

# Exercise in Reading the Primary Literature

## BIO 374 - Genetics

### Assignment Overview:

For this simple assignment, you must 1) use Medline or another appropriate the search tool for the biological literature to identify a research article on a genetics topic (NOT a review paper) that interests you, 2) use Folke Bernadotte Library and/or MINITEX to obtain a copy of the paper, 3) read the paper carefully, and 4) summarize the paper using directed questions (below) as a guide.

### Learning Objectives:

My hope is reading the primary literature will develop your scientific and information literacy skills and provide you with a vehicle to advance your learning of and cultivate your enthusiasm for genetics. Developing scientific and information literacy is an important part of a quality science education. It is also valuable for your pursuit of technically rich, information intensive careers, in addition to your responsibility to become informed citizens. Significantly, proficiency in working with primary source material is a critical step to gaining independence in learning in the field. My specific objectives for this assignment are that you:

- Develop proficiency in finding primary material in genetics
- Appreciate the procedure for obtaining published data
- Develop proficiency in reading and understanding primary literature
- Communicate effectively a summary of technically challenging information

### Directions:

To begin, you will need to use a search tool (see Medline URL below) to search for a paper that interests you. With these tools, you will get lists of titles, authors and hyperlinks to abstracts based on the search terms you use. I would encourage you to consider what aspects of genetics you find interesting. The assignment is generally interesting and enjoyable **IF** you let your interests dictate your reading. Looking through your text may help you to come up with some ideas about topics and search terms.

Once you have identified an article that you find interesting, you will need to obtain a copy of the article. Some journals, such as *Genetics*, have some of their holdings (not the older and most current issues) available on-line. Other journals are available through the library either as hard copy or via electronic access. Still others are available through the InterLibrary Loan process, and many of these result in the article being sent to you as an attachment. *Although electronic access is convenient, I encourage you to let your interests and not ease of access direct your reading!* Having to use InterLibrary Loan or the library to get the article is NOT a good reason to avoid a paper of interest. Planning ahead should eliminate any issues associated with these slower modes of delivery.

Read your article carefully (more than once). To complete the assignment, write a summary of **no more than two-pages**. In your summary clearly provide an answer, **in the order listed below**, for **all** of the following six questions (however, no bullet points):

- What interest did you have in choosing this article (briefly)?
- What was **the** main research question (or two) the authors were asking?
- What experimental approach did they take to address the question(s)?
- What were their results and what conclusions did they draw from them?
- Were these conclusions adequately supported by the data?
- What could be done next or in addition to further address the question?

The **due dates** will be **Oct. 18, Nov. 5** and **Dec. 13**. Turn in your two-page, type-written summary and a copy of the article you are summarizing.

**Article selection:**

To provide a breadth of exposure to both (model) organisms and levels of genetics, I want you to make your article selections to satisfy two criteria each assignment, one from the organism list and another from the genetic levels list. You may pair them in any combination you wish, but once selected for an assignment, it may not be used again.

Organismal selections

prokaryote

photosynthetic eukaryote

non-photosynthetic eukaryote

Genetic level selection

classic or mutational genetics

molecular & expression genetics

population & evolutionary genetics

**Search tools:**

PubMed is found at <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

CSA Biological Sciences, ScienceDirect Web Editions, & Web of Science are found through: <http://www.gustavus.edu/oncampus/academics/library/remoteaccess.html>

**Evaluation criteria:**

The summary will be evaluated based upon how satisfactorily you answer the six questions for the assignment. These will allow me to assess the objectives of the assignment (specifically the third and fourth objective). The first objective will be demonstrated in your answer to the first question. It is important to turn in a copy of the paper (you'll get it back) to show that you can obtain one (objective two).

By way of giving tips, I have found that students often doing fine on the first two questions, but be sure to use your own words for the second question. It is important to try to make distinctions between your answers to questions three and four; the approaches are the methods used to answer questions, the result and conclusions are what follow from their experiments. You must make this clear in your summary. The last two questions are, by design, the most difficult questions. It will take effort, but you should do your best and expect to get better at these as the semester progresses.

**Journal Suggestions:**

On the next page, the non-exclusive list includes journals that are likely to have appropriate articles. Note however, that the journal article you choose must have genetics at the core of the research reported. This list includes exemplary journals (marked by \*) and was derived from where I would look in the more molecular literature plus suggestions from colleagues working more ecology, population and evolution. You should consider consulting with other professors about what journals would be appropriate sources, given their expertise, if you have interest in those areas. I would be interested in learning about what journals you find to be productive sources of literature in those other topic areas, so I might add them to my list.

Journals that we have or that are on-line in part or in whole (see library journal locator):

American Naturalist

American and Canadian J. of Botany

Cell (recent issues only)

\*\*Conservation biology

EMBO Journal

\*\*Evolution

\*\*\*Genetics

Heredity

Molecular Biology of the Cell

Molecular and Cellular Biology

Nature

\*\*Proceedings of the National Academy of Science (see Genetics section)

Science

Good journals we do not have in the library:

Biological conservation

Biol./Botanical Journal of the Linnean Society

Current Genetics

J. of Heredity

Marine Ecology

\*Molecular and General Genetics

\*\*Molecular ecology

Plant Ecology

\*\*Trends in Ecology and Evolution (see Dr. Kittelson, a good source for ideas)

*Please ask ahead of time if you have any concerns about your choice of a paper.*