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ALTERING FOOD MAY NOT BE BEST OPTION

Caitlin Hassler
news and opinion editor

That corn you are about to eat, yeah, it was made in a Petri dish.

Many vegetables and fruits today are produced by genetic engineering—made in a lab by a scientist.

The process of genetic engineering starts with identifying a special trait. Then, they introducing changes into the DNA of a plant. To insert it into the DNA, the trait is incorporated into the genome of a seed. This creates a modification. The seed is then planted and farmed like a regular plant.

"Modification can help build resistance to disease and delay ripening," Susan Kelly, science teacher, said.

The first commercially modified food product was a tomato in 1994. The tomato was developed to ripen without softening. Since 1994, genetically modified crops have skyrocketed in growth.

"Genetic engineering is quickly replacing traditional plant breeding. In the United States, half of the soy bean and corn production is now genetically modified," Kelly said.

Right now, the freshmen in Kelly's biology class are learning about nitrogen in the soil and how it affects plants.

"We know that there is only so much modification that can be done to a seed. There is still some dependency on the nitrogen cycle in the soil and nature," Kelly said.

There have been many tests surrounding modified crops. Something that has not been tested is the effect that modified crops have on humans.

"There has not been much research on what the consumption of genetically modified crops does to humans. Is it safe? We don't know," Kelly said.

Not only are health concerns raised, but economic concerns have been heightened. For example, in 2003, Zambia cut off flow from their genetically modified supply of food from the United Nations to attempt to stabilize an independent economy. Subsequently, Zambia was left famine-stricken. In 2005, the Zambian government decided to allow genetically modified foods to be produced again to avoid future famine. There is still the question today of whether some countries are too dependent on these crops.

Due to this recent dependency, another concern that has been raised is the problem of singularity of crops.

"The potato famine in Ireland was caused by Irish farmers growing only one species of potato. When scientists are modifying these plants, they are creating one species. If something were to happen, like a blight that the modification does not prevent, there would be world-wide shortages of food. There is a need of genetic diversity," Kelly said.

There may be many concerns surrounding genetically engineered plants, but there are alos some positives. First, they help combat world hunger through higher yields.

Another positive would be that genetically modified plants can add vitamins to something. For instance, the staple of many countries in Asia is rice. In Asia, there is a severe lack of vitamin A, a necessary component for good eyesight. Scientists can modify rice plants to contain vitamin A, thus strengthening eyesight.

Kelly said, "In the end, scientists study the 'why.' The economists decide what to do with that information. That decision eventually leads to what is on our plates."

MORAL SIDE OF CLONING

Rachel Hobbs
staff reporter

Disease, warfare and global warming are well-known issues facing the world today. And although these issues are all serious threats to humanity, human cloning (though it's a lesser-known issue) may pose an even greater threat to humanity.

The idea of human cloning grew stronger in 1997, just after Dolly the sheep was, as scientists believe, 'successfully' cloned; however it was not really successful at all. Dolly faced multiple health complications and died at an early age. But she was alive and breathing if that is what scientists mean by 'successful'.

However, the prospect of furthering the world's knowledge of what it means to be human, and to possibly uncover a way for mankind to defeat disease, many scientists are willing to take the risks. Human cloning could spark a whole range of problems for the human race, other than medical defects.

For example, the creation of a single clone could give the 'creator' or scientist a god-like authority over that person. It would put the maker into a position of power that could turn very ugly, very fast. This power could bring about a brutal new age of human/clone slavery. It could also instigate prejudice and discrimination between real humans and the clones.

It would be difficult for a clone to feel loved, and it is probable that a clone would feel inferior and second-best to natural human beings. Not only that, but a human clone may have a hard time accepting their origins.

Human cloning would also generate issues beyond the individual clone's feelings. Cloning could bring about the destruction of the legal system, as several people would have the same DNA and fingerprints, and there would be no way of determining whether the original person committed the crime, or the clone.

