaten by range animals, although its forage value is very low. Can invade soils with low fertility, such as serpentine soils that are home to rare plant species.

Josslyn Wagster/Quality Southdown Lamb

Sheep graze on grasses and flowers

Invasive plant species that could be controlled include:

Steve Dewey, Utah State University

Perennial Pepperweed
Lepidium latifolium
Grows very aggressively, forming dense colonies that exclude native species. Seeds are spread easily by tires, shoes, and animals.

Peggy Greb

Yellow Star Thistle
Centaurea solstitialis
Common in open areas on roadsides, rangeland, and pastures. Forms dense infestations on 10 to 15 million acres in California, depleting moisture from soil.

Scott Bauer

Goats graze on grasses, flowers, and woody shrubs

Invasive plant species that could be controlled include:

Stan Shebs

Himalayan Blackberry
Rubus armeniacus
Has spread throughout California along streams and in other moist areas. Can take over large areas, shading out nearly all other vegetation.

Clint Shock, Oregon State University

Tamarisk
Tamarix parviflora
Deciduous shrub or small tree that forms in dense thickets. Long taproots allow it to reach deep water tables and dominate limited sources of moisture.

Invasive Species Project

Animal Science GATEway Garden

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Sign funded by the National Science Foundation

What are invasive plants?

Invasive plants are non-native plants that spread rapidly, compete with native plants, and negatively affect natural habitats. Invasive plants:

- Reduce biodiversity
- Diminish habitat for native plants and wildlife
- Lower land values
- Alter fire regimes, water cycles, and nutrient cycles

Why use animals to control invasive plant species?

- Using animals can reduce the need for chemical herbicides and fossil fuels required to apply them
- Animals can control invasive plants in steep, rocky, or remote areas where other control methods are not possible.
- Animals convert invasive plants to valuable commodities (wool, meat, leather)
- Using animals provides an additional source of income for ranchers who rent out their herds

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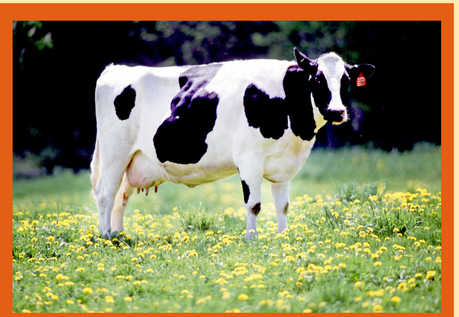
NSF

What Do You Know About Animal Science?

Test yourself and see!

What is Animal Science?



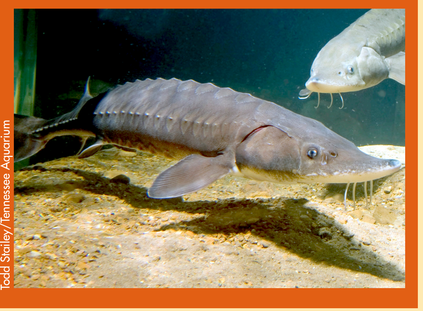
How are animal scientists making animal agriculture more sustainable?

What animals are studied in the UC Davis Animal Science Department?

Powerstrike Service Dog Solutions

What is the difference between Animal Science and Veterinary Medicine?

What kind of research is done in the UC Davis Animal Science Department?



Todd Skelley/Tennessee Aquarium

What are career options for Animal Science majors?

Welcome to the Animal Science GATEway Garden

The mission of the **UC Davis Animal Science Department** is to create and disseminate knowledge about animals for the betterment of animals, society, and the environment in California and beyond. We offer:

- Cutting-edge research
- Top-ranked undergraduate and graduate programs
- Extension services that link research to producers and consumers statewide
- 60 acres of teaching and research facilities

This garden is part of the **UC Davis GATEways Project** (Gardens, Arts, and The Environment), a campus-wide initiative led by the UC Davis Arboretum and Public Garden. The GATEways Project creates landscapes and programs that welcome the public to engage with the rich academic resources of UC Davis.

For more information:
animalscience.ucdavis.edu
arboretum.ucdavis.edu

Did You Know?

Livestock brands are registered with the state to identify ownership and protect against animal loss due to theft or straying. The UC bar brand (above) is registered to the UC Davis Animal Science Department. UC Davis is the only UC campus that holds livestock.

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What Do You Know About Animal Science?

Test yourself and see!

