

Love ANIMALS?



SUPPORT ANIMAL RESEARCH



Meet Jarvis. He was hit by a car. His hind leg could have been amputated. But thanks to femoral head osteotomy surgery (perfected with animal research), he's up on four legs and kissing pretty girls again.

AMANDA CARLSON



SERGIO E. CARLO-ALLENDE



EMMA GROOVER



ROSALIE WINARD



AMY KILPATRICK



HANNAH D.



ERIN VOGELSONG



LOVE ANIMALS? SUPPORT ANIMAL RESEARCH.

Whaaat!?! Is it possible to do both? If someone you know is dying of cancer, yes. If a pet is suffering from a rare disease, yes. And if you work in research, of course! (More about that later.) But if you're on the fence or haven't thought about it, please turn the page.

Millions of people love animals and support animal research!

(TOP ROW, L-R): Emma and Arwen, Anaid and Bella, Amanda and Dizzy.

(MIDDLE, L-R): Cole and Daryl, Dr. Temple Grandin and a furry friend, Kasen and Ryder.

(BOTTOM, L-R): Erin and Sugar, Hannah, Montana and Dakota, Jordan and Jack.



3 BENEFITS OF ANIMAL RESEARCH

Fertility drugs to get pregnant

Prenatal testing for birth defects

Chemotherapy for canine cancer



INTRODUCTION

Animal testing for medical advances (not for new beauty products) is a good thing.

It's a way to make sure the prescription drugs we take or give to our pets are effective and safe.

It's a method of perfecting surgical procedures such as deep brain stimulation, so epileptic patients can have a more normal life.

And yes, it's a really complicated issue.

That's why we put together this booklet – to help everyone understand the goals, benefits, and regulation of animal research.

We hope you'll take the time to read it from cover to cover.

Some people think animal research is conducted exclusively for our benefit. Actually it helps companion animals live longer too!





HEART DISEASE

Heart valve replacement surgery has saved hundreds of millions of people, and it's the result of animal research.



VISION LOSS

A surgical procedure perfected on animals is a common fix for cataracts, the world's leading cause of blindness.



MUSCULAR DYSTROPHY

In research with dogs, an experimental drug shows promise in slowing damage to muscles and potentially growing new muscles!



HOW ANIMAL RESEARCH HELPS PEOPLE

When you're ill or injured, just about everything the doctor, nurse, paramedic, pharmacist, or other health care provider can give you was made possible by animal research.

These medications, medical devices, surgeries, treatments, and therapies include:

Anesthesia, Antacids, Antihistamines, Asthma Inhalers, Athlete's Foot Creams, Blood Pressure Medicines, Chemotherapy Regimens, Cholesterol Drugs, Cold Medicines, Contact Lenses, COVID-19, CT Scans, Deep Brain Stimulation Therapy for Parkinson's, First Aid Creams, Heart Transplants, Heart Valves, Heart-Lung Machine, Hemorrhoid Creams, Hip and Knee Replacement Surgery, HIV Drugs, Insulin For Diabetes, Kidney Dialysis, Kidney Transplants, Laxatives, Migraine Medicines, Pacemakers, Penicillin, Poison Ivy Creams, Prostate Cancer Medicines, Tick-borne Disease Antibiotics, Transplant Rejection Drugs and Ulcer Medications, plus Vaccines for Cervical Cancer, Meningitis, Mumps, Tetanus, and Whooping Cough.

Phew! That's a lot to be grateful for. But there's much more! We'd have to use a font < this size > to list all the other procedures and medications made possible by animal research.

Research with dogs led to the development of new devices to stimulate breathing in people with spinal cord injuries who can't breathe on their own.





BLINDNESS

The pet parents of a dog who lost his sight to cancer enrolled him in an experiment to test a new drug. His sight was restored overnight!



CAT HEART DISEASE

An incurable cardiac condition may soon be curable. Using a new drug tested on lab animals, scientists made the defect disappear!