The Catholic Church is completely against the cloning of human beings, even if it could give mankind an advantage over disease and injury, because it would be a serious attack on an individual's dignity. People would no longer respect natural conception.

Pope Benedict XVI has said, "Human cloning is more dangerous than weapons of mass destruction."

UMNC TACKLES STEM CELLS

Patrick Murphy
sports editor

The University Of Nebraska Medical Center (UNMC) in Omaha has found a way to create cells that resemble embryonic stem cells.

UNMC took adult cornea cells from the eye and exposed those cells to elements secreted by embryonic cells. Through this process the cornea cells are turned into embryonic-like stem cells that have potential to create heart cells, liver cells and other cells. Scientists hope that these cells can someday be used to treat many diseases.

While Japan has made similar discoveries in creating embryonic stem cells, their findings used strategies which involved potentially destructive genetic materials to the newly created cells.

UNMC discovered a very similar way to create these embryonic cells without the use of harmful materials. The genetic makeup, DNA, is not affected in any way through this process.

The UNMC discovery doesn't need the human embryos because they can now be created. No human embryos will be destroyed if the UNMC studies continue to prove successful.

Human embryonic cells are still going to be needed for now and it seems essential that research continues so in the future years cells can be created, rather than taken from human lives.

More research is still needed at the UNMC to further the developments. Tests on rats and mice will be needed in order to make the results clear. If the test results on the rats and mice are prove promising, UNMC may be on their way to a great discovery.

CANNOT COUNT ON CLONED SHEEP

Kayla Condello
staff reporter

Since the release of Jurassic Park, a movie about the cloning and resurrection of dinosaurs, many people have wondered if it will ever be possible to resurrect dinosaurs and other extinct animals from the grave, but dismissed it as scientifically impossible. However, scientists may be closer to reviving dinosaurs than we think.

Similar to the cloning in the movie, the first mammal to be cloned from an adult cell was Dolly, the sheep, named in honor of Dolly Parton. She was cloned on July 5, 1996 at the Roslin Institute in Midlothian, Scotland. Code-named "6LL3," her birth wasn't announced until seven months later. It was heralded as one of the most significant scientific breakthroughs of the decade.

Dolly had been cloned from the cell of a six year old ewe. In the previous year, the same team had produced cloned sheep from the embryonic cells, but it was not seen as a breakthrough since adult cloned animals had been produced from embryonic tissue in 1958.

Dolly, the clone, lived her entire life of six years at the Roslin Institute before dying at age six.

In the autumn of 2001, at the age of five, Dolly contracted arthritis, but this was successfully treated. Unfortunately, on February 14, 2003, Dolly was euthanized because of a lung disease and severe arthritis. She was contracting physical problems that should not have affected her at such a young age.

The Roslin Institute's Harry Griffin said, "Sheep can live to 11 or 12 years of age. A full post mortem is being conducted."

Some have speculated that a factor in Dolly's death was that she could have been born with a genetic age of six years, the same age as the sheep from which she was cloned, because her DNA showed signs of premature aging.

Because of this, Professor Ian Wilmut, who led the team that created Dolly, announced in 2007 that the nuclear transfer technique may never be sufficiently efficient for use in humans.

Although it may never be ready for humans, research is leading towards the cloning of extinct animals. Scientists announced the cloning of the Pyrenean Ibex, a wild mountain goat, which was officially declared extinct in 2000.

Using DNA from skin samples that had been kept in liquid nitrogen, the scientists managed to clone the Ibex from domestic goat egg-cells.

The Ibex died shortly after from physical defects in its lungs. However, it may open doors for saving endangered and newly extinct species by resurrecting them from frozen tissue. It has also increased the chances that in the future it will be possible to reproduce species like woolly mammoths and even dinosaurs.

Both Dolly and the Ibex died early in life, and this is the major concern for the cloning of animals, along with physical defects. They also found that in some animals the organs never stop growing and become too big, similar to cancer. Other cloned animals appear normal and healthy, for example the 24 calf clones created by the U.S., but these have not lived long enough to draw any conclusions. Maybe, with further research, scientists will one day be able to recreate Jurassic Park.

