

INSTRUCTIONS FOR REVIEW PAPERS IN GENETICS

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ABSTRACT: The abstract should provide a summary of the major findings and conclusions of the paper. The order of the topics in the abstract should follow the order of topics in the body of your paper, it should consist of no more than 250 words, and it should be written as a single paragraph. Do not cite literature in the abstract. Write the abstract after you have finished with the main body of your paper. The abstract should state specific facts or conclusion; it should not say that something will be discussed

INTRODUCTION: The second section of the paper is the introduction. This section (what would be your second paragraph) should start with word "INTRODUCTION" written in all capital letters and followed by a period. The introduction should contain a general overview of what will be gained from a review of this topic. This includes such things as the importance of this topic in terms of its contribution to science or perhaps its importance to human health. The introduction will likely consist of several paragraphs depending upon the extent of this section. Following the introduction, other sections may be used as necessary to increase the readability of your paper. All subsequent sections should have headings that start as the introduction, with the header in all caps and the first word in the paragraph starting a section. Remember, this is not a scientific paper, so there will not be sections such as "MATERIALS AND METHODS" or "RESULTS". However, in a paper on Alzheimer's Disease you might have sections called "INHERITANCE PATTERN" or "GENE DEFECT", for example.

You must pick a topic in genetics, gather information on that topic from resources that

are available in our library, other libraries, or on the Internet, and write a review of your findings. If you pick a disease, for instance, your paper must deal with the genetic aspects of that disease and not some other aspect of the disease such as diagnosis or treatment. If you pick an organism, your paper must deal with the genetic aspects of that organism. Other topics might be the genetic aspects of speciation or genetic models of selection. One of the goals of this paper is to have you synthesize material from the primary literature and to that end most of your paper should use the primary literature as your sources. Non-primary sources are okay but should not be relied upon for the bulk of your paper.

Your paper must include at least eight full pages of text, exclusive of the literature cited. This is 8.0 full pages having met the formatting rules below. The purpose of this is to have you produce a minimal amount of writing appropriate to an upper-level college course. The minimal number of citations for your paper is 10. Of these 10, 7 must be from the primary literature of science. The primary literature of science is composed of those papers that are published in peer-reviewed journals and report original research. Absolutely no web site can be counted as a primary source and absolutely no source can be used that does not have a person as an author. No pamphlets or web sites published by societies, universities, or government agencies can be used unless there is a person who has taken responsibility for the content. If there is a fact or conclusion that comes from such a source, then search the literature until you find a source with a person to whom you can attribute said fact or conclusion. When you turn in your paper, include a photocopy of the first page of those articles that are from the primary literature (should be at least 7 papers). Do not use the abstracts page from an online search engines or the cover page from sources such as JSTOR.

Your paper must be typed, double-spaced throughout, and on only one side of the paper. You must use 12-point, Times Roman font. Each page, except for the first page, must be

numbered in the upper right margin. All pages must have a margin for the text that is less than 2.5-cm (1-in) on top, bottom, and sides. You should also turn off the widows/orphans protection feature of your word processor. This will stop the program from creating unusually large margins at the bottoms of your paper. Do not add a line space between paragraphs, between sections of your paper, or between entries in your literature cited. Following these guidelines, your paper must be at least 8.0 full pages of text, exclusive of the literature cited. Do not right-justify the margin as this will cause uneven spacing between words and letters in a line of text. Do not hyphenate in the right margin for any reason; this can lead to the creation of very ambiguous words. Staple your paper in the upper left corner. Make a copy for yourself because I will not return your papers before the end of classes, but I will hold your papers for 4 weeks into the next regular semester so that you can pick them up.

The first page must be set up like the first page of this guide, with the title in all upper case letters at the top of the first page and centered from left to right. Skip two lines, then type your name centered left to right. Skip one line then type the course title and number centered left to right, then immediately below it type the semester centered left to right. Then skip two lines and start the abstract. When word-processing, be sure to set line spacing to 1 before you type this section, then turn the line spacing back to 2 when you start the abstract.