CANINE BONE CANCER

Osteosarcoma is extremely aggressive. Animal research has led to a new treatment that's more than doubled the number of survivors!



HOW ANIMAL RESEARCH HELPS PETS

Animal research has improved and saved the lives of countless companion animals!

Here's how:

- Vaccines to prevent distemper, feline leukemia, infectious diarrhea (parvovirus), infectious hepatitis, kennel cough, cat flu, rabies, and tetanus.
- Veterinary medicines for kidney problems, cancer, heart disease, infections, and pain.
- Technologies such as ultrasound, CT, and MRI to help diagnose potentially deadly diseases.
- Life-saving emergency care for dogs and cats hit by cars.
- Advanced surgical procedures for organ transplants and pacemakers and to treat joint and ligament distress in cats and dogs.
- And nutritional products to help puppies and kittens grow into healthy dogs and cats.

Did you know cardiovascular disease is the leading cause of death in the world? And almost every major milestone in modern cardiovascular care has involved dogs? *Left:* After bypass surgery, a Labrador retriever gets a cardiac ultrasound.





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GETTY IMAGES / DANGUWONG



GETTY IMAGES / LINDA MARIAL DOWELL



FOTORESEARCH / LUCI WATERS

HOW ANIMAL RESEARCH HELPS WILDLIFE

Basically everything a wildlife veterinarian can do for animals and aquatic creatures is the result of animal research.

This includes vaccinations, modern medications, state-of-the-art diagnostic equipment, plus advanced surgical techniques, treatments, and therapies.

In addition, humane and ethical animal research has led to:

- A non-invasive pregnancy test for big cats such as cheetahs and leopards.
- More accurate methods to predict successful pregnancy in some endangered species.
- A rabies prevention program for raccoons and coyotes, two of the top wildlife carriers of rabies in North America.
- A peanut butter-flavored edible vaccine to help protect prairie dogs against disease.
- Enhanced knowledge of COVID-19 and other diseases that can be transmitted from animals to humans.

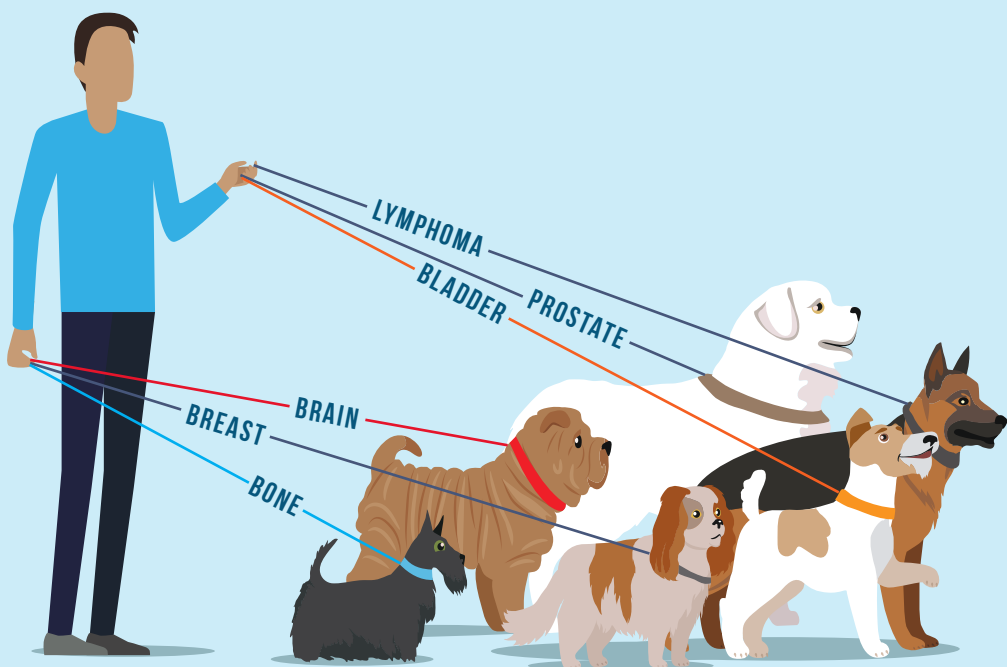
If you have a T-shirt or sticker that reads *Protect Wildlife*, remember this:

99% of animal researchers are hardwired to love animals! That is precisely the reason why they're doing their part to protect marine and wildlife populations.

