

Biol 458 - Plant Biochemistry and Biochemical Ecology

Term paper assignment 2017

This purpose of the assignment is to give you the opportunity to read the primary literature (refereed journal papers reporting novel findings) and review papers on a specific topic related to this class. The assignment is to summarize the most recent and relevant literature on a given topic, and to present the latest state of knowledge in this area, much like published Review Articles do. This includes addressing uncertainties or controversies in the literature.

This assignment will count 25% towards the final grade. An additional 5% will be given for timely completion of the **annotated bibliography (due date Nov 6th)**. This bibliography should have at least eight solid references, and you should write a 1-2 sentences for each summarizing key findings. You may structure the bibliography to reflect the outline of your paper. The main idea is to get you started on the reading and to get feedback before you begin writing.

Deadline for completion: Nov 24 (5 pm). Late papers will be penalized one grade per day late.

Guidelines:

- maximum length; **10 pages double-spaced** (12 point font), **not** including references and figures (references can be single-spaced).
- must be written independently. **You must use your own words (copying entire sentences or more from previously published work is considered plagiarism)**
- must include at least 20 references, at least half primary references (i.e, not review articles), and include at least two journal articles published in the last three years.
- web sites are not considered proper peer-reviewed sources and should not be used; peer-reviewed e-journals are OK (*check with me if in doubt*)

- clear writing and good organization are an essential skill and will be evaluated.
- use subheadings, figures can be used.
- include introduction and conclusion (summary) sections
- use page numbers, 12 point font

- figures taken from articles must be properly credited. Tables should be redrawn.
- make sure figures have legends (write your own, even if you use a published figure).
- references must be formatted as in the style for the Journal "**Plant Physiology**" (**exactly!**)
- 20-25 references is ideal, but it varies with topics.

Suggested Topics:

NB: **one student per topic**, so please let me know of your choice as soon as possible, but no later than **Oct 3**. *I strongly suggest you do a quick literature search and look at the papers to make sure the topic interests you.* Some modifications to the topics are allowed - check with me in advance.

The physiological roles of anthocyanins in fall leaf coloration
Metabolic engineering for healthier foods via manipulation of secondary plant metabolism
Phytochemical signals in the establishment of mycorrhizal symbioses
Challenges and successes in genetic engineering of the blue rose
The biosynthesis and ecology of phlorotannins in kelps (brown algae)
The physiological role of isoprene emission in plants
The diverse functional roles of callose (β -1,3 glucan) in plants
Biochemistry of flower scent in the rose (or other flowers)
Biochemistry and chemical ecology of the hydroxamic acids
Biosynthesis of rubber in non-conventional plant sources
Biochemistry and chemical ecology of polyketides
The biochemistry and biochemical ecology of caffeine in coffee trees
The complex nature and biology of polyphenols in tea leaves
The biochemistry and function of heartwood in trees
Biochemistry and chemical ecology of hops
The biology and biochemistry of Cannabis secondary metabolites
Biosynthesis and biotechnological manipulations of fructans in plants
Biochemistry and chemical ecology of flavor compounds in mint
Biochemistry and biology of nitrogen fixation in non-leguminous trees
The role of plant latex in defense against insects
The biotechnological modification of starch for industrial applications
Phytoestrogens: biochemistry, chemical ecology, human health effects
The biosynthesis and release of flavour volatile compounds in fruit
Biotechnological approaches for control of ripening in fruit
The functional role and chemical ecology of tannins in wild berries
The functions and chemical ecology of secondary metabolites in berry fruit
The importance of variation in plant secondary metabolites for defense
The occurrence and functional importance of root secondary metabolites
The impact of tannins on soil microbial ecology and nutrient cycling
Challenges for producing biofuels from wood or wood products.
Phytochemical adaptations of plants to UV-B irradiation
The importance of secondary plant metabolites for defense against aphids
Secondary metabolites in nectar: biosynthesis and ecological functions
The role of waxes and cutin in defense against insects
Convergent evolution in pyrrolizidine alkaloid biosynthesis
Mechanisms of secretion of secondary metabolites from cells
The biochemistry and function of benzenoids in Petunia