GENETIC ENGINEERING SPARKS CONTROVERSY

Olivia Vrbka
staff reporter

Some people think about cloning their pets. There are others who would like to "pre-program" their child's eye color before birth.

Possibilities like these are being explored by scientists all over the world as developments in genetic engineering, a highly debated topic, progress.

Dr. Gautam Sarath, an adjunct professor at the University of Nebraska at Lincoln and USDA-ARS Research Molecular Biologist/Biochemist, has done a lot of research and work with plant engineering.

"We work with many different kinds of organisms. We work with bacteria to make plant proteins to study genes and see what it does in the plant," he said.

Genetic engineering, also referred to as genetic modification or genetic manipulation, is the rearrangement of genes, usually from one species to another. Genes and segments of DNA are taken from one species, for example, a fish, and put into another species, for example, a tomato.

Genetic engineering provides the possibility to cut DNA either randomly or at specific sites. This isolates the DNA and makes it possible to study the individual segments of DNA, multiply them or splice/stick them next to the DNA of another cell or organism. This allows researchers to break through species barriers and shuffle information between completely unrelated species.

The genetic engineering of some substances, for example plants, is done with viral promoters. A fish will not work into a tomato unless it is given a promoter with a "flag" the tomato cells will recognize. Because it would take years to understand how the cell's internal communication and regulation works, most scientists use these viral promoters as a shortcut.

There are varying methods used to transform a new gene, but generally fall under one of three categories; the plasmid method**,** the vector method or the biolistic method.

New uses for genetic engineering are being discovered constantly, but a few of the more common uses include:

Food. Genetic engineering allows the natural functions of organisms we rely on for food to be replicated, improved or completely changed. Food producers can turn to science instead of nature due to efficiency, effectiveness and cost. Genetically engineered crops can be programmed to resist herbicides. It is debated whether science provides a more potent version of a natural enzyme or protein. Currently almost all soybeans and corn produced in Nebraska are genetically modified.

Medicine. Researchers are using genetic engineering to diagnose and predict disease and to develop therapies and drugs to treat diseases like cancer, Alzheimer's, diabetes and cystic fibrosis.

Pharming. "Pharming" is a highly experimental use of genetic engineering. It uses recombinant DNA to create hybrid genes and engineers crops and livestock to produce medical products.

Genetic engineering is a very controversial topic and federally funded cloning research is currently banned in the United States, Japan and most of Europe. Genetically identical species share not only strengths but also weaknesses, thus providing the chance to be wiped out by a single disease.

There are people also opposed to cloning from a moral standpoint. Opponents of it say that cloning will lead to cloning humans. They feel that as humans, physical traits and personal opinion are God-given rights and that cloning denies these rights. The ethics of experimenting with human life are greatly questioned.

Some would say that as humans we already are made up of materials from here, there and everywhere.

"Humans are all genetically modified… we get a little from here, a little from there," Sarath explained. "We can make mistakes. Any time you start messing around with other organisms [than plants] there is the possibility of consequences we can't comprehend now. How do you stop something if it gets going? Agricultural systems are easier to control than human systems."

Sarath, along with many others, is hopeful about the future of genetic engineering. He hopes that people use the knowledge of genetic engineering productively.

He mentioned how beneficial the improvements in quality of life over the last 15 years due to genetic engineering are.

"The payoff in [genetic engineering research is] really about improving life," he said.

He also believes that genetic engineering is worth the cost and effort.

"Science is such a critical aspect of society and society suffers without it. I'm an optimist… and most of us want a better life. Just because there's negative aspects doesn't mean we should stop the research. Do you stop something good because there are a few bad apples?"

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Dolly the sheep isn't the only animal to be cloned. Take a look at the other creatures science decided to copycat (including a cat).

