

Pros and cons of genetic engineering

[Engineering](#)



**ASSIGN
BUSTER**

Scientists are no closer to understanding what determines the form and function of a living organism than they were a century ago before the term gene was coined. As Craig Venter, a leader in the Human Genome project put it: " We know shit about biology". Scientists have tended to concentrate on physical causality genes determine form and function but they are looking in the wrong place. Genes and their proper expression as structural, regulatory or enzymes proteins are merely one of the necessary conditions for the idea underlying an organism to manifest.

The essence of the organism is its intellect or tells. Other necessary conditions for an organism to manifest include nutrient, water, warmth, light and many other factors to do with the earth as a planet in a cosmos. The optimistic predictions of the molecular biologists and genetic engineers is reminiscent of those offered by the early proponents of nuclear power. In the 1950s, electricity was forecast to become too cheap to make it worth metering, but the reality is that society is left with a legacy of nuclear waste the cost of dealing with which will place an immeasurable burden on future generations.

Ever since agriculture and the domestication of animals and lands began, man has been modifying their genetic make-up by selective breeding (e. G. Broccoli, Brussels sprouts and cabbage came from a single species of mustard). Traditional breeding involves gene exchange in the proper context within which they function with all the checks and balances of the biological processes of the organism itself and of the organism's normal interaction with its environment. GE is out of context. Organisms often behave very differently when taken from the laboratory, greenhouse or field trial

situation into the real-life context where they will be used, e. A gene for red flowers was inserted into a white petunia. The petunia turned red but also produced more leaves and shoots, had lower fertility and was more resistant to fungi. None of these additional effects was predicted. Over 90% of transgenic plants are discarded during the development process, most even before the plants leave the laboratory. The reason for so many rejects is because they do not express the desired gene or they are made unhealthy by the genetic engineering. Ever since man began to ferment fruit and milk products thousands of years ago, he has been using technology.

Traditional biotechnology uses natural organisms in contexts to which they are adapted whereas GE creates completely new genetic make-ups that could never have come about by natural processes. All attempts to define what species barriers are have so far had various shortcomings. The genomes of many organisms can be shown to contain gene sequences from totally unrelated organisms which might commonly be assumed to be on the other side of a 'species barrier' (e. G. The mariner sequence in the fruit fly *Drosophila*, is also in humans).

Mules (horse x donkey) have long since existed, but nobody is complaining and the technique of grafting different plants/trees onto each other is ancient. GE crosses species barriers. Crosses are made which would never occur in nature. All technology is unnatural (unless we hold that man and all his creations are part of the totality of nature). (see Shakespeare, *A Winter's Tale*, 03)leg is unnatural. We have consciously interfered with evolution through breeding, habitat management and even selection of our own

spouses for millennia without any noticeable dire consequences. Scrambling genomes will lead to total chaos in evolution.

I " And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the Sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepers upon the earth. " (Genesis 1 : 26)" Human beings are themselves part of nature, creatures within creation. Human discovery and invention can be thought of as resulting from the exercise of God-given powers of mind and reason. " (Church of England Board) Biotechnologist are playing God. I GE is a very precise way of introducing desirable traits into economically useful organisms.

The techniques are improving all the time and it is increasingly possible to insert genes at a precise locus in the host organism's genome. This is called 'gene targeting'. I GE disrupts the integrity of the recipient genome with unpredictable side effects including 'gene silencing' both of the inserted gene and other unrelated genes in the organism. GE cannot readily control the number of copies of the gene that are inserted into the host, nor where in the genome they will end up. Inserted genes can disrupt the function of existing genes in ways, which may not show up until eater generations.

GE often, but not always, needs to use bacteria, viruses or plasmids as vectors to shuttle the genes of interest into the target organisms. Having the parts of their genomes removed that would make them infective cripples these vectors. As the technology improves it becomes less necessary to use infective agents as vectors. GE makes use of pathogenic organisms such as

viruses and bacteria as vectors of the gene that is being transferred. In other words, the target organism has to be made ill just to get the gene in, sometimes with tragic consequences.

The pathogens can kill the target organism or could spread into the environment with unpredictable and dangerous consequences. Even crippled vectors can recombine DNA and therefore genes with their normal counterparts in their surroundings and thus suddenly and unpredictably become infective. Molecular biologists acknowledge that they are only modifying one aspect of an organism's totality. However, they examine the organisms produced in detail, sometimes taking them through breeding programs for years to be sure that they are behaving in the way that other normal members of the same species behave which have not had the genetic modification.