SLE254 Genetics and Genomics: Poster instructions

This assessment item is worth 32% of the total marks for the Unit.

Due Date: 8pm Friday 20th September 2024

The poster MUST be prepared and submitted as an ***individual assessment***.

The poster must be submitted to the assignment dropbox on the SLE254 CloudDeakin site. No emailed or hardcopy assignments will be accepted under any circumstances. Marks will be deducted for late work at a rate of 5% per day. NO marks will be given to work handed in more than 7 days after the due date.

Some useful references 

- Freeland, J (2005). *Molecular Ecology*. Wiley. Chichester.
- Horvath, M. Martinez-Cruz, B. Negro, J. Kalmar, L and Goday, J. (2005). An overlooked DNA source for non-invasive genetic analysis in birds. *Journal of Avian Biology*. **36**, 84-88.
- Taberlet, P. Waits, L. and Luikart, G. (1999). Noninvasive genetic sampling: look before you leap. *Trends in Ecology and Evolution*. **14**, 323 – 327.
- Fridolfsson, A and Ellegren, H. (1999). A simple and universal method for molecular sexing of non-ratite birds. *Journal of Avian Biology*. **30**, 116 – 121.

*these references are only a starting point, please perform a literature search for further information

POSTER FORMAT

The components and findings from Practicals 2-4: Determining the sex of the domestic chicken will form the basis of this assessment item, which is to be written up as a single scientific poster presentation.

The poster should have an appropriate and informative title, and should include the following sections: Introduction & Aims, Methods (**DO NOT** copy the full protocol from your practical manual), Results, Discussion, Conclusion and References. Word count of the main body text should be ~800 – 1000 words (not including references, figure captions and table titles).

Please use PowerPoint to make your poster and make a new presentation with a single slide. From slide “layout" (under the home tab) choose a completely blank slide and adjust the slide size to poster dimensions (70 cm × 100 cm). You can make your poster in portrait or landscape orientation. You can then arrange text boxes and images on your slide as you so desire. A poster should be predominantly visual so you want to keep your writing to a minimum and use point form over full sentences. All elements on your poster should be visible from approximately 2 m away so don't use any fonts smaller than 16 point and make sure your images are large enough and clear (however if you use any extra references, these can be included in small print in a small box at the bottom of the page).

Note: there are rules for plagiarism, see Appendix 2 for further information.

What your poster should include (with mark allocations):

Title (3%)

Your title should be informative and convey an accurate description of what your report is about in context with the outcomes. Be descriptive, yet concise. Good titles are typically less than 15 words.

***REMEMBER:* Make sure to include your name** *under the title!*

Introduction (20%)

The introduction is an account of the current scientific research area, setting the scene for the scientific problem to be addressed.

- Some important concepts should be introduced, such as:
    - what is meant by heterogametic sex
    - how markers can be used to distinguish between sex in monomorphic species and their young
    - the importance of sample type and what is currently known about using different tissue types (varying quality of extracted DNA, storage and collection considerations).
    - Are there any key examples of other similar work?
- Relevant literature should be cited, giving acknowledgment of where information has been sourced. Thus, a minimum of 3 peer-reviewed papers plus any other creditable sources of material to support any claims and statements should be cited.
- State the specific aim/s of the research being presented on the poster. This is followed by a very brief account of how these aims were investigated, that is an overview of experimental design (is usually the last paragraph of the introduction).
- The introduction should comprise concise paragraphs and avoid being too wordy.

Methods (10%)

The methods is a very succinct statement of the procedures used to generate the data.

- This section should detail the key steps in samples collection, processing, DNA extraction and PCR analysis and visualisation. Refer to relevant references to avoid re-writing whole slabs of text. For example, "The method employed to extract DNA from samples followed that of Hogan et al. (2020), which briefly included ……."
  Then, include the following reference for the prac manual in your reference section:
  Hogan F, Loke S, Sherman C, Kumar L, Cater M, Healey J, Telonis-Scott M, Wong Y, Oxley A and Ujvari B (2020) SLE254 Genetics practical manual 2020. Deakin University.
- The methods should comprise concise paragraphs like that of a scientific paper, and avoid being too wordy.
- Write in the past tense
- Do NOT write the methods as a set of steps (dot point format)
- Do NOT provide a list of materials.
- Avoid the use of irrelevant steps in the procedures, e.g. "I put my gloves on before…" or "I then disposed of the tube".

Results section (28%)

The results section has 2 purposes: i) to visually present the data/results, and ii) to state the key findings (not discuss them yet).

