

Annotated Bibliography:

Adams, Mike. *GMO Corn Linked to Cancer Tumors*. 2013. 4 April 2014.

This article explained the study done on rats that proved GMOs cause tumors in rats. Rats were fed genetically modified crops and showed results that tumors had formed. They suffered “mammary tumors as well as severe liver and kidney damage.” The findings of the study are in the article as well.

We talked about this article in class, so I looked it up myself. The aspect I found most interesting about this article was not even the article itself. If you go to the bottom of the article there are numerous responses from Facebook about individual’s feelings about the article. Those comments really prove how big of a debate GMOs really are. The article was a good reference. However, it was again posted to a biased website. “You are what you eat” is the logo of the website, which proves that they are anti-GMOs. This is an indicator that they could skew the study’s results in their favor.

Beyond Factory Farming. *Genetically Modified Organisms (GMO)*. n.d. 4 April 2014.

This is a very short article explaining what GMOs are. It explain that in the United States, Canada, and a few other countries are allowed to sell genetically modified crops for human and animal consumption. In Europe, Japan, and other countries it is banned to sell GMO products “until further testing can be done to prove they are safe.”

The article Genetically Modified Organisms, was an interesting read. It helped me fact check to determine that animals can also be genetically engineered. It also gives a nice, unbiased overview of the GMO debate along with a few facts about the countries that are allowed and not allowed to sell them. It was interesting to see that other countries are not ruling GMOs out as “bad,” just that more tests need to be done to prove them safe for human and animal consumption.

Donsky, Andrea. *The Dangers GMOs Pose to Children*. 9 May 2013. 1 May 2014.

This article was taken from ideas from the book by Jeffery M. Smith, Genetic Roulette: The Documented Health Risks of Genetically Engineered Foods. The article highlights three key points from his book. The first is that “nutritional changes impact children more.” Their bodies are still growing and convert most of their food into building organs and tissues. The second point was that “children are more susceptible to allergies than adults.” Children have smaller bodies and less developed immune systems, so smaller doses of any form of toxin will affect a child more. Finally, the last point was that “children are exposed to many GMOs.” Children consume much more corn products, such as chips, and soy found in infant formula. A higher dosage of a “toxin” has a direct correlation to the health effects on children.

This article suggested many of the same aspects that other articles I researched did. Children having allergies was brought up in many articles I read, as well as children being exposed to a higher dosage of GMOs. This was a very interesting article, and I also liked that I could read further on this topic by finding Jeffery M. Smith’s book for his full research.

Farm Sanctuary. *Factory Farming*. 2014. 1 May 2014.

This article explains what factory farming is. Factory farming is an industry that “puts incredible strain on our natural resources.” It creates an excess amount of waste, which, in turn, pollutes our water, land, and air. Property values lower around factory farms due to high reports of illness. The point of this form of farming is to mass produce eggs, meat, and milk to meet the needs our society demands. This is the only way for farmers to produce a profit on their goods. Animals are forced to undergo painful and cruel conditions, which can ultimately lead to deformities and diseases. They are raised to grow unnaturally fast in confined pens to save space.

I used the article to compare genetic modification to factory farming. This was a very informative article. I’ve done a lot of previous research on factory farming, including watching Food, Inc., so I was already knowledgeable on the topic and did not feel the need to fact check this site. It was all information I was expecting to read, and a very descriptive site. I liked that it was detailed, yet to the point.

Garber, Lisa. *GMO Soy Repeatedly Linked to Sterility, Infant Mortality, Birth Defects*. 12 January 2013. 4 May 2014.

This article explains a study performed on hamsters when fed genetically modified soy. Results show, that consumption of genetically modified soy can lead to hairy mouths and infertility. The study was performed on four generations of hamsters, with results of worse effects on the younger generations. The article explains the skepticism that many individuals are having on GM foods, as well as the effects to farmers and the environment. Finally, the article discusses that both sides of science are to blame. Scientists that are making GMOs are to blame as well as those testing on GMOs, using only 90 day trials as their research.

The article *GMO Soy Repeatedly Linked to Sterility, Infant Mortality, Birth Defects*, was used in my research to determine if GMOs cause birth defects. Like many articles, because GM foods have really only been tested on animals, the results were not overly helpful. It gave me more insight into what GMOs could potentially do, but overall, the article would only be helpful to someone wanting to know the effects of GMOs to animals. Little, if any, research has been done on humans to determine the true effects of GMOs for us.

How Stuff Works. *Agricultural Biotechnology*. 2011. 2014 May 1.