Clockwise from top left: X-ray of injured sea turtle; Panda bear; Life-saving surgery for injured koala; Orphaned baby elephant.



Some Cancers We Have in Common With Dogs



MEDICAL CONDITIONS HUMANS AND ANIMALS SHARE

The list is a lot longer than you think.

Allergies, anemia, arthritis, asthma.

Botulism, bronchitis, cataracts, deafness, diabetes, epilepsy, glaucoma.

Heart disease, hemophilia, hepatitis, hypertension, infertility, influenza.

Leukemia, lung disease, lupus, Lyme disease, malaria, measles.

Narcolepsy, nerve damage, rabies, rubella, scoliosis, skin diseases.

Tetanus, tuberculosis, ulcers, yellow fever.

And of course, cancer.

Dogs spontaneously develop cancers at rates similar to those in humans.

Today, physicians and veterinarians are working together – sharing research results and other information – to find a cure for both species.

Want to see what's really going on in America's research institutions today? *Please turn the page.*

Cancer is the most common cause of death in dogs. That's why early detection is key. Take your best friend for a "nose-to-tail" checkup every 12 months.



Today, there are more than 9,000 strains of laboratory mouse models to help scientists study illnesses and disease.



RESEARCH REGULATIONS IN AMERICA ARE AMONG THE STRICTEST ON THE PLANET

Federal laws ensure the humane use and care of lab animals.

Research institutions must meet multi-layered regulatory requirements of the federal Animal Welfare Act and the Public Health Service (PHS) Policy.

Among the many mandates for animal research, a veterinarian must be involved in the planning for procedures that may cause more than slight pain and distress. And painkillers are used after surgery unless the research doesn't allow it.

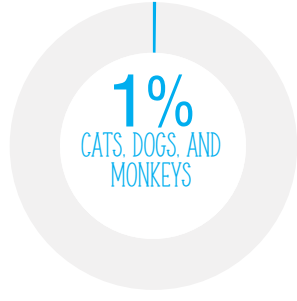
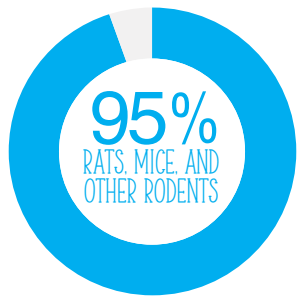
For example, in a study of pain relief for cancer patients, the animals endure some discomfort and distress.

Each institution must have an Institutional Animal Care and Use Committee (IACUC) to review research proposals and to ensure the use of animals is necessary.

Scientists must explain why alternatives such as computer simulations won't work. They must also reassure committee members their research doesn't unnecessarily duplicate previous studies.

LAB ANIMALS BY SPECIES

APPROXIMATION



LIVING CONDITIONS OF LABORATORY ANIMALS

- Living spaces are carefully designed to meet the specific needs of every lab animal species.
- Specially trained veterinarians oversee research animals' well-being and medical care.
- Temperature of living spaces is monitored 24/7, including weekends and holidays.
- The air they breathe is significantly cleaner than the air inside our homes.
- Lab animals drink water that is tested for quality.
- They eat healthy diets, which are developed by expert nutritionists.
- Primates regularly snack on fruits and veggies that have been cut into bite-sized pieces.
- And various forms of environmental enrichment (such as the example shown on the left) help promote psychological well-being.

Humane and responsible animal care standards are detailed in *The Guide for the Care and Use of Laboratory Animals*, issued by the National Academy of Sciences' Institute for Laboratory Animal Research.



