

The Art of Biology

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My summer research was far from an ordinary summer research project. It consisted of a combination of my knowledge in biology and my artistic capabilities to create artistic representations where either none are currently available or to make it more specific to the needs of the biology classes. These representations are diagrams and figures of helpful knowledge in the Tissue Engineering class offered at H-SC by Dr. Kristin Fischer. Tissue Engineering is far from easy and these representations were shaped by pencil, pen, knowledge, and feedback to help visualize and learn the material.

This summer research was a surprising combination of enhancing my artistic skills, opportunity advice from many individuals, and furthering the education of the Biology department of H-SC. Tissue Engineering, the course I created these images for, is the relatively new study of regenerating or replacing biological tissues. Having taken the Tissue Engineering course and being advised by the professor that I would be providing the artwork for, I was very well informed of the knowledge that needed attending to for artwork.

I had a multitude of goals to follow as the weeks of research continued that aided in my work:

- Submitting a piece of art to the Brain-Art Competition to help me get into the flow of creating biological artwork.
- Creating a multitude of images and diagrams for Dr. Fischer's Tissue Engineering course that can best convey the information requested.
- Contact Dr. Lewis via email for artistic techniques that would help further my art pieces.
- Learning from and incorporating feedback from peers and my advisor. Feedback was crucial to the furthering of this project and I could not have done as much as I did without it.

- Usage of multiple different media for artistic diversity and to draw interest to specific areas of the representations. Pencil and pen were used in the end due to ease and speed. Other media were too messy or took too long to use (charcoal and paint).

My first image, image #1, is that of the human brain which was submitted to the Brain-Art Competition online. I was never contacted by the organizers, so I have no idea if anything resulted from it. The rest of the images, images #2-6, were submitted to the Tissue Engineering instructor Dr. Kristin Fischer for use in her classes. The images were each made the same way but with varying difficulties in making and solidifying concepts; the hemocytometer and tilting method were the toughest to solidify. Each image was the product of many sketches that were drawn in many ways to convey different angles and views of the information in the simplest and most informative way. From these rough sketches, the final concept was transferred to a more refined piece of parchment to show more details for the information presented in the images. The hard deadline for these images was hard to work with since each image requires quite a bit of time to complete. Fruits of my work are as shown (Each on 11 x 14 inch 100% cotton drawing paper):

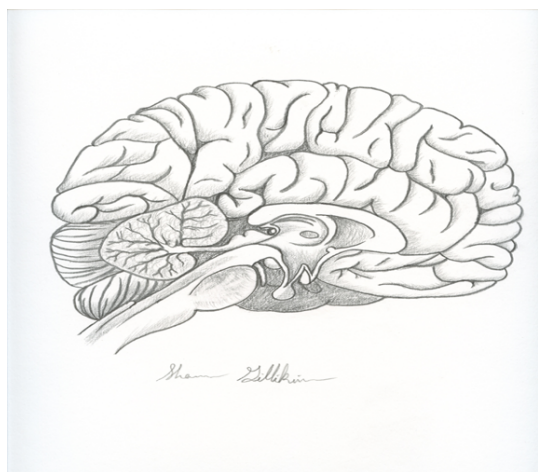


Image #1: Anatomical drawing of the human brain that was drawn for the online Brain-Art Competition. No feedback has been given from this competition.

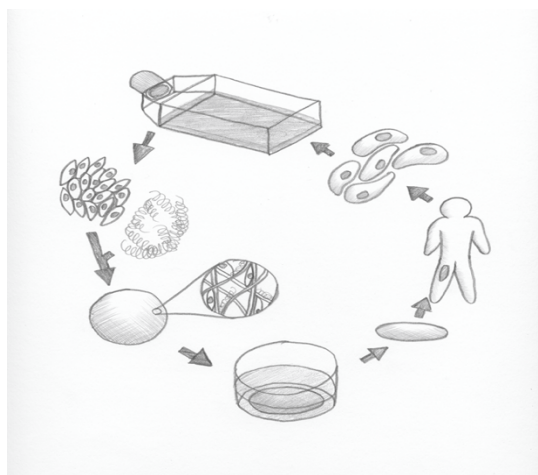


Image #2: Diagram of Tissue Engineering to help students understand the cycle that Tissue Engineering can accomplish. This image was submitted to Dr. Fischer and was used by peers to explain Tissue Engineering during their summer research presentations.

Image #3: Cell growth for Tissue Engineering to teach students the difference between maturing muscle cells that are happy in their environment (left) and those that are not so happy in their environment (right). This image was submitted to Dr. Fischer for use in her courses.

