

Exploring Biotechnology and Art

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Psychobiology

June 10th 2012

Professor Victoria Vesna

Stereotypes on Campus

Wed, 04/11/2012 - 03:23 | [luchen0511](#)

My name is Lu Chen, and I am a 4th year Psychobiology student. I am graduating this year, and am applying to medical school this June. I chose to take this class because I thought the topic was interesting (I never really thought about art and science together before) and because I wanted to take an art class at UCLA, especially since the last art class I took was in middle school.

The video “Stereotypes, Education, and Economy” was particularly interesting to me, especially the part about stereotypes of artists and scientists.

It was actually the first day of our Biotechnology and Art class when I had firsthand experience of my own stereotypes in action. I have actually never had class in Broad Hall, and I very rarely trek all the way to north campus, since my classes are usually science classes. But when I did walk through north campus, I definitely saw a different crowd of people. There were more people with short hair, dyed hair, and ear-piercings. I even saw a girl wearing a tie-dye shirt, which is a rare occurrence anywhere.



My (still stereotyped) views of the typical artist and scientist.

Another place where stereotypes come into play is in the Psychology department. You would think that a single department would not have segregations within itself, but there is a definite divide between the Psychology and the more scientific Psychobiology majors, even though these majors are housed under one roof. This also relates to C.P. Snow's claim that intellectuals are split between sciences and humanities. Although not traditionally thought of as a subset of humanities, psychology is definitely not seen as more scientific than psychobiology. The split between these two majors can definitely be seen in classes or during commencement. The psychobiology students always sit amongst each other, and the psychology students clump up together as well.



Franz Hall, the UCLA Psychology building.

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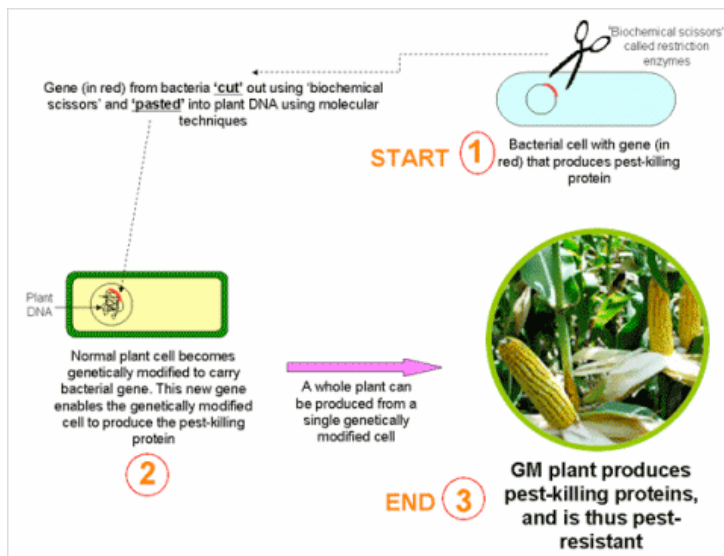
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Genetically Modified Salmon

Sun, 04/15/2012 - 00:42 | [luchen0511](#)

I decided to analyze the details of genetically modified salmon because every time I go back home, my parents really like to cook me salmon. I wanted to find out exactly what people do to the salmon that we eat, because I know that genetic engineering is done.

GMO stands for Genetically Modified Organisms, and is defined by Deborah Whitman as “crop plants created for human or animal consumption using the latest molecular biology techniques.” Although the term GMO is usually used for plants, it can be used for animals as well. My stance on GMOs is that it should be seen as a good thing. Like Deborah Whitman said, GM foods can help with pest resistance, disease resistance, drought tolerance, and even help people with nutritional deficiencies. Also, scientists are fairly certain that it is safe for humans to eat GMOs. However, like Steven Kurtz said in his interview, the general public does not understand the science behind genetically engineered foods, which adds to the negative view of genetically modified foods. The following is a very simplified depiction of how GM foods work.



