



The Advancements of Science

Biomedical research helps cure diseases in humans and animals.

Biomedical research is crucial for continued advances in the prevention, diagnosis, and treatment of disease. Without biomedical research and the advances it has produced since the 1900s, the average life expectancy in the United States would be 47 years (it's now 77); infant mortality would be 90 percent higher than it is now, and maternal mortality would be 99 percent higher. We wouldn't know the importance of hand-washing in preventing infections. Polio and small pox would still be major diseases, leading to the death and disability of many young children.

There would also be no treatment available for any neurological diseases, and no hope for improving the symptoms of or curing Parkinson's disease, multiple sclerosis, brain tumors, stroke, neuropathy, chronic pain—the list goes on.

The scientific community and the agencies that fund research in the U.S. are all committed to performing ethical research. That means the question the scientist is trying to answer must be an important one; that the approach taken to answer the question is sound and likely to provide an answer; and that the research subjects' rights (human or animal) are always protected. There are rules and regulations that must be followed in order to conduct a study, with careful oversight to make sure that the researcher is indeed following the rules.

Human subjects must be told in advance exactly what will be expected from them as study participants—as well as the potential risks and benefits from participating. They must also know that their privacy will be protected, and that they are free to withdraw from a trial if they no longer wish to participate. Animals must always be treated respectfully and be protected from experiencing unnecessary pain.

Biomedical research is a process that has many stages. Usually in the earliest stages, the only way to get the information needed is through studies that involve

cell culture or animals. These studies help us learn the most basic causes of many diseases, providing clues about how best to treat them. Then, studies are done in animals to learn whether the new treatments we develop actually work, what the side effects are, and what the correct dose might be. At that point, studies are initiated in humans to learn more about effectiveness and side effects and to fine-tune the correct dose. The end result is a new treatment that can help both humans and animals with the disease in question.

The biomedical research process is usually long, costly, and sometimes leads to dead ends, even when the original idea seems very promising. The people involved in this process—at every stage—are sincerely working to improve human and animal health. Without the creative thinking and patient determination of these researchers, where would we be? Take a moment to think about how different your life would be if our current state of knowledge was the same as it was 150 years ago. In my case, both of my daughters might have died, because both had very serious infections requiring treatment with antibiotics. These medications

are available because of studies done in animals and humans. I might now have had a stroke or heart attack because my high blood pressure would not be under control with medication. Where would you be without the benefits we all enjoy as a result of advances due to biomedical research?

Take good care,

Robin L. Brey, M.D.
Editor-in-Chief



Without research, life expectancy in the U.S. would be 47 years.