

Introduction to Botany

Alexey Shipunov

Minot State University

Lecture 3

- 1 Questions and answers
- 2 Plants: definition
 - Plants₁ and plants₂
- 3 Plants in general
 - Levels of organization
 - Taxonomy

- 1 Questions and answers
- 2 Plants: definition
 - Plants₁ and plants₂
- 3 Plants in general
 - Levels of organization
 - Taxonomy

- 1 Questions and answers
- 2 Plants: definition
 - Plants₁ and plants₂
- 3 Plants in general
 - Levels of organization
 - Taxonomy

Importance of plants

Why are plants important?

- Food
- Oxygen
- ...?

[aesthetics, landscape, materials, drugs,...]

Plants: definition

Plants₁ and plants₂

Plants₁ and plants₂

- Plants₁ are all green photosynthetic organisms
- Plants₂ are “typical plants” (better definition follows)

The nature of two definitions

- Plants₁—ecological definition (based on the role in nature)
- Plants₂—taxonomic definition (based on the evolution)

Plants₁ is about ecology

Plants₁ are *photosynthetic organisms*:



Some plants₁ could taxonomically be bacteria or even animals!

Green slugs



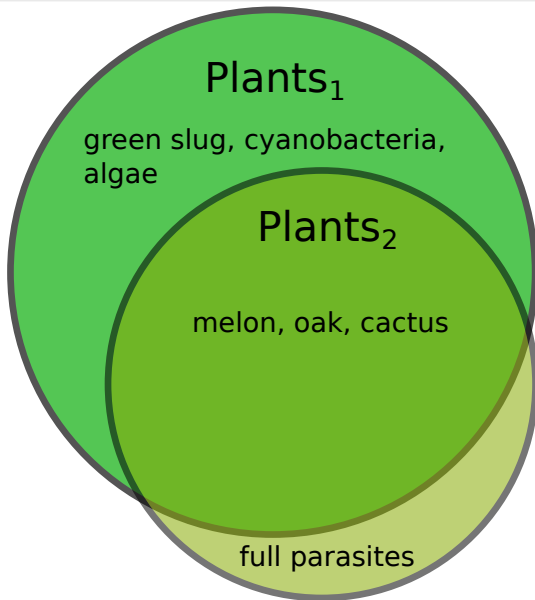
Green slugs obtain chloroplasts from algae, but keep them all their life, feed from them and even use chloroplast genes.

Green *Hydra*



No mouth!

Plants₁ and plants₂ are similar but **not** the same



Hydnora



Root parasite

Pilostyles



Tissue parasite

Dodder



Stem parasite

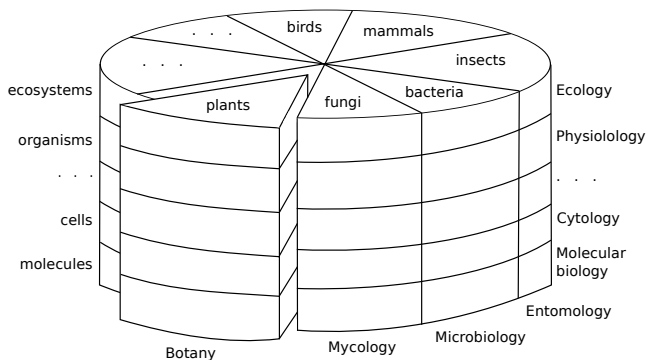
Plants in general

Levels of organization

Levels of organization

- Ecosystems OR Taxa
- Populations
- Organisms
- Organs
- Tissues
- Cells
- Organelles
- Molecules

Place of botany



Layered cake of biology (Odum, 1971): botany is a “slice science”

Plants in general

Taxonomy

Ranks

Most scientists accept seven main ranks:

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

Names

- Names of species are binomials like *Solanum tuberosum* (potato)
- Names of other ranks are uninomials like **Vegetabilia** (plant kingdom)

Plants₁ and plants₂ (updated)

- Plants₁ are all photosynthetic organisms
- Plants₂ are **Vegetabilia**: multi-tissued, terrestrial, primarily photosynthetic eukaryotes

Summary

- “Plants” have **two definitions**
- Botany is a “slice” science

For Further Reading



A. Shipunov.

Introduction to Botany [Electronic resource].

Mode of access:

http://ashipunov.info/shipunov/school/biol_154