- You *may* choose to separate it into 2 sections dealing with DNA extraction and PCR separately.
- You need to have the appropriate tables and figures for each section plus a few sentences describing the key results from each, referring back to ALL tables and figures in the text section.
- Gel images and figures should include detailed figure captions. Remember that Figure captions ALWAYS go underneath the Figure.
- Tables should present summary data only (like "means" and "standard deviation"). Do NOT present raw data in tables on posters or in papers. The table should look professionally produced, comprising a detailed title. Remember that Table titles ALWAYS go above the Table.
- Label figures as "Figure 1", "Figure 2" etc.…
- Label Tables as "Table 1", "Table 2" etc.…

Section 1

- A copy of the gel from your prac class showing DNA extracted from all three tissue types. This should be annotated, that is, to include labels indicating the size marker (ladder) and sample type in each lane.
- A table showing the estimated "mean" and "standard deviation" concentration of the DNA and/or PCR products derived from the three tissue types, using results from the prac class (provided). Do not just give raw data in this table.
- Text describing your results. Make comparisons between the different tissue types, which tissue resulted in the greatest yield of DNA, and did the quality of DNA vary among tissue types?

Section 2

- A copy of your gel clearly labelled showing the PCR product (for the three tissue types), positive controls (male and female), negative control and size marker.
- Determine the sex for each of the samples shown on the gel. Perhaps the determination of the sex of each sample could be presented in a table or on the gel.
- Text describing your results. What is the approximate base pair size of the W and Z genes, how many samples were male/female? Were there any differences in amplification between tissue types? Did all bands amplify? Did any of the negative controls amplify?
- Do the results obtained from the PCR correlate with the actual sex of the individual? Refer to your table and figures when describing your results.

Discussion (23%)

The discussion is an account where the key findings (first reported in the result above) are placed in context with the broader scientific literature.

- Reiterate the main findings for further discussion. Were the aims achieved? Hypotheses accepted?
- For example, discuss whether there were observed differences in the concentration of DNA extracted from the three tissues types. Was the observed result consistent with expectations? Use other published studies to substantial your statements. Discuss the pros and cons of using different tissue types for genetic studies of wild animals (hint: destructive, non-destructive, invasive and non-invasive sampling).
- Discuss why DNA extracted from the blood spot on a feather would provide DNA of higher quality than that extracted from the tip?
- Discuss the implications of not storing samples intended for genetic analysis correctly? Was DNA degradation evident in any of the tissue types used in this experiment? Discuss the implications of finding a lack of bands in the sample wells on the gel/s. See the tutorial on DNA.
- Discuss how the universal primers used in this experiment are able to provide information about the sex of an individual. Discuss the advantages of employing universal sexing molecular markers. Discuss any further implications of using this approach.
- Cite scientific literature in the discussion. Include at least 5 or more appropriate peer-reviewed papers are used as context.

- The discussion should comprise concise paragraphs like that of a scientific paper, and avoid being too wordy.
- Do NOT write in dot point format.

Conclusion (5%)

A conclusion is a brief statement that summarises the aims and key findings of the work, providing some context to the broader science (i.e. validity of use of genotyping in determining sex of *Gallus gallus*?), and also makes some suggestions for future directions/work in the field. No new findings or results should be added in this section.

References (5%)

Correct and consistent formatting of in-text citations and references in the reference list using a Harvard style.

- Reference section can be smaller font size.
- Comprise a list of at least 5 or more relevant peer-reviewed papers
- Reference the practical manual if cited in the methods
- Reference any other sources of information (websites) if cited in the text
- Appendix 1 has some further instructions on referencing style (see attached).

Visual presentation (5%)

Professional presentation is key, so make sure to create a poster that is easy to follow, clear and to the point. The whole report is to be narrated in the student's own words. Some specific things to consider are:

- Correct use of scientific terminology.
- Use of a visually appealing colour scheme (e.g. green and pink might not match that well) and appropriate fonts and sizes to achieve a clean layout.
- Optimally placed text and figures/tables, which is not overcrowded.
- Figure/table sizes, which should be large enough and easy to understand and comprise appropriate captions/titles.
- Text that is easy to follow, and has clear structure and good use of headings.
- Correct word count excluding references, figure and table captions/titles (~800 – 1000 words).

The following links can provide advice on effective poster design:

- http://guides.nyu.edu/posters
- http://www.personal.psu.edu/drs18/postershow/
- https://www.behance.net/gallery/2284120/SCIENTIFIC-POSTER

Appendix 1: Referencing

As a student, you will often prepare essays, reports, literature reviews, and other documents, where you draw information from journal articles, books, reports, speaking talking to other people (for example government agencies, lecturers, students), media sources such as a television program, and the internet. Drawing from such sources is important, but it is critical that you properly attribute the information or ideas to their **original** source.

Referencing is important for a number of reasons. It enables a reader to refer to the original source if they wish to obtain more information; and importantly, it clarifies the source of the information and ideas presented. If ideas and information are not referenced properly, you are **plagiarizing** them. This is a serious offence!

When is referencing required?