This article explains the difference between genetic modification and selective breeding. Genetic modification is altering the “DNA patterning of an organism to help create a new organism with desirable traits.” Selective breeding is how humans “nurture desirable traits in plants and animals.” For this, it is much less scientific. Two plants or animals of the same species are bred together to create specific desired characteristics in the offspring. The article explains how genetic modification is much more complex and scientific, but is still fairly new—we do not know much about it yet. Selective breeding has been used for a much longer time.

I used the article Agricultural Biotechnology to explain the difference between selective breeding and genetic modification. This article was very informative, but was easy enough for the average person to understand, especially if you had no idea what either were. It was very concise but left me with no additional questions. I was hesitant to use this site because it was the only “.com” sites I used, but I was impressed with the information it provided and made sure to fact check it with other sites to ensure it was accurate information, which it was.

Institute for Responsible Technology. *65 Health Risks of GM Foods*. 2013. 1 May 2014.

This article explained the health risks of genetically modified foods to both animals and humans and the specific foods that correlated to the health effect. Genetically modified potatoes caused precancerous cell growths in rats. Rats that were fed tomatoes suffered bleeding stomachs, which led to death in several of them. Also, rats fed Bt corn showed changes in blood cells, as well as their liver and kidneys. Intestinal damage was caused by Bt potatoes in mice. Human workers that were exposed to genetically modified cotton developed allergies, and some laborers were hospitalized. Cotton also affected sheep herds from grazing, resulting in death of most. Bt corn pollen may have also developed respiratory and intestinal effects in humans who inhaled the pollen. Farmers noted that pigs and cows became sterile after consuming genetically modified corn. Mice that were fed Roundup Ready soy experienced liver sell, pancreatic, and unexplained testicular cell problems. Roundup Ready soy also caused changes in metabolism in rabbits. Basically, many health issues were suggested to be due to GM crops.

The article *65 Health Risks of GM Foods*, was a very informative and factual. However, because there was so much information on animals, it was not overly relevant to my research. I would recommend this article to anyone searching for health risks of GMOs on animals.

Institute for Responsible Technology. *Higher Risks for Children*. 2013. 4 April 2014.

This article suggested that children were part of the immunocompromised population. They are still developing, so they have bodies that are greatly influenced. Children are more susceptible to allergies, problems with milk, such as lactose intolerance, nutritional problems, and are at a higher risk of antibiotic resistant diseases. During GM testing on rats, they used adolescent rats to try to show the significant differences to the immune system, digestive functions, and many other issues to best represent what children could face. Right now, the most common health effect in genetically modified food is allergies, which children are more likely to experience among foods. Though milk itself may not contain genetically modified ingredients, but it may have been produced by cows that were treated with “genetically engineered bovine growth hormone (rbGH).” In 2002, it was suggested that “genetic modification could lead to unpredicted harmful changes in the nutritional state of foods,” which children would be more susceptible to due to a lower immune system. Children are prone to ear infections, which puts them at a greater risk of antibiotic restraint. This is a strain of bacteria, and the use of antibiotic resistant genes in GM foods it, this issue can become even worse.

The article *Higher Risks for Children*, was very informative. It offered several helpful facts about specific reasons why children are part of the immunocompromised population. However, this article assumes certain health effects caused by GMOs, which have not yet been scientifically

proven. If these health effects are someday proven to be true, this article will gain much more credibility.

International Service for the Acquisition of Agri-Biotech Applications. *Global Status of Commercialized Biotech/GM Crops: 2011*. 2011. 4 April 2014.

This article summarizes the amount of crops around the world that are genetically modified, as well as the amount of crops each country produces. The United States is deemed the greatest provider of genetically modified crops and in the vastest amount of crops.

The article provided an excellent chart and graph to easily understand the large amount of numbers that they threw at you. The only difficult part about the article was that the measurements of crop area was in hectares, which was not a measurement I knew about, so I needed to do some calculations.

International Service for the Acquisition of Agri-Biotech Applications. *Pocket K No. 4: Crops and the Environment*. August 2013. 4 April 2014.

This article discussed the environmental risks and benefits of genetically modified crops. The benefits of GM crops consisted of the reduction of pesticide, herbicides, and greenhouse gas emissions from agriculture. Genetically modified crops also decrease the need for tillage, which saves one billion tons of soil every year. The environmental risks of genetically modified crops partially deal with the uncertainty of possible mutations. Crops could potentially withstand herbicides and be impossible to get rid of, causing crops to persist in the wild. Genetically modified crops could potentially be altering the diversity and population of insects.

