Images of plant cells expressing different fluorescent are analyzed to determine where in the cell, the different fluorescent proteins are located over time after a specific signal is perceived by the cell. For example, a receptor to hormone A binds to its receptor located on the outer membrane and then this receptor rapidly internalizes. This can be quantitated in the following manner: The outer membrane is delineated in the image as well as the internal compartment. Using existing software, the amount of fluorescence at the membrane is compared to the inner compartments. Dozens of images need to be analyzed to obtain a statistically-confident conclusion. Delineation (annotation) of the membrane and compartment is done by hand and is time consuming. In order to reduce the time of annotation, we created via CNN machine learning a method to automatically annotate the boundaries of the cells to create a membrane fluorescence pool and an internal pool for a ratio. As the ration goes up, more of the receptor has entered the cell. The AI tool is done but what we need is the software for the user interface which is simple in concept. This interface should enable the microscopist to see the original image along with the image our tool annotates and has collected the pixel information on. The microscopist will then select a region of interest with a drawing tool. The information in that region is provided (already by the annotation tool.

It takes 30 minutes for each images to be annotated by hand. Our new tool does it in less than a second. However, we need a easy and universally obvious interface to go from the annotated image to collection of the pixel information. We need a user interface.

Lots and lots of microscopists in the world would use this software.
Web browser (desktop)

no constraints other than we can only meet with the software developers remotely.

No, I do not have concerns.

We have worked with a team of your students once before, so we now know how things go and how this time we can be much more realistic and efficient. We need to have this interface working by Thanksgiving.

Client Expectations

CS - How critical is software?  not critical but it will save a ton of research time on our part.

CS - Available to pitch?  Yes

CS - Available to convey requirements?  Yes

CS - Available to answer questions?  Yes

CS - Reasonable expectations?  Yes

Consulting - Attend team meetings?  Yes

CS - Able to pay for infrastructure?  Yes

Client Group

Founder 2  Justin Watkins

Founder2 First name  Justin

Founder2 last name  Watkins

Founder2 email  justinmw@email.unc.edu
Pitch Survey Information

CS - Pitch Availability
Other Availability
CS - Recording of presentation
Project Name
Description

Account Information

Academic Program, Event, or Department Account

<table>
<thead>
<tr>
<th>Account Name</th>
<th>UNC Department of Biology</th>
</tr>
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<td>University of North Carolina at Chapel Hill</td>
</tr>
<tr>
<td>Academic Program</td>
<td>Department</td>
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<tr>
<td>Account Active Status</td>
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Website  
Phone  
Fax  
Email  
Account Record Type  
Account Owner

Academic Program, Event or Department
Kathleen Lowry

Application Details

Close Date  7/28/2020

Additional Information

Description
Comments

Address Information
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</table>
| Department of Biology  
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Coker Hall, CB #3280  
120 South Road  
Chapel Hill, North Carolina  
27599-3280  
United States | United States |

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