You **must** reference any material (ideas or information) that you have obtained from other sources (published, internet, verbal) and used in your report. You do not have to reference information that is general knowledge, such as 'Melbourne is the capital of Victoria'.

Referencing Styles

There are a number of standard referencing techniques, which may also be varied by journal or book editors. I will outline a standard technique which is used in many environmental journals. For those wanting further details about referencing, see Australian Government Publishing Service's book Style Manual for Authors, Editors and Printers (1994 or later edition).

Referencing in the body of the report

When you have included some information from another source, you cite that source by giving the **author or authors' surname** and the **year of publication**. The citation can follow the statement at the end of the sentence, or within the sentence. Two examples of correct citation are:

Pollution affects the efficiency of transfer of nutrients and energy in aquatic ecosystems (Jones 1992).

Jones (1992) pointed out that pollution affects the efficiency of transfer of nutrients and energy in aquatic ecosystems.

In both cases, the author's surname and year of publication are included. I will outline shortly how the full reference is to be included in the reference list at the end of the document. If the sentence is long and the citation refers to only a portion of it, the citation should be placed at the end of the relevant clause. **Importantly, including a reference at the end of a paragraph where you draw from another source is *not* sufficient.**

Note that (Jones 1992) can also be cited as (Jones, 1992). For the purposes of this unit, either format is fine.

Direct Quotes

If you are using another person's **exact** words, you must include your citation in quotation marks. For example: "Pollution affects the efficiency of transfer of nutrients and energy in aquatic ecosystems" (Jones 1992, pp. 14)

In the above example, the page number also needs to be given. If you want to include page numbers, include a comma between the year and 'p' or 'pp'.

Avoid quoting large slabs of material. It is much better to rephrase the information in your own words and cite the author as (author, date), rather than including large amounts in quotation marks.
If the source is a government department or other group, rather than an individual person, your reference should be the (name of organisation, date). For example, (EPA 2001) for a report prepared by the EPA.

The author for material from a website also needs to be included. An electronic copy of a journal article should include the individual author's name. Otherwise, you should include the name of the organisation (or business, etc.) and the date.

Multiple Authors
Papers with two authors should be cited as (Wallis and Wescott 1998). Three or more authors should be cited as (Wallis et al. 1988). The names of all authors will be included in the reference list at the end of the paper.

Duplicate references
If you refer to two or more papers with the same author name and year, distinguish them with a letter a or b eg. McGee 2000a, McGee 2000b, in both the citation in the body of the report and in the reference list at the end.

Personal Communications
Information obtained by speaking to people rather than from written documents should be cited as 'personal communications', e.g. Ibis were observed in their thousands at Reedy Swamp during the 1991/92 breeding season (Robinson pers. comm.).

Personal communications are not included in the reference list, but include the name, position and department/affiliation of the source in a separate personal communications list, e.g. Robinson, D. (1998) Senior Wildlife Planner, Department of Natural Resources and Environment, Benalla.

The Reference List
The list of references should include all of the material cited in the text and no material not cited. References should be listed in alphabetical order of authors (many word processors will sort for you automatically). Again, styles will vary amongst editors, but the following is used widely, and should be used for referencing in this unit.

Journal articles
[author]. ([year of publication]). [Title], in [*name of journal*], [volume number] ([journal number]):x-xx. [page numbers of the article].
For example:

- Seebohm, K. (1997). "Guiding principles for the practice of social assessment in the Australian water industry", in *Impact Assessment*, 15(3):233-251.
- Daubenmire, J. and Kakela, P. (1997). "Great Lakes shipping and clean air: interactions", in *Impact Assessment*, 15(3):273-294.

Books
[author]. ([year of publication]). [*title*], [edition number, if not the first], [town of publication]: [name of publisher].

For example:

- Rowell, A. (1996). Green Backlash: Global Subversion of the Environment Movement, London: Routledge.
- Campbell, A. (1994). *Landcare: Communities Shaping the Land and the Future*, St. Leonards: Allen & Unwin.

Book Chapters
[author of the chapter]. ([year of publication]). [title of chapter], in [*title of book*], [edition number, if not the first], [names and initials of editors], [page numbers of the chapter]. [town of publication]: [name of publisher].
For example:

- Clarke, L. (1991). "The Political Ecology of Local Protest Groups", in *Communities at Risk: Collective Responses to Technological Hazards*, Couch, S.R. and Kroll-Smith, J.S. (eds), p. 83-112. New York: Peter Lang.

Newspaper articles, pamphlets, government reports, etc.
These may not have a specific author or date and no actual publisher. Include all relevant information, as shown below:

- State Government of Victoria. (1994). *Creating Prosperity: Victoria's Capital City Policy*. Melbourne: Government of Victoria.
- The Age. (1997). Residents fume over toxic tip. *The Age* 14/8/97, p.4
- Department of Infrastructure. (1996). *Understanding Planning: Your Guide to Planning in Victoria*, 2nd edition. Melbourne: Department of Infrastructure.