The article *Crops and the Environment*, there was a brief discussion of the current environmental situation to give reference to how genetically modified crops would alter the natural environment. This article would very unbiased, which was helpful for our research. It stuck to facts, gave hypotheses for the future, but expressed that there was no scientific research on certain areas if there were no studies done to prove their hypothesis.

National Anti-Vivisection Society. *The Failure of the Animal Model*. 2013. 4 April 2014.

This site explains the difference in the evolution, molecular biology, and genetics among animals and humans. It explains how "data obtained from animal models can be extrapolated and applied to human conditions," because they choose animals that have a similar biology to humans. However, the article later discusses that "the claim that animals can accurately predict human response is false." Animals will never be exactly the same as humans, so to use them to test the safety of new products for humans can never give a 100 percent guarantee that humans will respond the same way. The cycle goes both ways. Animals may have a bad reaction to something that humans would not, just as animals may not have a bad reaction to something humans do. An example of this notion the article stated was the antibiotic, penicillin. When tested on rabbits, it was ineffective, but was later proven to be "safe and effective for treating bacterial infection in most humans." Overall, animal testing is used for the prediction of what will happen to humans.

The article *The Failure of the Animal Model*, was very helpful to my research. It was very informative and gave both sides of the “animal testing debate.” I used this article to explain that testing GMOs on animals may not give the same health related effects that humans will face. Right now, studies have shown that GMOs cause tumors in rats, but no scientific evidence has proven that tumors in humans are caused due to the consumption of GMOs.

Non-GMO Project. *FAQ on GMOs*. 2014. 4 April 2014.

This article gives an overall idea of GMOs. It begins by explaining the issue about what GMOs are, and what foods GMOs are most likely to be found in. Alfalfa, canola, corn, cotton, papaya, soy, sugar beets, zucchini, and yellow summer squash were the main genetically modified crops. It answers the questions of “does Whole Foods Market’s quality standard prohibit GMOs?” There are several other questions on the website pertaining to Whole Foods Market.

The site *FAQ on GMOs*, was helpful only for the small bit of information I was looking for. When I went on this site I was simply looking for the main crops that are genetically modified. This is fact based so it was easy for a “non-GMO” site to give me proper information. Beyond that, the information on here could potentially be skewed for their benefit. I did not do any cross referencing on this site for the other information because it did not pertain to my research.

Non-GMO Project. *GMOs and Your Family*. 2014. 4 April 2014.

This article discusses topics that deal with GMOs and your family. The main topics covered on this page are geared toward GMO issues that could pertain to your family. It asks questions such as, “Are my kids eating genetically engineered food, what if I only buy organic, and what are the most common GMOs?” The article ends by providing a list of verified non-GMO products for if you are planning to change your diet to a non-GMO diet and need to know where to be going.

I used this article to fact check if children were consuming more GMOs found in snack foods. Also, I found a list of the top genetically modified crops. This article came from the same website as the article I found a list of the top genetically modified crops on, so I did not use this site to fact check that. Overall, the site helped me with the research I needed. The site is biased because they preach non-GMO products, but for what I needed the site for it was fine.

Non-GMO Project. *Monsanto Pesticides Causing Cancer, Birth Defects In Argentina*. 13 November 2013. 1 May 2014.

This webpage was to inform about Argentina. They are the world leader in producing soybeans, which are a huge product containing GMOs. Sofia Gatica was an individual that lived in the Córdoba suburbs of Argentina. Her son was paralyzed temporarily due to an illness that the doctors could not explain. There were many other children in the area that were born with deformities and other health defects. It was suspected by citizens of Argentina that these issues were due to GMO consumption, but Monsanto denied that GMO consumption was at all correlated to the increasing health concerns of the area.

The article *Monsanto Pesticides Causing Cancer, Birth Defects in Argentina*, was not as helpful as I had hoped. The article lost credibility as I continued to read it because of the spelling errors. The title suggested that the article would be about pesticide issues within Argentina, but there

was information regarding GMOs. It was difficult to come to a conclusion with this article because Monsanto expressed different conclusions than the doctors and medical professions in Argentina.

Renter, Elizabeth. *Farmer reports: GMOs causing deformities, birth defects in piglets*. 30 January 2014. 29 April 2014.

