

Isabel and Caroline
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Final Report

Our research has become an investigation into the healing processes of a cut, specifically an infected and non-infected laceration. Preliminary research tells us that while both wounds have similar healing processes when the wound is infected additional steps are required and the timeline becomes longer. Infections create warmth, redness, discharge, slowness of healing, and additional pain. Since we are creating a model to represent the difference we need to exclude warmth and pain from our data since it is difficult to represent in visual form. From this, we can present the symptoms of an infected wound so that we can show the process of healing that the human eye can not see. Our progress so far has been in the bulk of our project, the research. We have been looking at medical sites to find information about the difference in the healing process of an infected versus a non-infected wound. There is a difference when looking at the cells and how our body reacts to a wound depending on a present infection. A laceration is a deep cut or tear in the skin which can be caused by sharp objects such as a knife. Lacerations tend to bleed, the process of stopping the bleeding is called hemostasis. Then there is inflammation, growth, and rebuilding of the cells followed by strengthening the tissue. Signs that a healthy wound is healing are scarring, tissue growth, swelling, and scabs. We will continue to research other completed scientific investigations surrounding the comparison of these two cuts and build our project around the questions and conclusions they established. We want to verify and simulate their conclusion in our model. We will make the size, depth, and what the wound was caused by uniform. We will also assume that there are no additional injuries caused by the event and no preexisting conditions that would impede the healing process. Our simulation will depict the cut from the earliest stages, after the initial cleaning, until it is completely healed and/or there is scarring visibility. To create this simulation we will use NetLogo. By working with NetLogo we want to incorporate many visual representations into our presentation. We want to create graphs of time vs bleeding, time vs scarring, and time vs wound size (these graphs would be scatterplots with time as the x-axis and bleeding and/or inflammation as the y-axis)), and a table of additional information/ details/ descriptions. The purpose of this experiment is to model a specific wound and compare the infected cut's healing process with a healthy cut's healing process. We are expecting to have a model that demonstrates the differences between the healing processes on NetLogo. The infected wound should take more time to heal and should show extra symptoms such as redness and puss. We are expecting the infected wound to take longer than thirty days to heal. The healthy wound should show cells being rebuilt and scarring and should take about two weeks, but definitely less than thirty days.

Works Cited

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