**WE  OUR
LABORATORY
ANIMALS**



LAB PEOPLE ♥ THEIR LAB ANIMALS

From the associate animal care technician to the Nobel Prize-winning scientist and everyone in between, all make the physical, physiological, and behavioral needs of lab animals a top priority. Why?

- Because it's good science. Well treated animals provide more meaningful and reliable research results. More reliable research results could reduce the number of animals needed for research.
- Because treating lab animals with the most dignity and compassion possible just comes naturally!
- And because it's the law.

Research scientists actively observe the three Rs:

- REDUCE the number of animals used in testing.
- REFINE procedures to minimize pain and distress.
- REPLACE animals with alternatives when possible.



LABORATORY ANIMALS HELPING US UNDERSTAND AND DEFEAT COVID-19

- ✓ African green monkeys
- ✓ Bats
- ✓ Cats
- ✓ Chickens
- ✓ Cows
- ✓ Dogs
- ✓ Ferrets
- ✓ Flies
- ✓ Guinea pigs
- ✓ Hamsters
- ✓ Horseshoe crabs
- ✓ Llamas
- ✓ Macaque monkeys
- ✓ “Magical” mice
- ✓ Mink
- ✓ Pangolins
- ✓ Pigs
- ✓ Rats

GETTY IMAGES / BLACKMAG3D



COVID-19 AND ANIMAL RESEARCH

Animal research is playing a key role in getting our global pandemic under control. The ultimate goal is the development of a new vaccine to provide complete immunity.

Some significant animal research examples at the time of this writing include:

- “Magical” mice – genetically engineered with a human protein – are helping scientists better understand how the coronavirus infects humans.
- Since ferrets and mink cough and sneeze, they’re good models to study for respiratory diseases.
- To develop treatments and vaccines for COVID-19, researchers are growing human antibodies in genetically modified cows.
- In addition, non-genetically modified llama antibodies are being harvested for humans for the same purpose.
- To test vaccines for bacterial contamination, researchers use blood drawn from horseshoe crabs. (The horseshoe crabs are returned to the ocean humanely.)

We’ve learned so much about this virus since the first cases were reported, and we continue to learn more each day. To stay up to date, visit www.fbresearch.org/COVID.

The scientific name for the strain of coronavirus causing COVID-19 is SARS-CoV-2. It’s a zoonotic disease (which means it can be transmitted from animals to humans).





RESEARCH STUDIES WITH DOGS

The number of dogs involved in research is small (less than 0.25%). But their impact on human and animal health is enormous.

- 9 of the 10 most common prescription drugs were developed with dogs.
- Many treatments initially developed for us also help our pets.
- Today many research studies directly benefit a lot more animals.

“But can’t you just use rats and mice?” you may ask. No, not really. The path from concept to cure is complicated.

In a drug development study, a researcher may start with cell cultures, tissue samples, and computers but then animal models may be needed.

When they get positive results, researchers can advance to clinical trials with humans.

Humans and dogs share more than 80% of human DNA.

That’s precisely the reason why dogs are more than man’s best friend. They’re also our research partners.

Thanks to contributions made by these two beagles, strides forward in research have been made for both human and animal health. After their research work was complete, they were adopted and today are spoiled rotten :)



RESEARCH STUDIES WITH CATS

Cats have helped scientists gain a better understanding of cardiac disease, diabetes, vision loss, and hearing loss.

