

Statistics on US Biotechnology

In US biotechnology has expanded across different sectors. The medical market includes human therapeutics and diagnostics as well as applications in veterinary medicine. The National Institute of Health's (NIH) Human Genome Project was an attempt to construct a genetic map of humans by analyzing the chemical composition of each of the 50,000 to 100,000 genes making up the human body. The International Human Genome Sequencing Consortium, led in the United States by the National Human Genome Research Institute (NHGRI) and the Department of Energy (DOE), successfully completed the Human Genome Project in April 2003, more than two years ahead of schedule.

Building on the successes of the Human Genome Project, the Dept. of Energy has initiated an ambitious programme to achieve the most far-reaching of all biological goals: a fundamental, comprehensive, and systematic understanding of life. The Genomes to Life programme will make important contributions in the quest to venture beyond characterizing such individual life components as genes and other DNA sequences toward a more comprehensive, integrated view of biology at a whole-systems level.

Non-medical markets encompass both agriculture and industrial applications. Agricultural applications include making plants and crops pest resistant, improving seed quality, modulating growth and ripening times, enhancing nutrient content of foods, and providing simple and inexpensive diagnostics for use in field testing for contaminants and toxic materials. Industrial uses of biotechnology involve many different sectors and include industrial enzymes, waste management, environmental cleanup, energy biomass,

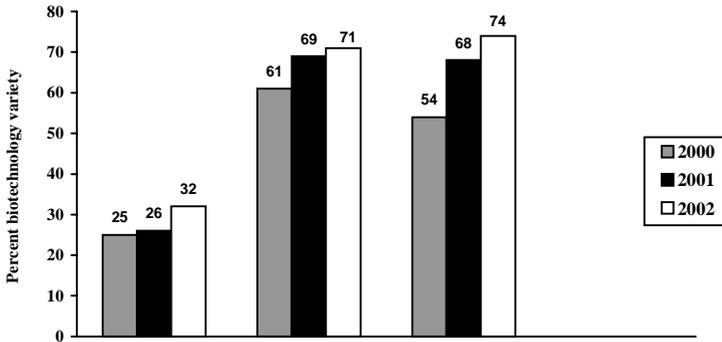
cosmetic formulations, and diagnostics for toxicity determinations. In the roughly 25 years since the development of recombinant DNA technologies in research laboratories, over 2,000 firms have been founded in the US to explore and take advantage of this new field.

The general public has different levels of support for biotechnology depending on the particular branch. Of the people who expressed an opinion, 90 per cent of people surveyed support genetic testing. In comparison the level of support for animal cloning is equal to the level of opposition. In all three areas of biotechnology, the proportion of people who are neutral is small indicating that biotechnology is an area where the US public has clearly formed opinions.

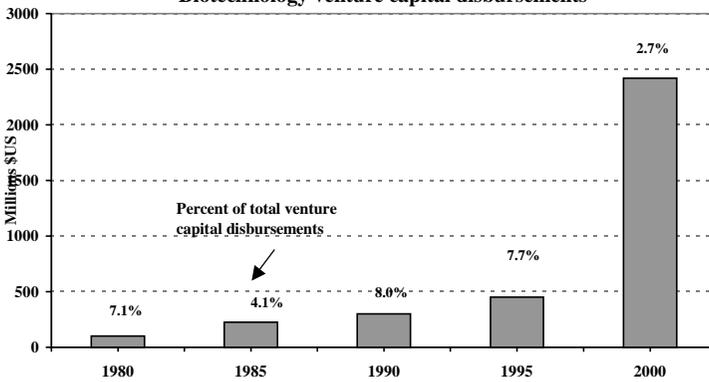
The National Science Foundation reported that the number of biotechnology research doctorates awarded has fluctuated over the period 1993 to 2001 averaging about 11 doctorate awards per year. In 2001 there were 9 doctorates awarded. In comparison, annual biometrics/biostatistics doctorates awarded averaged about 79 over the same period. According to the US Government, bio-engineered crops were planted on approximately 88 million acres in the US. In 2002 approximately 75 per cent of all soybean plantings were of a biotech variety. This has increased from just over 50 per cent in 2000. Corn in comparison is still predominantly a crop which is not planted as a biotech variety. Only a third of all corn planted in 2002 was of a biotech variety a per cent of which has increased marginally from the per cent in 2000.

Biotechnology venture capital disbursements in the US amounted to 2.7 per cent of total disbursements in 2000. This is down from a high of 11 per cent in 1992. Since 1992 biotechnology venture capital disbursement shares have been steadily decreasing over time. Unfortunately, there are no recent official figures on public biotechnology funding. However, the US Census Bureau will release data on biotechnology R&D expenditure when results of their 2002 economic census become available in May.

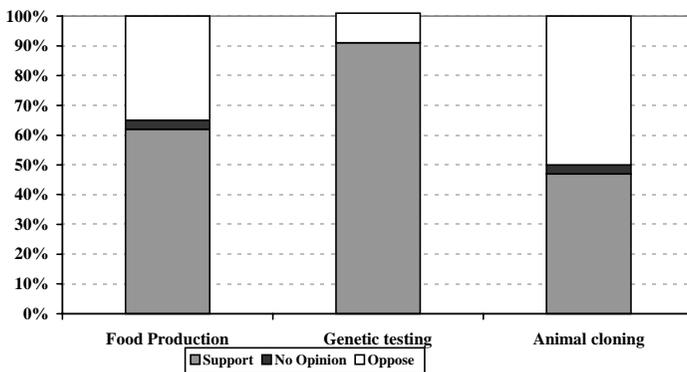
Biotechnology varieties planted, 2000-2002



Biotechnology venture capital disbursements



Public assessment of selected biotechnology applications 2001



Source: US agricultural statistics Board, NASS, USDA website: www.usda.gov/nass downloaded March 2003
NSF, Science and Engineering 2002, appendix 7, 2002