

SA #27	ANGIOSPERMS: Flower to Fruit and Seeds
BIO 2500	Stern, Chapters 8 and 23 (Parts)

OVERVIEW: We finish our taxonomic survey with the **Magnoliophyta**, the "flowering plants" or **angiosperms**. There are two taxonomic classes of angiosperms, the Liliopsida (monocotyledons) and Magnoliopsida (dicotyledons), distinguished by the number of cotyledons, or embryonic leaves within the seed.

READING & EMPHASIS:

On page 127, in the opening of Chapter 8, your text authors use a "NOTE to Reader" to explain how Chapters 8 and 23 are complementary to each other in the treatment of angiosperms. Please read this statement before proceeding with the reading assignment noted below:

1. Read Chapter 8, pages 127-133, which presents the structure of *flowers*, *seeds*, and *fruits*.
2. Read Chapter 23, pages 429-436, which emphasizes meiosis, pollination, and fertilization.

STUDY QUESTIONS below represent what will be the focus of our discussion in lecture. Refer to your laboratory notes and graphics in addition to Chapters 8 and 23 to answer them.

1. Write a definition of **flower**. How do you explain the origin of flowers and flower parts such as sepals, petals, anthers, stamens, and ovary from a creation and evolution perspective?
2. Draw an angiosperm *ovule* in cross-section including details of the egg sac (female gametophyte), and label each structure within and around the egg sac. Then, extend each label to indicate the structures into which these structures develop—*i.e.* each of the following: *embryo*, *endosperm*, *seed coat*, *fruit*. Consult your laboratory study of the *Capsella* embryo.
3. Write a definition of *fruit*. What are two major categories of *fleshy fruits*, and two major categories of *dry fruits*? List one example of each category.
4. Both pine cones and legumes open to release seeds, yet legumes aren't gymnosperms. Explain.
5. *Ginkgo biloba*, *Taxus cuspidata*, and wild black cherry (*Prunus serotina*) all have fleshy, edible tissues in their mature reproductive structures, but *Ginkgo* and *Taxus* are classified as gymnosperms, not angiosperms. Explain.
6. When many people "snap beans" they remove the end with the hard stem and the small papery leaves, and they may also remove the slender tip on the opposite end. On the other hand, "shelling peas" involves breaking open the pods and stripping the peas from within. Describe these activities using appropriate botanical terminology.

Objective: To become familiar with one or more career options which involve plant biology.

Instructions: This is an approximately 1-hour assignment in which you are asked to sign out the book referenced below from the Centennial Library. It is on strict reserve so you can simply complete the assignment in the library, perhaps even at a computer station. There are at least 10 copies of the book so there shouldn't be a problem getting a copy as long as you avoid procrastination and a “crunch” at the announced deadline.

Reference: Blythe Camenson. 2004. *Careers for Plant Lovers and Other Green Thumb Types*. McGraw Hill. Chicago.

Procedure:

1. When you have a slot of time, sign out a copy of the book from the front desk of Centennial Library (strict reserve) and peruse the book. Note the career areas it describes, as follows:

Ch. 2 Floriculture – Grower, Plant Importer, Broker/Wholesaler, Florist, Retail Nursery Worker, Floral Designer,

Ch. 3 Land Planner (plans for best utilizing community land), Landscape Architect, Landscape Designer (not technically certified; less education than L.Architect), Historic Landscape Preservation, Forester/Conservationist, Park Service Ranger

Ch. 4 Botanical Gardens (positions listed), Arboreta, Arborist

Ch. 5 Plant Scientist (extensive career list within), Plant Science Education
> e.g. Plant exploration, plant genetics, plant pathology, molecular biology, etc.

Ch. 6 Healing with Plants --Herbalism, Pharmacognosy, Horticultural Therapy

Ch. 7 Garden Writer and Photographer

Ch. 8 Careers with Edible Plants – Farmer, Organic Grower

Note: Each chapter has listing of professional associations and their websites.

2. Select one (or two if you wish) career areas that are most appealing to you.
3. Skim/read the information for the one or two you select and write a **1-1.5-page double-spaced essay** which includes your name, lab section, and career title(s) at the top, followed by a summary which defines the nature of the career(s)– *i.e.* type of work or service rendered, significance of this career, job/educational requirements, and how your particular interests/aptitudes/spiritual calling (“vocation”) might fit this career. Suggestion: If you can access a computer in the Library, you could at least create a draft of the essay with the book in your “possession.” Exercise care to avoid extracting text without using acknowledgment (quotes). Citation for quotes can be formatted in the report as (Camenson, page #). Then, include the reference (as above) at the end of your essay for future access.
4. Please submit your essay by entering WebCT Blackboard, select “Assignments” and then “Careers in Botany.” Use the “Add Attachments” option to attach your essay; then “Submit.”