Your paper will be graded on content, grammar, clarity of writing, and adherence to formatting guidelines. If you need help with writing, I suggest that you contact the Writing Center (341-5380, 345 SE Morse Hall). In addition, Robert Day has written an excellent book entitled "Scientific English: A Guide for Scientists and other Professionals" (Oryx Press, 1992). I strongly suggest that you buy this book, read it, and keep it as part of your permanent library. You should be able to get a copy through the bookstore. It will serve you well throughout college and into your professional career.

LITERATURE CITED. All statements in your paper must be documented with citations. The method of citing previous literature follows the Harvard System. In this system, papers in the text are referred to by the last name of the author(s) and the year of publication. Single-authored papers would be Smith (1981); double-authored papers would be Smith and Jones (1984); and more than two authors would be Smith et al. (1989). If the author is not an element in the sentence, for example the subject, then the reference is enclosed in parentheses and put inside the period at the end of the sentence (Moore, 1992).

Citations are listed at the back of the paper in the "Literature Cited" section. Papers are arranged alphabetically by last name of the authors and then by date of publication within author. Thus, Smith (1983) comes before Smith and Brown (1982), and Smith (1981) comes before Smith (1987). If the same author had two publications in the same year and both are cited then one is designated 1981a and the other 1981b. See Sousa (1979) on page 418 in volume 64 of "The Quarterly Reviews of Biology". Do not alphabetize the authors of an individual paper; the order of the authors generally indicates the level of contribution by the different authors.

The style of the citations, as they are listed in the literature cited, must follow exactly the style given below. Punctuation must follow exactly this style, pay particular attention to the use of spaces, commas, periods, colons, underlining, and that the titles of journals must be spelled out. Note that the first and middle names of authors are not spelled out; only use the initials. Also, even if the original article used the person's titles or degrees in the byline of the paper, these are dropped in the literature cited section of your paper. This formatting style follows the guidelines of the "Council of Biology Editors Style Manual". Below are listed some examples of citations. You might also examine the literature cited section of several of the primary sources that you are using for your review paper for guidance, but you must follow this formatting.

article in a journal

Schoener, T. W. 1982. The controversy over interspecific competition. *American Scientist*, 70: 586-595.

St. Clair, L. L., B. L. Webb, J. R. Johansen, and G. T. Nebeker. 1984. Cryptogamic soil crusts: enhancement of seedling establishment in disturbed and undisturbed areas. *Reclamation and Revegetation Research*, 3: 129-136.

chapter in a book

White, P. S., and S. T. A. Pickett. 1985. Natural disturbance and patch dynamics: an introduction. In S. T. A. Pickett and P. S. White (eds.), *The Ecology of Natural Disturbance and Patch Dynamics*, p. 3-13. Academic Press, Orlando.

entire book

Tilman, D. 1982. *Resource competition and community structure*. Princeton University Press, Princeton.

internet site (if the material does not list an author, do not use it)

Carriveau, K. L., Jr. 1995. Review of the book *Environmental hazards: Marine pollution*. *Electronic Green Journal* [Online], 2: 3 paragraphs. Available: gopher://gopher.uidaho.edu/11/UI_gopher/library/egj03/carriv01.html

PRIMARY LITERATURE: For an article to be included in the primary literature of science it must meet two criteria: 1) it must be peer-reviewed and 2) it must present original findings in science. The primary literature is typically found in journals. A typical article from the primary literature will have an abstract, introduction, materials & methods, results, discussion, and literature cited. If a paper does not have these sections, usually clearly labeled as such, then it is probably not part of the primary literature. There is much good information published in what is called the "gray literature" of science, however, these publications do not meet one or both of the criteria for inclusion in the primary literature.

