Automated Process of Quantifying Scientific Images Using Fiji

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Introduction
The process of quantitative analysis of immunohistochemical sections in biomedical research is an arduous process that often takes a long time. We sought to automate the analysis of histological sections using FIJI. FIJI is an open source image processing program for multidimensional image data with a focus on scientific imaging. FIJI was used to help automate calculations and collecting data for the images of rodent’s pancreases.

Key Findings/Results
For the results, I was able to automate the freehand and calculation process of the images using FIJI and was able to individualize each picture to find the right calculations of their needs. However, for my key findings, the only process that was not automated was the size of the particles to be measure since each image was different, as well as, some islets stains were not picked up by the program. Additionally, the program does not account for large amounts of white space present in the images.

In conclusion, the process was automated using macros and there was no need to freehand/draw the selected areas to measure, which saves scientists time in research and development.

Methods
For “Methods”, first the original image was duplicated to avoid harming the original image. Next, the duplicated image was adjusted red on the RBG to find the stained particles on the Color Threshold. Then, the program analyzed the pixels/particles of the “new” image, which then allows the program the measure the pixels/particles for 1 pixel/nanometer. After, the program collected the results and summary of the “new” image, it displayed the listed measurements and the summary of the image.

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References
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