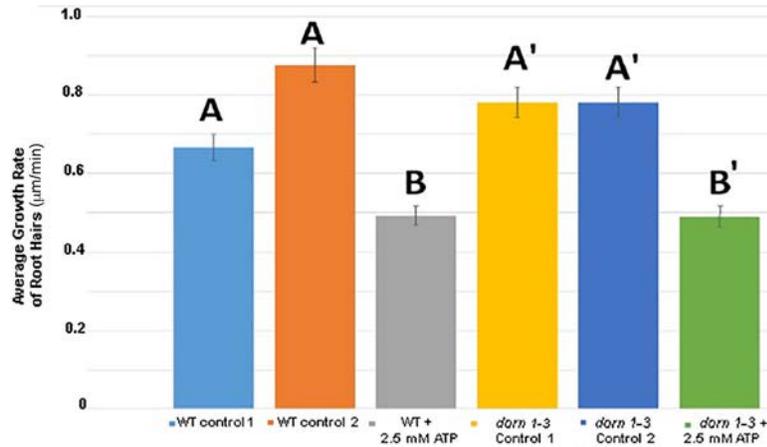


Provide succinct answers to the following questions in the space provided. If you need additional space, you can continue your answer on the back of the page. The potential value of each questions is noted in the margins.

30 pts.

1.(a) If the class obtained reproducible results such as shown in the Figure below, (i) what hypothesis would this result render unlikely? (ii) what specific hypothesis would it support? and (iii) what would be the significance of this result relative to what is known currently?



10 pts. (b). After you and your partner gain enough experience to get consistent root hair growth rates, would it still be important to have more than one control measurement for your experiments on the signaling steps that control root hair growth? Justify your answer.

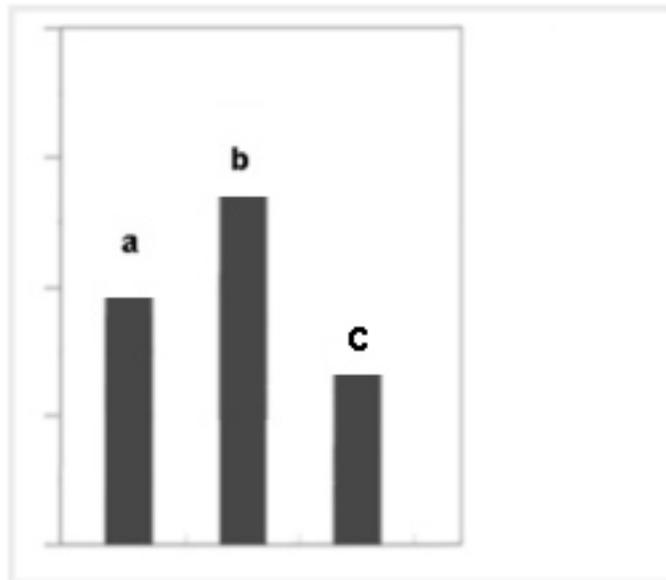
10 pts.

(c) In 1998, Pitts et al. published a paper that demonstrated Auxin promoted root hair elongation in Arabidopsis. Why is this result related to the apyrase expression experiments done this semester?

20 pts.

2. Among the results obtained in the auxin-related experiments done this semester, the bar graph below is an incomplete skeleton of a **novel** result (i.e., not previously published) obtained. Provide the following information to complete the graph:

- a) label the Y (vertical) axis, and provide appropriate numbers for the Y-axis scale;
- b) identify what the measurement is for each bar.
- c) provide one additional piece of information that would help clarify how the results should be interpreted; and
- d) state appropriate conclusions for the results presented in your completed graph.



- 30 pts
3. Choose from among the results generated this semester three different results that (if verified) you think could be linked together to form the basis of a publication. To justify your choice:
- a) write a brief paragraph (< 100 words) giving the background for the publication, stating what is the novel question the data sets you chose are addressing and what prior discoveries set the stage for the question your data will address.
 - b) explain how each result you have selected helps answer an important unresolved question in the field and how it is related to the other two results you selected.
 - c) describe what additional data, not obtained this semester, would further strengthen the hypothesis you think the other data support.