Common carp (1963)
Noto and Kaga the calves (1998)
Mira the goat (1998)
Tetras the Rhesus monkey (2000)
Cumulina the mouse (2000)
Ombretta the mouflon (2000)
Copycat the cat (2001)
Noel, Angel, Star, Joy and Mary the piglets (2001)
Rabbit (2001)
Ralph the rat (2002)
Idaho Gem the mule (2003)
Prometea the horse (2003)
Ditteaux the African wildcat (2003)
Dewey the deer (2003)
Libby and Lilly the ferrets (2004)
Snuppy the dog (2005)
Snuwolf and Snuwolffy the wolves (2005)
Garima the buffalo (2009)

FACT OR FICTION: THE SCIENCE BEHIND GENETIC ENGINEERING

Jake Swanson
staff reporter

Genetic engineering is a very misunderstood and unknown branch of reproductive sciences. Genetics of course refer to a persons' build-up. Engineering is synonymous with building. Therefore genetic engineering is when someone tampers with DNA in order to arrive at a certain finished product.

When a person thinks of genetic engineering they may think of cloning or other odd procedures, but truth be told (aside from these over-the-top sciences), genetic engineering is a very real and progressive science. As with anything there are aspects of this science that are simply untrue and there are aspects of undeniable truth.

These are some of the most popular genetic engineering myths:

Myth: Genetic engineering is not new, it is just the same as sped up selective breeding.
Fact: Genetic engineering is a relatively new area of science. It is manually adjusting procedures and DNA in order to make something better or just plain different. Breeding, on the other hand has absolutely no manipulation of the genes.

Myth: Genetic engineering is precise.
Fact: On the contrary, genetic engineering (GE) is unstable and inaccurate. As of now, the world has only but breached the wall of GE. Not all aspects of this area are known and for this reason there are many unexpected results.

Myth: Genetically engineered foods are more nutritional.
Fact: There have been no signs that GE foods are more nutritional. These foods, however, have been engineered to resist herbicides.

Myth: One can always choose to avoid GE foods.
Fact: As of this moment, the majority of foods at the local grocery markets do not label GE foods as such. A person could have been eating these foods for a long time and wouldn't even know it.

Myth: There is no evidence that GE crops are harmful to the environment.
Fact: This is a very common misconception. GE foods actually release the pollen which cross-pollinates with non genetically engineered foods. The pollen also gets onto weeds and because of GE foods resistance to herbicides the weeds become far more difficult to control.

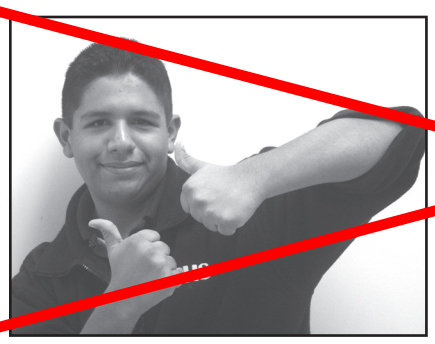
Myth: Some people believe that if precautions are not taken that soon it will be impossible to find a non-GE plant.
Fact: This is untrue. GE plants are not planted everywhere. To think that its pollen could mix with every plant in the world is nearly inconceivable. The truth is that so long as farmers do not plant their GE foods right up against their natural foods, this kind of genetic plant invasion, so to speak, is completely out of the question. There will still be natural fruits and vegetables for a long time to come.

In short, the subject of genetic manipulation is very commonly misunderstood. There are a lot of questions concerning cloning as well. Human cloning, however, has yet to be tested. Genetic engineering is in fact a real and advancing scientific study. These are the most prevalent myths in the genetic engineering field, according to Prorev.com.

Xclusive: SCIENCE, GENETICS, CLONING, MORALITY, DOLLY Xclusive: SCIENCE, GENETICS, CLONING, MORALITY, DOLLY Xclusive: SCIENCE, GENETICS, CLONING, MORALITY, DOLLY Xclu

Straight from the Bolts

"If you could clone any person from history who would it be?"



Alberto Meza
freshman

"George Washington."

Sam Williams
sophomore

"Babe Ruth for sure."