At first when I found out that salmon were genetically engineered to grow more, I thought that they were engineered to grow bigger than normal salmon. However, a New York Times article I read analyzed salmon that were engineered to grow twice as fast as normal salmon. Specifically, it can grow to its desired size in 16 to 18 months instead of in 3 years. The following picture is of two salmon at the same age. The top one is an engineered salmon, and the bottom is a wild and natural salmon.



Although these salmon are altered, GM salmon should not cause any alert to the public, because it is essentially the same salmon. The article stated that GM and natural salmon are the same in “taste, color, vitamins, minerals, fatty acids, proteins, and other nutrients.”

One thing that was somewhat surprising was that most salmon these days are not caught from the wild, but are raised in fish farms. This would also explain why some people are opposed to GM foods, but I still believe that consumers should not be worried about any health effects of genetically modifying foods.



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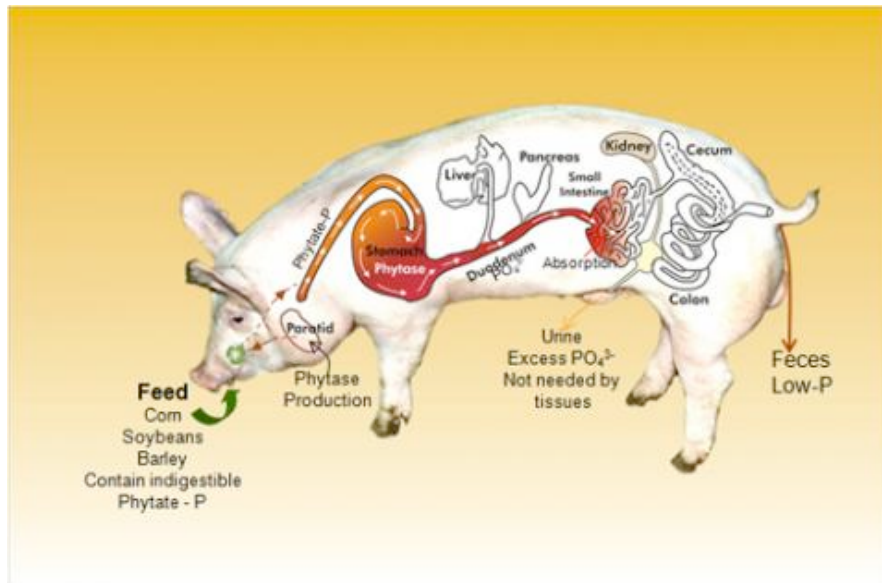
Genetic Engineering and (Farm) Animals

Sun, 04/22/2012 - 13:48 | *luchen0511*

My stance on genetic engineering on animals is that it can be very beneficial, as long as we go about it the right way. Here are some farm animals that have been genetically engineered.

