

# Fields of Biomedical Research & Related Careers



Research Veterinarians research the diseases and conditions associated with domestic pets, livestock, and wild animals and develop vaccines, treatments, and cures.



Toxicologists study toxic substances and their effects on organisms, helping people and animals that have been poisoned by household or industrial toxins, environmental toxins, and prescription and nonprescription drugs.



Microbiologists research the causes of disease such as viruses, bacteria, fungi, and parasites.



Endocrinologists research disorders of the endocrine system and related conditions such as diabetes, obesity, and thyroidism.



Oncologists research ways to treat and cure all types of cancer, in humans and in animals.

Cardiologists research disorders of the heart and blood vessels and develop life-saving drugs and surgical techniques such as pacemakers and artificial heart valves.



Immunologists study the body's defense mechanisms against viral or bacterial invasions and develop preventative vaccines and treatments.



Geneticists study heredity, genes, and DNA. Stem cells and genetically modified organisms are areas of such research.



Pulmonologists research ways to treat diseases of the lungs and airways such as lung cancer, pneumonia, pleurisy, asthma, sleep disorders (which often affect breathing), and emphysema.



Hematologists research ways to treat diseases of the blood, spleen, and lymph glands, such as anemia, sickle cell disease, hemophilia, and leukemia.



## Career Opportunities

Career Opportunities	Minimum Requirements/Conditions					
	High School Diploma	College Degree (2 & 4 years)	Graduate Degree	Certification Possible or Required	Work with Animals	Indirect Work with Animals
<b>Animal Behaviorists</b> study animals to collect data on their behavior and activity.		●			●	
<b>Animal Care/Laboratory Animal Technicians</b> provide food and water, clean housing, and enrichment for laboratory animals and monitor animal health on a daily basis.	●			●	●	
<b>Animal Facility Supervisors</b> oversee the animal facility setting, ensuring that all laws and regulations are followed.	●	●		●	●	
<b>Animal Health Technicians</b> monitor animal health and provide medical care as prescribed by a veterinarian.		●		●	●	
<b>Biomedical Engineers</b> work in the practical application of engineering as it relates to health and medicine.		●		●	●	●
<b>Cagewashers and Facility Maintenance</b> personnel keep research facilities and equipment clean, dependable, and safe.	●				●	●
<b>Clinical Trials Associates</b> organize the testing of new drugs and technical procedures on humans.	●					
<b>Computer Scientists and Programmers</b> create and design programs for use in research.		●				
<b>Engineers</b> design and create equipment, facilities, devices, and materials used in a research environment.		●				●
<b>Laboratory Assistants</b> help technicians, veterinarians, and researchers in the laboratory setting.	●			●	●	●
<b>Laboratory Veterinarians</b> provide medical care to animals, perform independent research, and serve as consultants and collaborators to research investigators.				●	●	●
<b>Medical Doctors</b> provide medical care to humans, work on advances in medical procedures and surgical techniques, and discover new drugs and medical treatments.				●	●	●
<b>Medical Technologists</b> perform laboratory tests in medical and hospital diagnostic laboratories.		●		●		
<b>Nutritionists</b> design healthier diets for animals and humans and study food-borne illnesses.		●		●	●	●
<b>Pharmaceutical Technicians</b> assist researchers in discovering and creating new medicines.		●			●	●
<b>Pre-Clinical Trials Associates</b> work with scientists testing new drugs and procedures on animals prior to testing on humans.		●			●	
<b>Regulatory Affairs Specialists</b> maintain and enforce the laws and rules that govern the use of animals in all areas of research.		●				●
<b>Research Associates/Technicians</b> work with scientists, doctors, and vets in laboratories assisting in experiments, analyzing data, and maintaining equipment.		●		●	●	●
<b>Researchers/Scientists</b> study medical conditions and conduct experiments in all fields of biomedical research to develop new medical techniques, devices, treatments, and medicines. Look around the edges of the chart for some examples!				●	●	●
<b>Statisticians</b> use computers to help researchers design experiments and analyze the results.		●				
<b>Technical Writers</b> record and publish the results of research, the protocols for research, and the specifications and procedures for using new medicines and surgical advances.		●				
<b>U.S. Department of Agriculture Inspectors</b> are responsible for inspecting farms, meat packing facilities, zoos, and medical research facilities to ensure that all federal laws are strictly upheld.				●	●	●
<b>Veterinary Technicians</b> assist veterinarians with veterinary care. They can work in private animal clinics, animal hospitals, zoos, or research facilities.		●		●	●	



[www.ca-biomed.org/csbr](http://www.ca-biomed.org/csbr)



AMERICAN ASSOCIATION  
FOR LABORATORY ANIMAL SCIENCE  
[www.aalas.org](http://www.aalas.org)



