

Arabidopsis Paper Rubric:

i. **Abstract: briefest summary of all (5pts)**

Readers skim through abstracts to find out if a paper is pertinent to their research interests. You need to give the reader enough detail so that they can judge if it is worth pursuing and reading the rest of your paper. Therefore it needs to be concise summary of your report.

- ☐ 150-200 words
- ☐ What, how and why you did the work (1-2 sentences from each section of the paper)
- ☐ Results, p-value

ii. **Introduction: why do this research (building my explanation for discussion) (25 pts)**

- ☐ Background information: why do this research- placed in the context of the research that lead up to it.
 - Phenome of Arabidopsis: genotype X environment → phenotype
 - Drought: a method to induce drought with out killing the plant, but in a biologically meaningful manner. (drought is complex) see papers in Google Drive and Drought Concept map info.
 - Arabidopsis: model organism
 - Citations and references: don't care what kind of format. Stick to one.
- ☐ Hypothesis: state without null and alternate : for entire class data
- ☐ How did our experiment address the hypothesis-
- ☐ Past tense!!!!
- ☐ May use first person.
- *Clearly defines the topic (subject area): you have 2 options*
- *Presents a clear and concise argument as to why the experiment and paper is relevant*
 - *The larger ideas behind the experiment*
 - *How your experiment addresses those questions/ideas*
 - *You will need to talk about unPAK (briefly!)*
- *Supports that argument with relevant references to scientific literature*
- *Provides a brief rationale for how the experimental approach allows you to answer the questions posed (not a rehashing of Materials and Methods, but rather explanation of the experimental approach to answering the questions posed)*

iii. **Materials & Methods (7 pts)**

Goal : replication of your experiment by a peer in the field.

Tricky: balancing the level of detail: like for a peer in the field

- ☐ Materials: Arabidopsis seed: accession, soil type, germination dome, inside, type of light
- ☐ Methods: stratification, planted, rotation, measuring rosette diameter, fruit counting, % hydration, watering method, statistical analysis

- This should not be bullet points.

iv. Results: facts and not the analysis. Concise, (story that you are telling, letting the data tell story) (25 pts)

- Visual Information
 - Graphs, tables (are only if there is no other way to present the info), pictures
 - Labeled axis,
 - Title: overview of what you are showing
 - Legend
 - Captions, titles.
 - Caption: concise! Stand alone: sp, accession, define % hydration, p-value, special equipment,
 - ~~○ Table with p-values and statistics~~
 - p-values are embedded in the captions and the verbal section
 - all data in results must be discussed in your discussion.
- Verbal information
 - Sentences that refer to your visuals
 - (p-values) (figure #)
 - Trends, patterns, guiding the reader through your data.
- *Opens with general statement of overall findings*
- *Tells the story of your data using tables, figures and text*
- *Keeps relevant information grouped in logical and easy to follow manner*
- *The text should not repeat what is in the visual but rather point out trends, patterns and specific details that are important for understanding the results*
- *Refers to the appropriate visuals in the paragraphs (Table 1, Figure 2, etc.).*
- *Summarizes statistical tests often in parentheses (name of test, p-value)*
- *Presentation of visuals is clear, well designed and accurate with*
 - *clear and well written caption and title*
 - *Independence- enough information for biologist to understand experimental results without reading materials and methods. (did you include the species, soil type, length of experiment, etc)*

v. Discussion = results + into (25 pts)

- What topic/background did you emphasize in your introduction – stick to it!
- May not mention data in the discussion if it isn't in your results!!!!
- (p value) (figure# in results)
- Explaining what your data means and
- Back that up with references and citations.
- When you say "Because" then you should have someone other than yourself as your reason.
- Hypothesis and how the results support or disprove

- How this data and research contributes to the body of research
 - Organization : clear and easy flow and rationale for the reader.
 - Sources error: do not emphasize, → suggestions for the next iteration of the project
 - Next steps/iterations/ new ideas
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- *Demonstrates how the experiment and the results contribute to our knowledge of this area of research.*
 - *Backs up statement with reference to appropriate findings including references to results, data and statistics (Figure 1) or ($p < .05$) etc*
 - *Includes explanation for the results (why did the results come out as they did?)*
 - *Interprets the data and explains what they say about the impact of salt on reproduction , for example*
 - *Uses the data presented in the results section (i.e. Don't put things in the Results that you aren't going to talk about in the Discussion and vice versa).*
 - *Explains how the results relate to current and future scientific research, by integrating into your discussion references to scientific literature.*
 - *May include a discussion of confounding factors or improvements to the experimental design if needed.*
 - *Concludes with a discussion of how these results may contribute to the greater understanding of the topic presented in the introduction (why are these results significant?).*

References (3 points)

- All background information was properly cited within the text and in the works cited section.
- At least 3 peer-reviewed journal articles were cited within the paper.

Grammar, spelling, organization, and overall effectiveness of writing (10 points)

- Few errors in spelling, grammar and punctuation
- Follows scientific format including
 - organization and correct placement of information in each sections
 - proper tense, and appropriate presentation of scientific names.