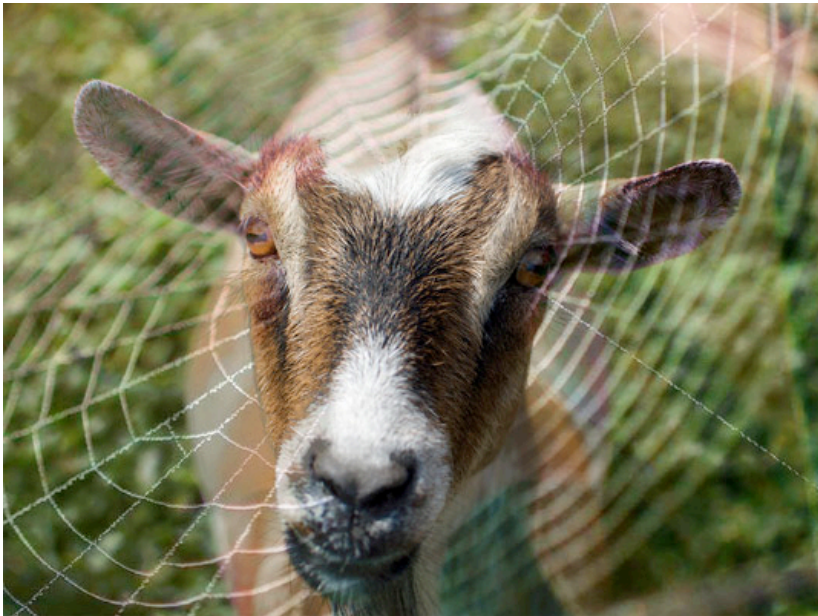
Enviropig / Frankenswine

This pig has been genetically engineered with *E. coli* and mouse DNA to digest phosphorous better than the wild type pig. This is helpful, because the manure from pigs have a lot of phosphorous, which may then damage the water system, damage microbial water life, and decrease the amount of oxygen available. Because of this genetic engineering, this reduces pollution and is better for the environment.



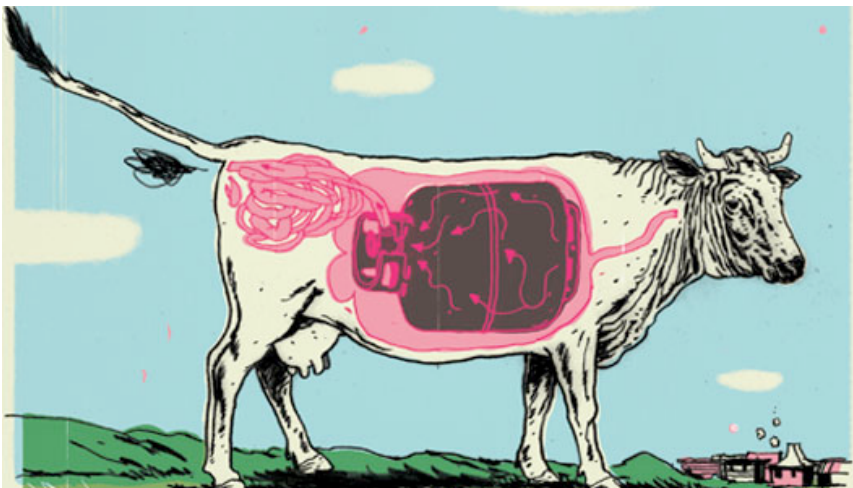
Spidergoat

This next animal is a goat genetically engineered with spider DNA. This causes the goats to produce silk in its milk, which can then be used to mass-produce silk products. This silk is very strong, and can be used to produce bulletproof vests and artificial ligaments and tendons.



Cows that Pass Less Gas

This last example is of a cow that is genetically engineered to release less methane. Methane is the second most contributor to the greenhouse effect, so again, this genetically engineered farm animal is designed to help the environment.



On another note, I thought the movie *Strange Culture* was very shocking. It baffled me to see all the things the government did to Steve Kurtz, from abandoning his cat, to making a mess in his house, to accusing him of being a terrorist without any solid evidence backing up their claims. I also thought it was shocking that this movie wasn't taken down because of the way the government was portrayed. Lastly, I thought it was interesting that Steve Kurtz had this movie being made in the first place. Through this class, I've learned that artists use their artwork as a means to communicate to and educate the public. Even though Steve Kurtz did not end up using his artwork in the exhibit, he used the situation he was in to communicate to others through film.

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Cotton and Pollen

Sat, 05/05/2012 - 16:00 | [luchen0511](#)

Although most people probably focused most on Noa's honey installation, I was actually most interested in the cotton vest that Noa made called "Clothes Up: Cotton". In this vest, Noa made the tangles loose, just like the loose tangles in the actual cotton. The vest was very aesthetic, and it is something that I feel that people could wear to class or to nice events. It just amazes me how Noa can be so flexible in her abilities, because she seems to have explored so many ways to manipulate the objects and space around her. In one project, she can be cutting shapes out in 2 dimensions, and in another project, she can be sewing thing. I know that if I attempted to do the same, I would not be as successful.