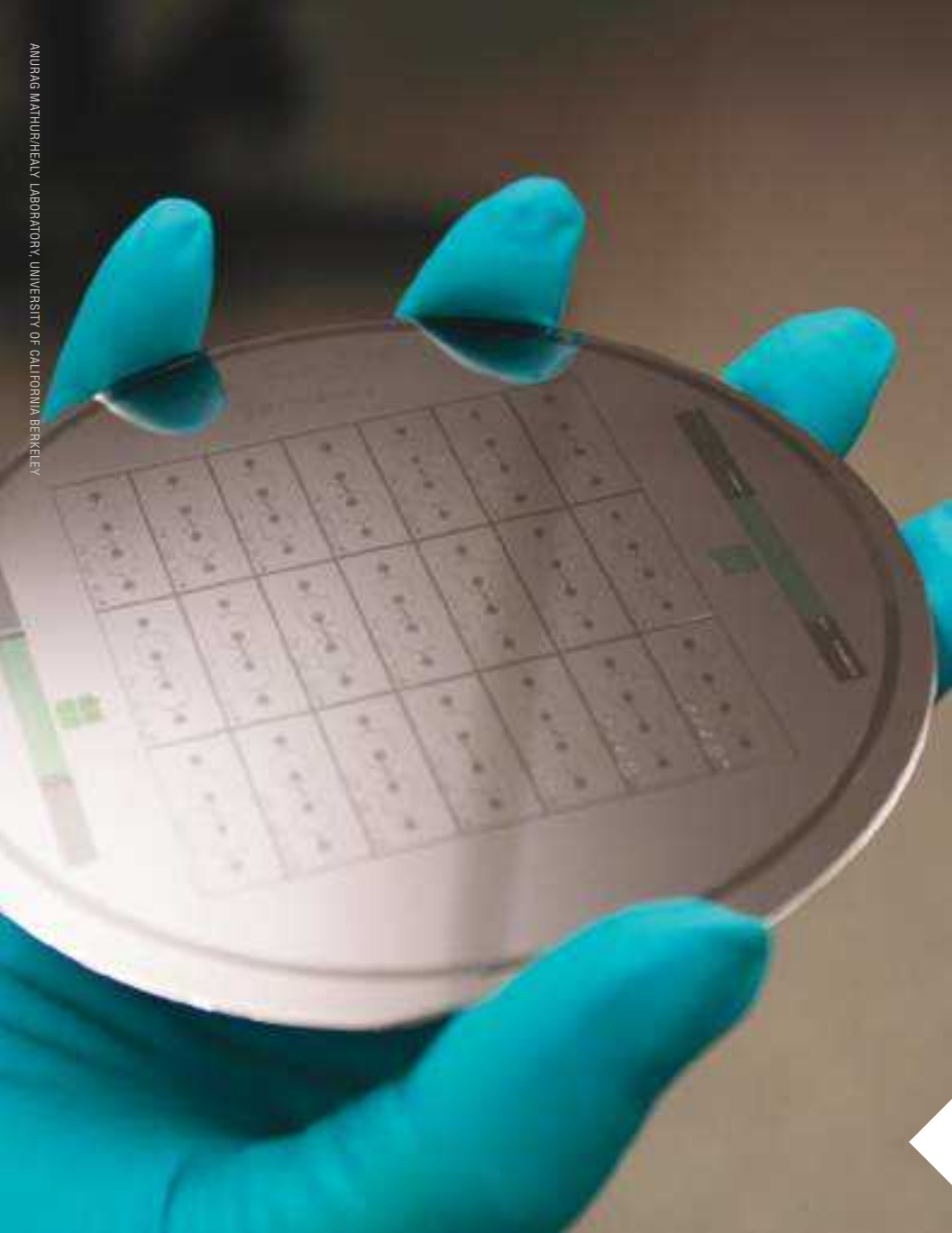
Research with cats helped create cochlear implants – those small electronic devices that help children with hearing loss keep up with other students and fit in instead of becoming bully victims.

Now researchers are conducting studies with felines to conquer Alzheimer's, cancer, and more than 200 other hereditary diseases common to both humans and animals. Miracle drugs could benefit both species.

We truly look forward to the day when all cats will be in laps not labs. But a relatively small number is necessary to test the safety and efficacy of better cat foods, medications, and therapies.

After participating in lab experiments, Mercury and Koji were adopted. Today they're enjoying the good life they worked hard to give others.





ALTERNATIVES TO ANIMAL TESTING

For decades, scientists in the U.S., U.K., and Germany have been working on making the transition to non-animal methods. That's why today, there are more options than ever before.