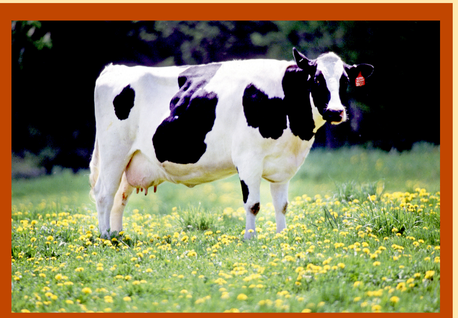
Sue Cockrell/Davis Enterprise

Professor Ed DePeters studies dairy cow nutrition.

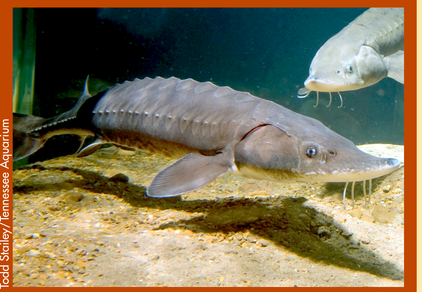
Professor Frank Mitloehner studies the effects of livestock on air quality.

John Stumbos

Professor Huaijun Zhou uses advanced genomics to develop chickens that can resist disease and tolerate hot climates.



Pawsitive Service Dog Solutions



Todd Stalley/Tennessee Aquarium

Students practice veterinary emergency response techniques with a horse model.

Professor Jim Murray works on genetic engineering of mammals to improve the properties of milk for human consumption.

Students receive hands-on training in processing meat for sale at the Meat Lab.

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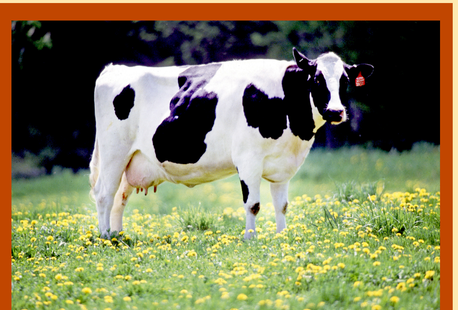
What Do You Know About

Animal Science?

Test yourself and see!

Animal Science seeks to understand the biology of domesticated animals and animals in captivity to enhance their care, management, and use for food, fiber, companionship, service, recreation, and research.



UC Davis animal scientists study ways to decrease air and water pollution and to reduce the carbon footprint of meat and other animal products by efficiently using energy, water, and land resources.

Animals studied include:

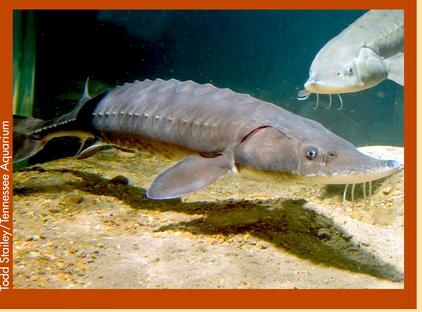
- Food or fiber animals: cattle, pigs, sheep, goats, poultry, fish
- Medical research animals: swine, rabbits, rats, mice
- Working or service animals: horses, mules, dogs
- Companion animals: dogs, cats, birds
- Wildlife: fish, birds, crustaceans

Pawsitive Service Dog Solutions

Animal Science focuses on the care, management, and production of animals. Veterinary Medicine focuses on the prevention, diagnosis, and treatment of disease or injury in animals. Researchers in both fields frequently collaborate.

Research ranges from basic animal biology to animal production systems. For example:

- Developing a diet for dairy cows that increases healthier unsaturated fat in milk
- Studying pigs as a model for breast cancer in humans
- Improving methods for raising sturgeon and producing caviar in California



Todd Straley/Tennessee Aquarium

Animal Science majors have a strong foundation in basic biology with additional hands-on experience. Career options range widely from production agriculture to government service to veterinary medicine.

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tales From The barn

UC Davis Cole Facility— 100+ years of Animal Science

1908-1909

Student Farm Opens

UC Berkeley opens a University Student Farm in Davis and begins offering instruction in livestock production and management. Eighteen students are enrolled.

1910s

Horse Barn Built

The Horse Barn is built to house the draft horses and mules used for daily farm work.

1920s

Gunrock Mascot

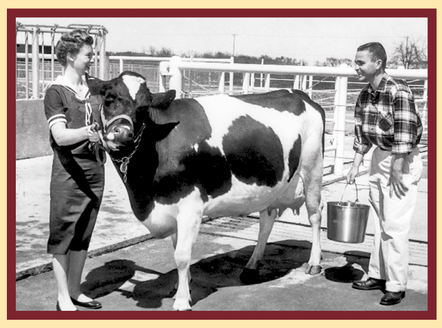
Gunrock, a handsome Thoroughbred stallion, is donated to the UC Davis Horse Barn to improve breeding lines for the U.S. Cavalry. The new "fighting mustang" mascot makes his debut at a men's basketball game.

