

Basic vs. Applied Research (from Lawrence Berkeley National Laboratory)

<http://www.lbl.gov/Education/ELSI/research-main.html>

Basic Research:

Basic (aka *fundamental* or *pure*) research is driven by a scientist's *curiosity* or interest in a scientific question. The main motivation is to *expand man's knowledge*, not to create or invent something. There is no obvious commercial value to the discoveries that result from basic research.

For example, basic science investigations probe for answers to questions such as:

- How did the universe begin?
- What are protons, neutrons, and electrons composed of?
- How do slime molds reproduce?
- What is the specific genetic code of the fruit fly?

Most scientists believe that a basic, fundamental understanding of all branches of science is needed in order for progress to take place. In other words, basic research lays down the *foundation* for the applied science that follows. If basic work is done first, then applied spin-offs often eventually result from this research. As [Dr. George Smoot](#) of LBNL says, "People cannot foresee the future well enough to predict what's going to develop from basic research. If we *only* did applied research, we would still be making better spears."

Applied Research:

Applied research is designed to solve *practical problems* of the modern world, rather than to acquire knowledge for knowledge's sake. One might say that the goal of the applied scientist is to *improve the human condition*.

For example, applied researchers may investigate ways to:

- improve agricultural crop production
- treat or cure a specific disease
- improve the energy efficiency of homes, offices, or modes of transportation

Some scientists feel that the time has come for a shift in emphasis away from purely basic research and toward applied science. This trend, they feel, is necessitated by the problems resulting from global overpopulation, pollution, and the overuse of the earth's natural resources.