For many safety and toxicity tests, sophisticated tissue models and cell cultures have completely replaced rabbits.

Organs-on-a-chip that mimic human organs such as the liver, lungs, and kidneys can be used for evaluating new drugs.

And scientists now have the ability to test biologics using modern technology.

But supercomputers loaded with state-of-the-art software can't accurately predict the weather, let alone accurately predict everything a new drug will do once it's inside you.

(sigh)

So for the time being, research with animals is still the surest path to discovering new prevention and treatment strategies for heart disease, diabetes, and cancer.

Industry experts say organs-on-a-chip may one day fully replace animal models in 15-20 years. They are currently used as adjuncts to animal research, like this UC Berkeley "heart-on-a-chip."



SUMMARY

Research scientists have made medical discoveries with animal models that wouldn't have otherwise been possible.

We think they deserve our trust and support.

If you agree, please share this with family and friends.

And if you post your thoughts online, be sure to add the hashtags #LoveAnimals #SupportAnimalResearch #LASAR

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This public education booklet was created by the Foundation for Biomedical Research. FBR illuminates the essential role animal testing and research play in changing health outcomes and defeating illnesses affecting both people and animals. Together with 189 co-sponsors, we endorse ethical, carefully regulated research with lab animals because these types of clinical studies are essential to learning more about the biology, treatment, and prevention of diseases and conditions that cause suffering and death in humans and animals.

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Cover photo and story shared by Eddie Richardson



IF YOU CARE ABOUT PEOPLE AND PETS, THINK ABOUT A CAREER IN BIOMEDICAL RESEARCH

Not all positions require a graduate degree.

HIGH SCHOOL DIPLOMA

Animal Care Technicians and Lab Animal Technicians feed and water, clean housing, enrichment, and monitor animal health daily.

Animal Facility Supervisors oversee the animal facility setting. They make sure all regulations and laws are being obeyed.

Cage Washers and Facility Maintenance Team Members keep research facilities and equipment clean, safe, and dependable.

Clinical Trials Associates organize testing of technical procedures and new drugs on people.

Laboratory Assistants help technicians, veterinarians, and researchers inside a laboratory.

COLLEGE DEGREE (2 OR 4 YEAR)

Animal Behaviorists collect data on the activity and behavior of animals.

Animal Health Technicians monitor animal health and provide medical care as prescribed by a veterinarian.

Biomedical Engineers work in the practical application of engineering as it relates to health and medicine.

Computer Scientists/Programmers design programs for use in research.

Engineers design and create equipment, facilities, devices, and materials used in a research environment.

Medical Technologists perform lab tests in medical and hospital diagnostic laboratories.

Nutritionists design healthy diets for animals and humans plus study food-borne illnesses.

Pharmaceutical Technicians help researchers in discovering and creating new medicines.

Pre-Clinical Trials Associates work with scientists to test new drugs and procedures on animals prior to testing on humans.

Regulatory Affairs Specialists maintain and enforce the laws and rules that govern the use of animals in all areas of research.

Research Associates/Research Technicians assist scientists, doctors, and veterinarians with animal studies, data analysis, and equipment maintenance.

Statisticians use advanced computers to help researchers design experiments and analyze the results.

Technical Writers record and publish the results of research, the protocols for research, and the specs and procedures for using new medicines and surgical advancements.

Veterinary Technicians assist veterinarians with animal care. They can work in research facilities, animal clinics, animal hospitals, or zoos.

GRADUATE DEGREE

Laboratory Veterinarians provide medical care to animals, perform independent research, plus they consult and collaborate with research investigators.

Medical Doctors provide medical care to humans, improve surgical techniques, and make drug and medical treatment discoveries.

Researchers and Scientists study medical conditions and conduct studies in all fields of biomedical research to develop new devices, treatments, techniques, and medicines.

U.S. Department of Agriculture Inspectors visit farms, meat packing facilities, public zoos, and medical research facilities to ensure federal laws are upheld.