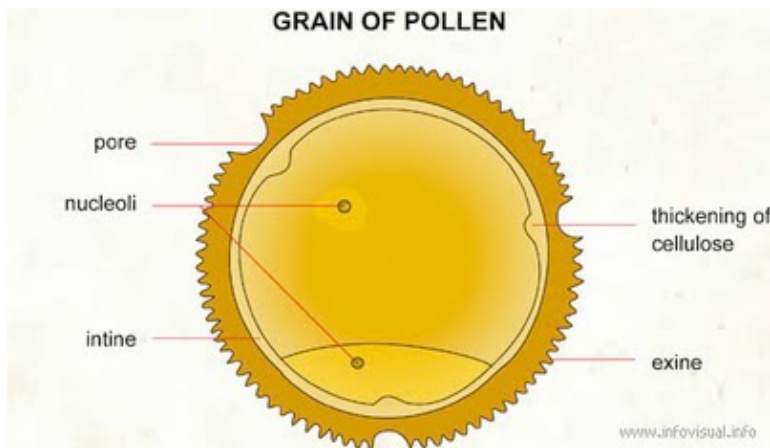
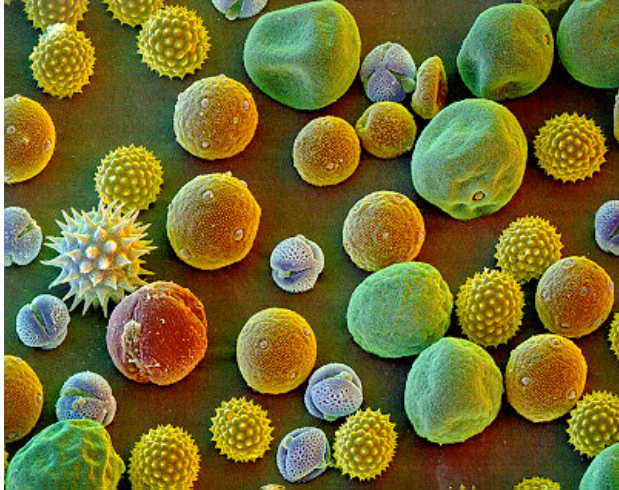


Of course, I was also amazed at “Pollen”. What struck me as strange, was that this piece of art was intended to raise awareness of how bees use so much effort into creating honey, and yet this piece of art used honey and lets the honey not be eaten. Of course, this had a purpose, and it doesn’t compare to the amount of honey that people consume each day, but it is still honey, and is being used. On the flip side, I don’t think this piece would have been as meaningful if it used something that just looked like honey, especially since it would probably not be the consistency and smell of honey.





Lastly, I think it's great that Noa made the pollen in her installation actually look like real pollen. This further increases the public's awareness as to what honey and pollen are, and gets people thinking about how honey is made.



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Joe Davis - Bioart

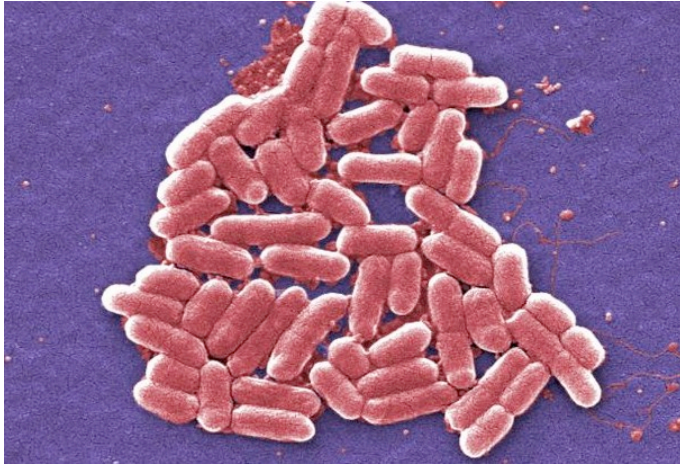
Mon, 05/14/2012 - 00:40 | [luchen0511](#)

The first part of the biotechnology and art lecture discussed the work of the bioart pioneer, Joe Davis.