Kids-4-Research  
[www.kids4research.org](http://www.kids4research.org)

Funded by:



<http://foundation.aalas.org>



researchers continue to look for  
Scientists and medical  
treatments and procedures.  
the safety of new medical  
and animals and to assure  
that affect both humans  
treating, and curing diseases  
methods for diagnosing,  
and to discover more effective  
learn more about these conditions  
to understand the situation. Researchers use animals to  
conditions in both humans and in animals, they need  
are a critical part of biomedical research for many  
used in medical research, testing, and teaching. Animals  
research that specializes in the care and study of animals  
Laboratory animal science is the area of biomedical

**Important to biomedical research? Why is it**

an effective treatment and search for a permanent cure.  
of a disease in order to develop  
study the biological processes  
scientists working together to  
technicians, and a variety of  
care technicians, research  
scientists, engineers, animal  
veterinarians, computer  
include medical doctors,  
specialties. Such a team might  
different backgrounds and  
team of people drawn from  
areas of both the life and physical sciences and requires a  
This broad field of research includes many important



**Who conducts biomedical research?**

Biomedical research is the broad area of science that is  
undertaken to gain knowledge and understanding of the  
biological processes and the causes of disease. Biomedical  
research is an evolutionary process that requires the input  
and participation of many professionals. Through careful  
experimentation, laboratory work, analysis, and testing,  
biomedical researchers look for ways to prevent, treat,  
and cure diseases that cause illness and death in people  
and in animals.

**What is biomedical research?**

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**Careers in Biomedical Research**

**Accept the Challenge to Care**

- Research corporations
- Biotech firms
- Colleges/universities
- Pharmaceutical companies
- Hospitals/medical schools
- Veterinary schools
- Military/government agencies
- Non-profit associations
- Voluntary health organizations

are positions in:  
Just as careers in biomedical research cover a wide  
range of positions and fields, jobs can be found around  
the world and in a variety of work environments. There

**Where would I work?**

The main characteristics these careers have in  
common are a joy for discovery, a need to further our  
understanding of disease, medical conditions, and health,  
and the desire to help both humans and animals. There is  
a job in biomedical research that will suit you perfectly!

- **Research scientists** work in a research laboratory  
designing and conducting experiments.
- **Computer programmers and statisticians** work with  
computers creating programs, tallying data, and  
doing statistical analysis of research results.
- **Technical writers** use their good  
writing skills to prepare grant  
applications, write research  
plans, and summarize  
results.
- **Medical doctors** work with  
human patients.
- **Veterinarians and animal  
care technicians** care for  
research animals.
- **Engineers** design and maintain  
medical devices, research equipment, animal  
housing, and laboratory facilities.

**What kinds of careers are there in biomedical research?**

Depending on your interests and the field of science  
you like best, there are many career options in biomedical  
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ways to reduce the number of animals needed to obtain  
valid results, to refine experimental techniques, and to  
replace animals with other research methods. Currently,  
even the most sophisticated technology cannot mimic the  
and organs in a living body; so, animals will continue to  
play an important, and irreplaceable, role until effective  
alternatives are found. Researchers remain devoted to  
providing the best care for these animals, which also  
strengthens valid and reliable research results.

**How do I prepare for a career in biomedical research?**

Start right now! For any career in biomedical research,  
a strong foundation in the life and physical sciences and  
math in high school is important. While some jobs in  
research require only a high school diploma, others need  
specific training, certification, or a  
college degree, and still others  
require education beyond the  
four-year college degree. It  
is important that you take  
advantage of all the classes  
your school offers in these  
areas.  
Whether you plan on  
a career right out of high  
school or an advanced degree, make sure you have good  
grades, a strong grounding in the sciences and math,  
and good writing and communication skills. If attending  
college, talk with your high school guidance counselor to  
make sure you take all the required classes for entrance  
into an accredited college or university. College is  
competitive and can be expensive; getting good grades  
will increase your chances of being accepted into the  
college of your choice and of receiving scholarships.  
Once you are in college, always work with your  
academic advisor to plan your course load to not only  
safely all graduation requirements, but to also gain  
exposure to the sciences relating to biomedical research.  
Knowing more about each field of science can better help  
you choose the specific area for your future career!

Many in biomedical research have gone onto graduate  
school after college and obtained advanced degrees.  
If you want to pursue a career that requires graduate  
school or a professional degree, keep in mind there are  
individualized requirements for specific college courses  
and entrance exams for graduate, medical, or veterinary  
school. Work with your academic advisor to ensure you  
are adequately prepared!

Not all careers in biomedical research require a college  
or advanced degree. Some careers  
in research require certification  
or specialized training instead  
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American Association for  
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laboratory animal science and the benefits of biomedical  
research to both people and animals.

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