Secondary Sources
You will occasionally need to cite material that is itself cited in the article you are reading. For example, you might want to cite something written by Wallis in 1980. You haven't seen his original publication, but it was cited in a book by Adams in 1994. You need to reference both the document you read (Adams 1994) and the original source of the information (Wallis 1980).

One way to do this is to state the original source, but say that you obtained the reference from another publication. In the text, the reference would be: (Wallis 1980, cited in Adams 1994).

The reference list would also show both sources: Wallis, R. (1980).Ecology & Environment. Melbourne: Deakin University Press. Cited in Adams, R (1994). Conservation Ecology. Deakin University Press.

If possible, it is much better to cite the original source – the material may be misquoted or misrepresented by the intermediate author. Only use secondary sources where the original document is genuinely unobtainable.

The Internet
In the body of the report, include the author (individual, group or organisation) and the date (date of publication or when the information was updated), as outlined above. For the list of references at the end of your document, material which you obtain from the internet follows a similar format to the above, except you must also include the internet address, and the date that you obtained the information. For example: ABC Radio National. (1996) "Gridlock". *Radio National Transcripts: Background Briefing* 4/3/96.
http://www.abc.net.au/rn/talks/bbing/bb960204.html [11/10/97]

The information was obtained on the 11/10/97. It is important to include both the internet address and the date of access.

Note on styles: You might want to use a slightly different style than the above. For example, you might wish to use bold instead of italics, for the title of a book. These slight style differences are fine – just ensure that you include all of the details required in the text and reference list citation. Also ensure that the referencing style is consistent.

Appendix 2 Rules on plagiarism

Plagiarism and collusion constitute extremely serious academic misconduct. They are forms of cheating, and severe penalties are associated with them, including cancellation of marks for a specific assignment, for a specific unit or even exclusion from the course. The University's definitions of plagiarism and collusion are as follows:

- Plagiarism occurs when a student passes off as the student's own work, or copies without acknowledgment of its authorship, the work of any other person.
- Collusion occurs when a student obtains the agreement of another person for a fraudulent purpose with the intent of obtaining an advantage in submitting an assignment or other work. You should note that the University views collusion very seriously and may impose serious penalties.

The University's policy on plagiarism and collusion sets out your responsibilities as a student in regard to plagiarism and collusion. Students are responsible for ensuring that:

- they are familiar with the expected conventions of authorship and the appropriate use and acknowledgement of all forms of intellectual material relevant to their discipline;
- work submitted for assessment is their own;
- they take all reasonable steps to ensure their work cannot be accessed by others who might seek to submit it, in whole or in part, as their own.

Whenever you refer to another person's research or ideas (either by directly quoting or by paraphrasing them), you must acknowledge your source. If you are ever in doubt about how to properly cite a reference, consult your lecturer or the academic skills web site http://www.deakin.edu.au/current-students/study-support/study-skills/.

The University policy of plagiarism and collusion is available from The Guide http://theguide.deakin.edu.au/. Appropriate information is contained under the heading 'plagiarism and collusion in the assessment procedure'.

Unauthorised collaboration

Unauthorised collaboration is a form of collusion. It involves working with others with the intention of deceiving your markers about who actually completed the work. If you have collaborated with others in preparing an individual assessment item, you must disclose this to your lecturer. Assignments will sometimes be set as group work, but even in these cases you will generally still have to write up and submit your own report. If you have any doubt as to what constitutes authorised or unauthorized collaboration, consult with your lecturer. The Assessment Panel or Faculty Academic Progress and Discipline Committee will impose a penalty on any student who is found to have committed an act of academic misconduct such as plagiarism, collusion, examination cheating or unauthorized collaboration. These penalties can include:

- Allocate a zero mark or other appropriate mark for the unit or the assessment task
- Suspend from the course for up to 3 trimesters
- Exclude from the course for 2 trimesters or more
- Impose a fine of up to $500.00

Additional/substitute actions:

- Require an apology
- Reprimand and caution the student
- Allow resubmission of an assessment task
- Recommend counselling (on a voluntary basis)

Things you should never do

There are some activities that are never acceptable in the preparation of assignments at the tertiary level. Students who engage in any of the following activities create some doubt in the mind of the reader that the student's work is original. Many of these activities leave the student open to charges of plagiarism.

Students should never:

- Submit an assignment without providing a list of references used.
- Copy one or more sentences from a reference source (book, journal, web page, etc.) without formatting the material as a quotation.
- Use data in the form of numbers, tables, graphs, diagrams or other images without citing the source of the material.
- Use program source code, even if it is freely available in the public domain, without citing the source of the code.
- Take material from reference material and paraphrase it (write it in your own words) without citing the source of the material.
- Use an idea made by another person without citing the source of the idea.