This article showed a correlation to the Monsanto article above, which was helpful and made the previous article more credible. A pig farmer in Denmark believed that Monsanto and their genetically modified feed was causing deformities, growths, and other abnormalities to his pigs. The farmer, Pedersen, suggested that the herbicide, glyphosate, the GM crops “naturally” produced was the reason his pigs were unhealthy. Being the biggest pork producer to Danish Crown in Europe, he decided to switch the feed he fed his pigs to non-GMO feed. This did not completely stop deformities and other abnormalities, but symptoms did lessen drastically. This small change saved him much money and time. The non-GMO feed caused less abortions and illnesses, making his yield much higher. The article also mentioned that an Iowa farmer also experienced similar issues and had similar results when he went away from GM feed.

The article *GMOs causing deformities, birth defects in piglets*, was very interesting and helpful at the end when the article tied the Europe farmer story to a story about a farmer in the United States. It applied a bit more to what our topic was covering. We mainly focused on the U.S., so it was important that we consistently used information about the U.S.

Shireen. *GMO Timeline: A History of Genetically Modified Foods*. 10 March 2013. 2014 April 4.

Ranging from 1935 to 2014, this article gave a brief, yet detailed, timeline of the evolution of GMOs. The beginning of the timeline goes all the way back to when DNA was discovered because genetic modification is about altering the DNA of a plant or animal. Later, the first GMO patent is issued and the FDA approves the first GMO: Humulin, which was insulin produced through genetically modifying the E. coli bacteria. This article is not specific to the United States, so it mentions when labeling becomes mandatory in Europe. Finally, the timeline ends with the GMO patent on Roundup Ready expires in 2014.

This article gave a good, quick overview of how far genetic engineering has come so far, and how far it still has to go. Even though my research was more based in the United States, a timeline about the evolution of GMOs in the U.S. would have been rather brief. It was also helpful to gauge how long it took genetic modification to come about after DNA was found. I was very pleased with this website.

Smith, Jefferey M. *GM Foods More Dangerous for Children than Adults*. 7 October 2010. 4 April 2014.

This article suggest that children are part of the immunocompromised population, and have a higher exposure rate to genetically modified foods. Children are more prone to allergies, which is a health concern of GMOs, though it has not been proven to have a direct correlation yet. GMOs are mostly found in highly processed foods, which tend to be our quick snack foods.

Children tend to be more exposed to these types of foods, meaning they ingest a higher percentage of ingredients from genetically modified crops.

This article was similar to a previous article I read. It once again suggested that children are more susceptible to allergies from GMOs. One aspect I really liked about this article was that children have a higher exposure to GMOs, which is definitely true. When GM corn is found in many types of chips and other snack foods, it makes sense that children would have more health problems because of GMOs. This article definitely make a good case for itself.

Smith, Jeffery. *Spilling the Beans: Unintended GMO Health Risks*. March 2008. 4 April 2014.

This article covers a wide variety of genetic modification topics. The article begins by discussing the unintended GMO health risks. The Organic Consumers Association does not believe that GMOs are safe to eat. It then goes on to explain the difference between genetic modification and natural breeding, which is why GMOs can produce such "unpredictable changes." Then, the article explains the "growing evidence of the harm from GMO's," which touches on soy, Bt corn and cotton linked allergies. Finally, the article finishes by explaining the liver problems that GMOs cause from a study on rats.

I used this article for the overall health risks of GMOs. I found this article to be very biased. An important note when searching for fact-based information on genetic modification is to look at the source. Of course an organic consumer association is going to sway evidence to make GMOs sound bad, just like the companies that are producing GMOs are going to say how good they are. This site did provide information I found on other websites, so some of it was helpful to my research because it was backed up by other sources. Overall, this was a biased site and difficult for me to use much of for my research.

WorldWatch Institute. *Genetically Modified Crops Only a Fraction of Primary Global Crop Production*. 2013. 4 May 2014.

The article *Genetically Modified Crops Only a Fraction of Primary Global Crop Production*, gave information about global GM crop production as of 2007. At this point, genetically modified crops were 12 percent of all crops in the world, within 23 different countries. Later, the article went on to explain why there were, and continue to be, increases in GM crops, such as changes in climate and large profits for farmers, due to higher yeild percentages, and seed companies, for the production and distribution of high-demand GM seeds.

This article was very informative, but rather confusing. There was nothing simply laid out for the average person to look at and quickly understand. They also used the measurement "hectares," which I was unfamiliar with, so I needed to do some calculations to grasp the area they were talking about. Overall, the article was helpful and accurate, but as a higher level of understanding. In my research, I tried to make this part less confusing for the average person to read and understand.