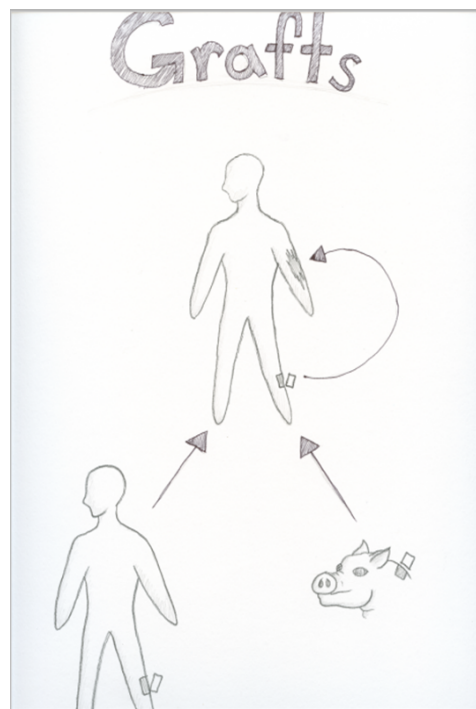
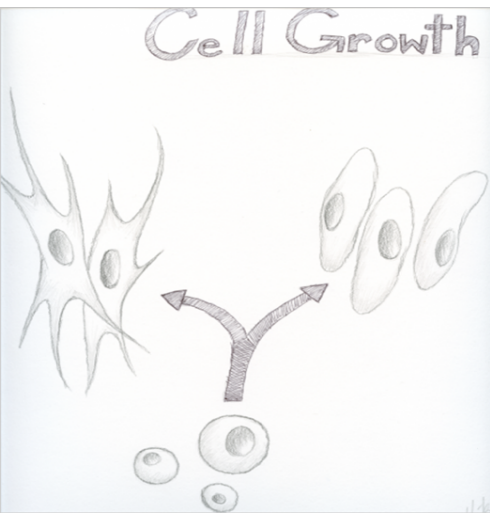


Image #4: This diagram of the Hemocytometer, that has been renowned for confusing students, should aid students in understanding it. This image was submitted to Dr. Fischer for use in her courses.



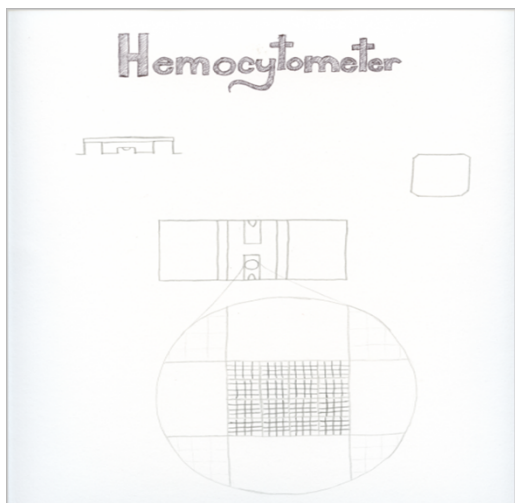


Image #5: Different grafts used in Tissue Engineering should aid students in understanding the differences between these grafts. This image was submitted to Dr. Fischer for use in her courses.

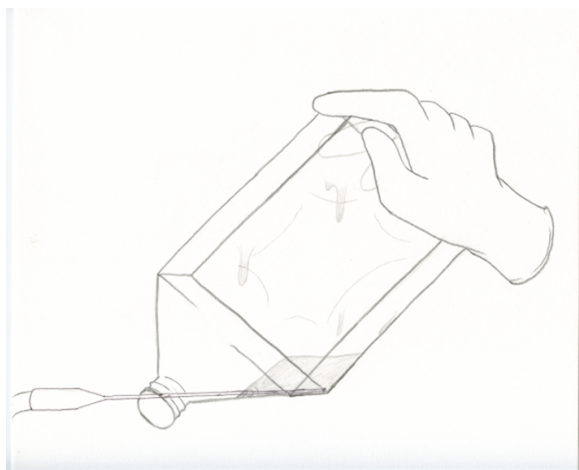


Image #6: Tilting technique used for feeding cells in the Tissue Engineering class. This image was submitted to Dr. Fischer for use in her courses.

In the end, I was severely surprised by the amount of time this project required and by how much feedback this project required in order to move forward. The finished products above are the results of much feedback and a great many rough sketches that were transferred to quality drawing paper for viewing. Without the peers that I worked with, Dr. Fischer and her Tissue Engineering course, as well as the H-SC Summer Research program none of this would have been possible. These art pieces will help students grasp the needed or confusing information that may trouble individuals taking the class. The images may be used in notes, as diagrams, and as references to aid in the learning experience and to aid with teaching. The effects of these images should make the teaching process easier for the instructor and make the learning process go more smoothly from which students can learn.