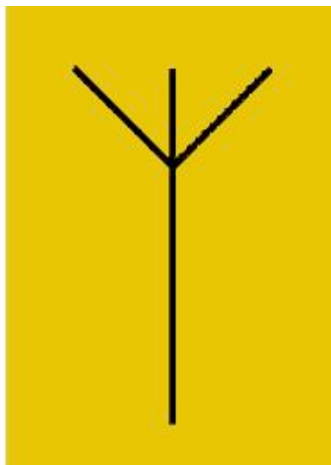
One work of his that intrigued me was his audio microscope. This microscope reads light information, and somehow transforms it into sound. This allows people to then “listen” to the signatures of organisms. Joe Davis said that even two different species that are closely related could have two separate signatures. An example is *paramecium multimicronucleatum* as opposed to the *Paramecium caudatum*. However, two individuals of a species must have the same signature. Joe Davis showed this with two plants of the same species. Although this is interesting, I think it would be even more interesting to see exactly how this device works.

Joe Davis along with Andrew Zaretsky also studied the effects of jazz music on bacteria. It was found that if you stress the bacteria with sound waves, then that might cause the bacteria to produce more antibiotics. I think it would be interesting to see what would happen if different genres of music were played, and also what would happen if you altered the bass levels of the songs being played, and if those factors would affect the production rate of antibiotics.





Another one of Joe Davis's works that is definitely interesting is the microvenus. This is a symbol representing the external female genitalia, and is also a rune that represents the female earth. Joe Davis made a genetic representation of this symbol on a small piece of DNA, inserted it into bacteria, and sent those bacteria to space. The following is a picture of the microvenus icon, then the bitmap version, and finally the DNA sequence. I understand that the bitmap version looks like the microvenus symbol, but I do not understand how Joe Davis translated the bitmap version into the DNA version, because to me it does not resemble the microvenus symbol at all. It would be interesting to know his thought processes in creating this "piece".



5'-CTTAAAGGGGCCCCCAACGCGCGCGCT-3'
 3'-GAATTTCCCCGGGGGGTTGCGCGCGCGA-5'

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Kathy Brew's Going Grey Exhibit

Mon, 05/14/2012 - 01:34 | [luchen0511](#)

One thing that I've learned about art so far this quarter is that art is not always something pretty a person can look at, but that it is often used to illustrate a point. Kathy Brew's exhibit definitely did that.



This exhibit got me thinking about how society thinks of aging, and also what I think of aging. Ever since I was in elementary school, I actually started getting gray hairs. I never wanted to pull them out, because to me, they signified me growing up. Of course, once people get older, they do not want to look older. Nowadays I realize just how far some people go to prevent their appearance of aging. Not only do people dye their hair and wear wigs, but people also use rogaïne and other anti-hair loss products.



Again, I don't know if it's just me, but I never really notice when people are balding, because to me, it seems like such a natural thing to do.

Another popular product that we see everywhere is anti aging / anti wrinkle creams. There are hundreds of anti aging products. Just a few products / companies are: Revitol, Estee Lauder, Dior, Givenchy, Ponds, Olay, Clinique, Neutrogena, Eucerin, and L'Oreal. Even though this is a booming industry, there is actually little evidence that these products have a significant effect. There was one study that found that even the best anti aging creams could only reduce the prevalence of wrinkles by 10%, which is indistinguishable to the human eye. Another study found that one particular product gave only most of the subjects a slight improvement.



I personally think that people should naturally try to prevent aging, or not even try at all, because aging is inevitable. I came across a website with 5 tips on how to prevent aging. Here is my outline of their tips.