Examples of primary literature would be articles in *Journal of Heredity*, *Genetics*, *Journal of Wildlife Management*, *Auk*, *Journal of Bacteriology*, and the reports section of *Science*. All of these articles have been subjected to a peer-review process to insure that they present original research and that they are scientifically sound. These articles will all contain a materials & methods section that explains how the research was done, though in *Science* the materials & methods is included at the end of the paper in a section called “references and notes”.

Examples of non-primary literature would include articles in *Newsweek*, *Time*, *Scientific American*, *Science News*, the news section of *Science*, review articles in books such as the *Annual Reviews of Genetics*, review articles in journals, any newspaper article, any government document, any book including textbooks, any internet site, and any thesis or dissertation. All of these non-primary sources may contain very useful information and can be cited in your paper. In addition, a review article can provide you with a very good overview of a topic and can provide you an entry point into the primary literature.

QUOTES AND PLAGIARISM: The purpose of this paper is to help you develop the skills necessary to summarize and synthesize material from the primary literature. When you quote directly from a source you are not synthesizing the material but merely regurgitating the material. In addition, quotes are usually wasteful of space and thus cost too much to publish in scientific journals. The general rule is to avoid quotes. The only time that you see quotes used in the primary literature is when the author feels that the statements of the original author are open to different interpretations. In this case, the author quotes the previous author and then explains what she thinks the statement means. There is almost never a reason for doing this. **THUS THE RULE –AVOID THE USE OF QUOTATIONS.** However, you can have one quotation in your paper; **EVERY QUOTATION AFTER THAT IS A 10-POINT DEDUCTION.** However, if you must use more than 10 words intact from a source, you must put it in quotations.

Plagiarism is passing off information from another source as your own. To you this means that almost every fact or conclusion in your paper will come from a source other than you. Thus, you must provide a citation for the source of your information. While you are reading the primary literature, pay attention to how often a citation appears in the text. In the introduction or discussion of a paper from the primary literature, almost every sentence will have a citation. In general, if you have truly written a review paper in which every paragraph represents a synthesis of information from multiple sources, then every sentence should have a citation. In your paper, if you have a paragraph in which all of the information is from the same source, then be sure to cite that source in the first sentence and in the last sentence of the paragraph, at least.

Plagiarism, of course, is unethical and illegal and will cause your paper to be worth nothing. The way to avoid this pitfall is to take notes as you read an article, then write your paper from your notes, not from the article itself. Be sure to cite the original article. If you write your paper with your source open beside the computer or you are cutting and pasting statements from an online source to be edited later, you are probably on very thin ice. This type of behavior usually results in what is called patch writing, and it is the same as plagiarism. The rules on plagiarism apply equally well to your summaries.

Anytime you get an idea or a fact from another person's work, then that work must be cited in the text and the full citation listed in the Literature Cited section of your paper. Failure to do this is considered unethical behavior and a number of scientists have had their careers ruined by this kind of behavior. The effect on you will be to receive a zero on your paper and to have me notify the chair of the department of your transgression.

You should pay very close attention to the following excerpt from the "Random House Handbook" (Crews, Frederick, 1984, Random House Publ., pp. 405-406).

Consider the following source and three ways that a student might be tempted to

make use of it.

Source: The joker in the European pack was Italy. For a time hopes were entertained of her as a force against Germany, but these disappeared under Mussolini. In 1935 Italy made a belated attempt to participate in the scramble for Africa by invading Ethiopia. It was clearly a breach of the covenant of the League of Nations for one of its members to attack another. France and Great Britain, as great powers, were bound to take the lead against Italy at the League. But they did so feebly and half-heartedly, because they did not want to alienate a possible ally against Germany. The result was the worst possible: the League failed to check aggression, Ethiopia lost her independence, and Italy was alienated after all.¹

¹ J.M. Roberts, *History of the World* (New York: Knopf, 1976), p. 845

Version A: Italy, one might say, was the joker in the European deck. When she invaded Ethiopia, it was clearly a breach of the covenant of the League of Nations; yet the efforts of England and France to take the lead against her were feeble and half-hearted. It appears that those great powers had no wish to alienate a possible ally against Hitler's rearmed Germany.

