

BME42-731/ ECE18-795/CB02-740 Bioimage Informatics Spring 2012

Reading Assignment #2

Assigned on Feb-06-2012

Due on Friday Feb-17-2012 by 5PM at TA's office

A. Overview

This reading assignment serves two purposes

- To review different contrast generation methods in light microscopy.
- To review basic concepts and principles of fluorescence microscopy.

B. Instructions

Part I Write a report (no more than 2 pages) that briefly summarizes the basic concepts and principles of the following contrast generation methods.

- Transmitted light vs reflected light
- Bright-field vs dark-field
- Phase contrast and DIC

Briefly discuss their advantages and limitations. To complete this part of the report, you are required to study related information from the websites listed below. Give proper citations to web pages you use for preparing your report. NOTE: There may be substantial overlap between these websites.

1. <http://micro.magnet.fsu.edu/index.html>
2. <http://www.olympusmicro.com/>
3. <http://www.microscopyu.com/>

TIP: Search by keywords such as DIC. This often leads you to the right information quickly. For this part of the report you will also find it useful to use the references listed for part II.

Part II Write a report (No more than 2 pages) that briefly summarizes the basic concepts and principles of fluorescence microscopy. You are required to read the following references.

1. Lichtman JW & Conchello JA, Fluorescence microscopy, *Nature Methods* 2005, 2:910-919.
2. Stephens DJ & Allan VJ, Light microscopy techniques for live cell imaging, *Science*, 2003, 300:100-102.

3. Giepmans BNG, Adams SR, Ellisman MH, Tsien RY, The fluorescence toolbox for assessing protein location and function, *Science*, 2006, 312:217-224.

Feel free to use any additional references if you see fit.

C. Report format

The report, including references, must not be more than 4 pages in total. Reports longer than 4 pages cannot be accepted.

Page size: letter

Line space: single

Page margins: 1 inch on each side (top, bottom, left, right)

Font size: 12 points font for the main text; 10 points for listed references

D. Some general guidelines on preparing a reading report

1. The single most important guideline regarding preparing a report is to think independently and use your own words. Avoid literal duplication of words from the references since otherwise it could run the risk of unintentional plagiarism

http://www.studentaffairs.cmu.edu/acad_integ/acad_integ_text.html.

If you must cite the original text, clearly mark your citation using quotation marks.

2. Organize your report into sections and use section titles. This substantially improves readability.

3. Avoid long paragraphs. Instead, try to break them up into logically coherent short paragraphs.

4. Pay attention to details. Be sure to cite your references properly. If you are not sure how to make citations, follow the format of a research journal.