1. Get enough rest (at least 8 hours – also don't eat 3 hours before you sleep, and don't exercise 1.5 hours before you sleep)
2. Exercise (even walking is good!)
3. Drink enough water (8 glasses a day)
4. Nutrition
 - avoid: red meat, white bread
 - approach: fruits, vegetables, fish, whole grains
5. Distress (don't stress out)

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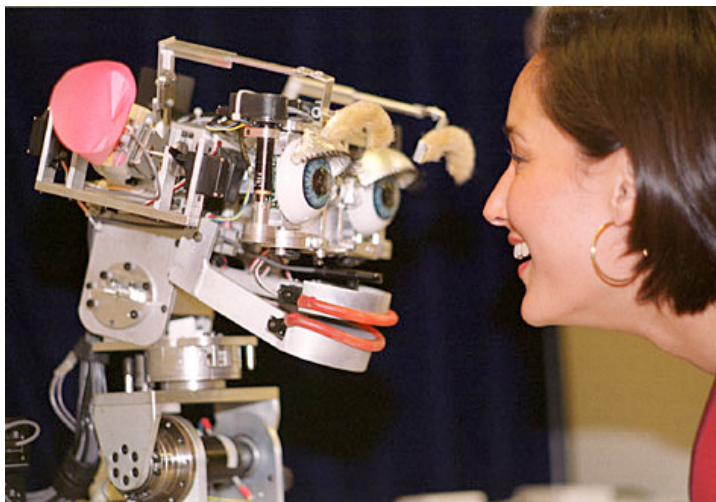
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Artificial Intelligence: Kismet the Robot

Mon, 05/21/2012 - 23:28 | [luchen0511](#)

Alan Turing is seen as the father of computer science and artificial intelligence, which is why my group decided to focus on artificial intelligence. I will specifically focus on Kismet, a robot made at MIT that has many human qualities such as **speech detection, speech, emotion / facial expression, and vision**. There are many aspects of artificial intelligence such as general intelligence, social intelligence, perception, learning, and planning. Kismet in particular has social intelligence.



Speech Detection:

Kismet has 5 different categories of affects that it can detect through a wireless microphone:

- 1) approval "Oh, Kismet! You are so smart!",
- 2) prohibition "Hey! You're not allowed to do that!"
- 3) attention "Hey, look at this!"
- 4) comfort "Oh, don't worry about that!"
- 5) neutral "My name is Anna"

Speech / Vocalization:

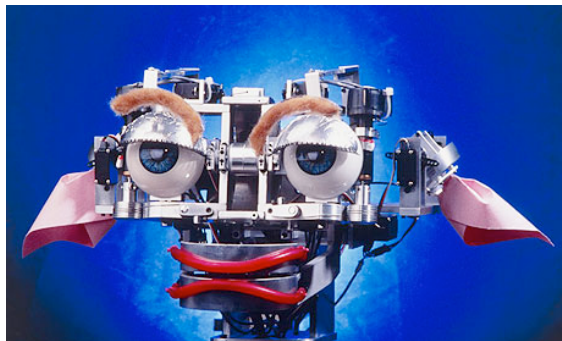
Kismet's voice is done through an articulatory synthesizer, which is roughly modeled after the human articulatory tract. Kismet was specifically designed to sound like a child.

Emotion / Facial Expression:

There are 21 motors on the face and neck in order to express emotion. The ears can do various things such as perk up (showing interest), or they can fold back (to show anger). The eyebrows can furrow in frustration, elevate with respect to its head to show surprise, and slant the inner corners of the eyebrows up to show sadness. The two eyes can either open and shut at the same time to blink, or at different times to wink. Lastly, the mouth can curve up to smile or curve down to frown.



Happy Kismet:



Angry Kismet:



Surprised Kismet:

Vision:

Kismet has 2 eyes, but he has 4 color cameras (and 9 computers) for vision. 2 are located centrally on the head, and are there for attention and for computing distances. The other 2 are at the pupils of his eyes, and detect facial features of the person he is talking to.

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Summary

As you can see, I started off this class with a very segregated view of artists and scientists. I always thought that art and science were very polar-opposite subjects. Now, I know that the two are very much interrelated; science can help build art, and art can inspire science, and I realized that scientists are artists, and artists are scientists. Almost every subject we touched upon this quarter combined these two topics: art and science. I also had the opportunity to meet many people who have delved into both science and art.

I entered this class wanting to learn more about art – and I did. I've delved into very interesting topics this quarter – topics that I would never have talked about if it weren't for this class. It was a great way to end my senior year.