Comment: Clearly plagiarism. Though the facts cited are public knowledge, the stolen phrases aren't. Note that the interweaving of the writer's own words with the source's do not render the writer innocent of plagiarism.

Version B: Italy was the joker in the European deck. Under Mussolini in 1935, she made a belated attempt to participate in the scramble for Africa by invading Ethiopia. As J.M. Roberts points out, this violated the covenant of the League of Nations.¹ But France and Britain, not wanting to alienate a possible ally against

Germany, put up only feeble and half-hearted opposition to the Ethiopian adventure. The outcome, as Roberts observes, was "the worst possible: the League failed to check aggression, Ethiopia lost her independence, and Italy was alienated after all."²

1 J.M. Roberts, *History of the World* (New York: Knopf, 1976), p. 845.

2 Roberts, p. 845.

Comments: Still plagiarism. The two correct citations of Roberts serve as a kind of alibi for the appropriating of other, unacknowledged phrases. But the alibi has no force: some of Roberts' words are again being presented as the writer's.

Version C: Much has been written about German rearmament and militarism in the period 1933-39. But Germany's dominance in Europe was by no means a foregone conclusion. The fact is that the balance of power might have been tipped against Hitler if one or two things had turned out differently. Take Italy's gravitation towards an alliance with Germany, for example. That alliance seemed so very far from inevitable that Britain and France actually muted their criticism of the Ethiopian invasion in the hope of remaining friends with Italy. They opposed the Italians in the League of Nations, as J.M. Roberts observes, "feebly and half-heartedly because they did not want to alienate a possible ally against Germany."¹ Suppose Italy, France, and Britain had retained a certain common interest. Would Hitler have been able to get away with his remarkable bluffing and bullying in the later thirties?

1 J.M. Roberts, *History of the World* (New York: Knopf, 1976), p. 845.

Comment: No plagiarism. The writer has been influenced by the public facts mentioned by Roberts, but he hasn't tried to pass off Roberts' conclusions as his

own. The one clear borrowing is properly acknowledged.

COMMON ERRORS AND THINGS TO WATCH:

1) All scientific names must be underlined or put into italics, for example *Homo sapiens*.

Do not underline the space between the generic name and the specific epithet.

2) Use metric units of measure and standard abbreviations for the units. For example, use g for grams, kg for kilograms, cm for centimeters, and sec for seconds. Leave a space between the number and the unit and no period after the units unless it is at the end of a sentence, for example 10 g or 20 cm.

3) Time is always on a 24-hour clock, with midnight 0:00 and 1:00 pm is 13:00. Dates are always day month year without punctuation, for example 12 February 1809 (Charles Darwin's birthday).

4) The subject and verb of a sentence must agree in number. Thus "data" always takes a plural verb, for example, the data show that ...

5) Do not use "i.e." in place of "that is".

6) Do not use "e.g." in place of "for example".

7) Do not hyphenate in the right margin.

8) Be sure to look up affect and effect in the dictionary and know when to use one versus the other. Do not use "impact" because you do not understand the difference between "effect" and "affect".

9) Do not use "since" in place of "because". Since implies time, for example since moving to Kansas... To imply causation use "as" or "because", for example "as the car is black, it gets very hot ...".

10) Be sure to look up the difference between "it's" and "its". These are often used incorrectly.

One is a possessive pronoun and the other is a contraction for "it is".

11) Do not use contractions such as "don't" for "do not" or "it's" for "it is".

12) Chemical names and diseases/syndromes are common nouns and are not capitalized unless part of the name contains a person's name and then only the person's name is capitalized (Down syndrome, adenosine triphosphate).

13) Measure the margins of your paper with a ruler before turning it in and be sure that your text goes to the very last line on the eighth page.

14) Rewrite the paper several times, and run the spell checker.