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Cow Diversity Report (80 points)

General (4 pts)

_____ 4 Author demonstrated overall understanding of study

Title Page (2 pts)

_____ 1.5 Title is descriptive and concise

_____ 0.5 Author's affiliation is correct

Introduction (12 pts)

Paragraph 1

_____ 2 Explain a "big picture" into which the project fits

Paragraph 2

_____ 4 Cite relevant background information from both primary research articles. Using these studies, try to draw connections between what these studies did and what you did – how your study is similar or different to these studies.

Paragraph 3

_____ 2 Clearly state the objectives of the specific study we are doing in lab

_____ 2 In a few sentences, describe the approach taken to achieve the objectives

Paragraph 4

_____ 2 In a few sentences, summarize your main findings (regarding DNA sequence variation)

Materials and Methods (12 pts)

_____ 1 Materials are not listed separately (like the ingredients list in a cookbook)

_____ 2 Written in paragraph form (not listed or bulleted like steps in a recipe)

_____ 2 Written in past tense

_____ 5 Contains all relevant information to enable reader to repeat the experiment; this includes cow sampling, PCR primer sequences, the PCR cycling protocol, and analytical methods.

_____ 2 Avoids excessive details on the methods, but instead references manufacturer's instructions when appropriate. The M&M section must not exceed 1.5 pages of writing.

Results (19 pts)

_____ 2.5 Figure 1 (genomic DNA gel photo) is present, labeled, and well-formatted

_____ 2.5 Figure 2 (PCR gel photos) is present, labeled, and well-formatted

_____ 0.5 Figure captions are below the figures

_____ 0.5 Figures are numbered in the order in which they are discussed in the text

_____ 3 Figure captions adequately describe the data being presented in the figures

_____ 5 All calculations of divergence and diversity are correct

_____ 1 Synonymous and nonsynonymous variation at *ND3* is described correctly

_____ 1 Statements that imply statistical analysis are only made when statistical analyses have been conducted (*e.g.*, references to "significance," "correlation," etc.); **note:** you did not perform any statistical analyses in this project, so don't use these words!

_____ 2 Written in past tense

_____ 1 No explanation is given for the results (although basic conclusions may be stated)

Discussion (13 pts)

Paragraph 1:

_____ 1 The specific aims of the study are restated

_____ 1 Results are briefly restated

_____ 2 The conclusions/interpretations are stated and justified given the data/results

Paragraph 2:

- _____ 2.5 The broader significance of the results is explained (do not quote the lab handout!)
- _____ 2.5 Appropriate reference is made to both primary research articles

Paragraph 3:

- _____ 2 Limitations of the study are discussed
- _____ 2 A suggestion is made to improve the study; this cannot be a suggestion to increase sample size

Literature Cited (4 pts)

- _____ 2 Both references are listed alphabetically by first author's last name
- _____ 2 Reference format is correct and complete, following the conventions in the journal *Genetics*

Note: it is expected that you pay attention to detail when it comes to citing references. This means that you do this properly in the text of the report, and you follow the citation format to the letter. There is no excuse for doing this incorrectly. This will not be graded leniently. See the associated sample document for guidance in citing references correctly.

Convention (2 pts)

- _____ 1 Provide the scientific names of all organisms in text of article when first mentioned. Common names may be used when convenient after stating the scientific names.
- _____ 1 Units of measure must conform to the International System of Units (SI), *i.e.*, metric

Writing (12 pts)

- _____ 2 Information from references is paraphrased. Quotation marks are not used.
- _____ 2 Writing is clear and efficient
- _____ 2 Writing is formal and appropriate for scientific papers
- _____ 6 Paper is proofread: free of spelling, grammatical, and typographical errors

Note: the report must be double-spaced with 1" margins, and you must use a Times Roman 12 pt. font. Failure to do this will lead to a 5-point grade penalty.

You are expected to properly cite references in the body of the report. Failure to do this will lead to a 5-point grade penalty. Refer to the associated sample document (the beginning and end of a paper published in *Genetics*), which shows exactly how in-text citations and bibliographic entries should be formatted. Three in-text references are highlighted: one with a single author, one with two authors, and one with more than two authors. The corresponding bibliographic entries (in the Literature Cited section) are also highlighted; see Literature Cited above.



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