

What Are GE Animals?

Animal Biotechnology Update ~ September 2010

A genetically engineered (GE) animal is one which has had a deliberate modification made to its genome. Genetic engineering allows scientists to precisely transfer beneficial genes from one species to another.

GE animals can provide solutions to transform public health through biomedical, environmental, food production and animal welfare applications.

GE animals currently under development include pigs, sheep, goats, chicken, fish and cattle.



Benefits of Genetically Engineered Animals



GE animals offer benefits in five broad areas of scientific development:

Advancing human health: Through the production of pharmaceutical proteins, drugs, vaccines and replacement tissues for the treatment and prevention of human disease, GE animals can help advance human health.

Enhancing foods through healthy animals: Improved food production traits will enable animals to produce more efficient, higher quality and lower-cost sources of food.

Reducing environmental impact: GE animals can improve the environment with the consumption of fewer resources and the production of less waste.

Optimizing animal welfare: GE animal technologies can reduce animal disease susceptibility, increasing lifespan and quality of life and well-being.

Improving industrial products: GE technology has led to the production of high-value industrial products such as spider silk used for medical and defense purposes.

Bio[®]
BIOTECHNOLOGY
INDUSTRY ORGANIZATION

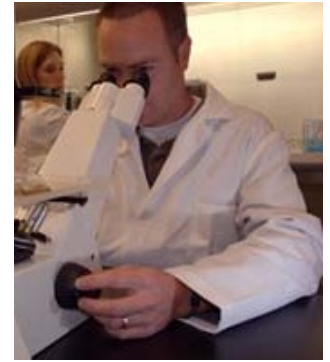
For more information contact:

Dr. David Edwards
BIO's Director of
Animal Biotechnology
(202) 962-6697
dedwards@bio.org

1201 Maryland Avenue, SW, Suite 900 - Washington, D.C. 20024 - (202) 962-9200 - www.bio.org

Advancing Human Health

GE animals are integral to the development of new diagnostic techniques and drugs for human disease while delivering clinical and economic benefits that cannot be achieved with any other approach. Through genetic engineering, scientists are able to produce therapeutic proteins to use in treating cancer, heart attacks, hemophilia, and rheumatoid arthritis among other diseases. In addition, scientists are researching the possibility of using these animals to grow transplant organs that can be used when other options have been exhausted.



Enhancing Foods Through Healthy Animals

The genetic engineering of animals can help improve food production. For example, this AquAdvantage[®] salmon is genetically engineered to grow to its mature size more quickly, increasing the efficiency of food production and alleviating stress on wild fish stocks.



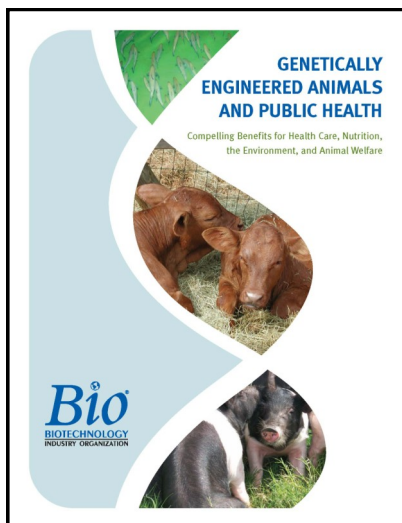
This technology promises improved animal productivity and animal welfare, and it can also improve the nutritional value of foods. GE animals

are required to undergo a strict review by the appropriate federal agencies before being approved and commercialized. This process can take many, many years.

Animal Welfare and the Environment

Genetic engineering can also be used to lessen the environmental impacts of livestock production. One example of this is the EnviroPig[™] which produces dramatically lower levels of phosphorus emissions than traditional pigs.

Genetic engineering also can improve the welfare of the animal by imparting resistance to disease and enhancing overall health and well being.



For more information:

BIO commissioned a scientific report:

“Genetically Engineered Animals and Public Health: Compelling Benefits for Health Care, Nutrition, the Environment and Animal Welfare”

by Dr. Scott Gottlieb and Dr. Matthew Wheeler

It is posted at www.bio.org
or contact BIO for a hard copy.