Gunrock, with Animal Science student Alyce Williams Jewett in the saddle

1937

500 Dairy Majors

More than half of the 1000 students on campus are dairy industry majors.



1969

Cole Facility Dedicated

The Harold H. Cole Facility is built. The complex includes a meat laboratory and buildings used for research on cattle, sheep, goats, and pigs.

1993

National Honors

Animal Science professor R. Leland Baldwin is inducted into the National Academy of Sciences for his foundational research on large animal lactation, nutrition, and metabolism.

1998

Broader Mission

Animal Science and Avian Science Departments merge and expand their scope to include companion animals and laboratory animals.

2010s

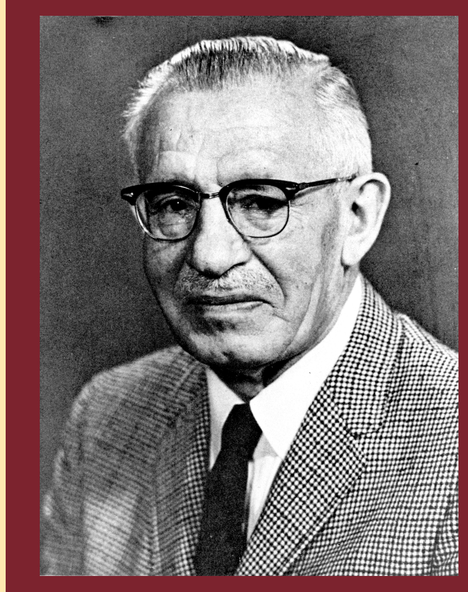
One of the Largest Majors

Animal Science continues to be one of the largest majors at UC Davis, with over 1000 undergraduate students and 40 faculty members. Nearly 100 students per year participate in hands-on internships at the Cole Facility.

The Future

You can help support the development of the Cole Facility and the UC Davis Animal Science Department. Contact 530-752-1250 for more information.

Welcome to the Harold H. Cole Facility for the Study of Biology of Large Animals



Who was Harold H. Cole?

During his years as chairman from 1951-1960, Harold Cole built a reputation for the Animal Husbandry Department (as it was called then). Through his research in mare hormones, Cole helped establish UC Davis as a center of excellence in reproductive biology.

Student Opportunities

Students have many opportunities to be involved at the Animal Science facilities. Student interns apply their classroom studies to hands-on work with animals, and their experiences inform their studies and shape their future careers. Student labor is also integral in maintaining the facilities and keeping the animals healthy.

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The secret of the southwest

It's more than just cactus!

The Southwest U.S. and Mexico are home to a rich variety of plant and animal communities that change dramatically with elevation.

Explore the Southwest U.S. and Mexican Plant Collection to learn more about these bold, beautiful, and water-wise plants.

The plants in this garden come from the shaded region on the map, which includes a variety of desert and mountain habitats.

Look for autumn sage (*Salvia greggii*), a hummingbird-attracting Arboretum All-Star, in front of you.

High Elevation

Forests are dominated by pines, oaks, maples (shown here in glorious fall color), and other trees. Shrubby sages make a beautiful understory.

more cool and moist

Elevation Change

more hot and dry

Look for bullgrass (*Muhlenbergia emersleyi*), a tough and beautiful ornamental grass, in front of you.

Nadine Levin Photography

Middle Elevation

Grasslands and open woodlands are dominated by drought-tolerant trees, shrubs, and perennial grasses, like bullgrass.

Look for desert spoon (*Dasylirion wheeleri*), a dramatic Arboretum All-Star, in front of you.

Low Elevation

Desert communities are dominated by extremely drought-tolerant shrubs, succulents, and fiber plants, like desert spoon.

Home on the Range

Middle elevation grasslands provide an important natural food source for livestock and wildlife.

Cattle and sheep ranching are the most viable forms of agriculture in much of the Southwest. Dry conditions and lack of irrigation water make growing crops challenging.

Nadine Levin Photography

Follow the side path to the Animal Science GATEway Garden to learn more.

- See UC Davis horses and other animals up close
- Learn about the work of the Animal Science Department
- Relax in a shaded seating area with beautiful plantings

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Southwest U.S. and Mexican Collection

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