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2020

A rubric for grading laboratory research paper writing assignments in plant biology

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Recommended Citation

Rhoads, David, "A rubric for grading laboratory research paper writing assignments in plant biology" (2020). *Q2S Enhancing Pedagogy*. 128.

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Student Name:

Biol431-F2020 Lab Report Grade Sheet Rubric with Guidelines

Abbreviations used in grading: **Gr** = grammar issue; **NAS** = not a complete sentence; **Sp** = spelling issue; **W** = wording issue; **Unc** = writing is unclear; **Inc** = section/concept is incomplete; **DSSWN** = don't start a sentence with a number; **Logic** = issue with logic used to arrive at conclusion; **Logic flow** = issue with the logical flow- usually means illogical organization

Abstract (0.5-0.75 pg.)

Score = /10 pts.

Components:

- 1) Brief intro to plant stress problem & HSPs & previous data
- 2) Hypothesis
- 3) Brief summary of how hypothesis was tested
- 4) Brief summary of results:
- 5) Brief summary of what results mean:
 - overall quality of writing, including:
 - logic flow:
 - clarity of writing:

Introduction (1.5-2 pgs.)

Score = /15 pts.

Components (Note: each of these should be no more than 4 sentences):

- 1) Intro to plant stress problem
- 2) Intro to HSPs
- 3) BRIEF Intro to Arabidopsis (*Arabidopsis thaliana*)- only 1-2 sentences (optional)
- 4) BRIEF Intro to gene expression- only 1—2 sentences (optional)
- 5) BRIEF Introduction to reporter genes / luciferase- only 1-2 sentences
- 6) Previous data- BRIEF summary (about 2 sentences)
- 7) Hypothesis
- 8) How hypothesis was tested
- 9) BRIEF Summary of MAIN results- just cloning success and heat response of reporter gene (optional)
 - accuracy & completeness of presented background information:
 - accuracy & completeness of description of problem investigated / purpose of experiment(s):
 - overall quality of writing, including:
 - logic flow:
 - clarity of writing:

Materials & Methods (3-4 pgs.)

Score = /10 pts.

Components:

- 1) 1st seed planting
- 2) Plant growth
- 3) PCR
- 4) RE digest
- 5) AGE1
- 6) Purification from gel
- 7) AGE2
- 8) Ligation
- 9) Bacterial cell growth to make competent cells
- 10) Making competent cells
- 11) *Agrobacterium tumefactions* C58 transformation
- 12) Bacterial cell growth after transformation
- 13) Plasmid DNA isolation
- 14) RE digestion
- 15) AGE3
- 16) Plant transformation
- 17) Seed collection
- 18) 2nd seed planting
- 19) Heat stress & plant analysis
- 20) Imaging
 - accuracy of description of details in protocol:
 - overall quality of writing, including:
 - logic flow:
 - clarity of writing:

Results (3-4 pgs.)

Score = /20 pts.

Components:

- 1) Results of AGE1- PCR & digestion
- 2) Results of AGE2- purification of PCR product
- 3) Results of *Agrobacterium tumefaciens* C58 transformation- colonies obtained?? how worked overall?
- 4) Results of AGE3- success of obtaining correct construct??
- 5) Results of plant growth from seeds for planting 1:
- 6) Results seed production after transformation
- 7) Results of plant growth & development from seeds after putative transformation:
- 8) Results of plant imaging

Fig legends:

- 1) Completeness- all data discussed:
 - All lanes labeled and referred to (if appropriate):
- 2) Accuracy:
- 3) Clarity:
 - accuracy of reporting of obtained data:
 - accuracy of stated results derived from data:
 - completeness and accuracy of figures / tables / graphs:
 - quality of writing, including:
 - logic flow:
 - clarity of writing:

Discussion (2-3 pgs.)

Score = /30 pts.

Components:

- 1) Discuss results of AGE1- PCR & digestion
- 2) Discuss results of AGE2- purification of PCR product
- 3) Discuss results of *Agrobacterium* transformation- colonies obtained
- 4) Discuss results of AGE3- success of obtaining correct construct
- 5) Discuss results of plant growth & development before & after transformation including seed production:
- 6) Discuss results of plant imaging
 - clear statements of conclusion(s) generated from results:
 - connection of evidence (results and what they mean) to support conclusions:
 - discussion of implications of the results for your future experimentation in this lab project:
 - description of problems / anomalies encountered and reasons and ways to correct / adjust experiment:
 - overall quality of writing, including:
 - logic flow:
 - clarity of writing:

References/ bibliography (~0.5-0.75 pgs.)

Comments:

Score = /5 pts.

Format, style, grammar / spelling/ wording:

Comments:

Score = /10 pts.

Sub-total = /100 pts. Total

General Comments/deductions:

Final Comments:

Final Grade total: /100 pts. --> divide by 2 --> /50