

Introduction to Botany. Lecture 3

Alexey Shipunov

Minot State University

September 3, 2014



1 Questions and answers

2 Ways of life

- Energy and food

3 Photosynthesis

- Chemistry of life



Outline

1 Questions and answers

2 Ways of life

- Energy and food

3 Photosynthesis

- Chemistry of life



1 Questions and answers

2 Ways of life

- Energy and food

3 Photosynthesis

- Chemistry of life



Previous final question: the answer

What is the difference between plants₁ and plants₂?



Previous final question: the answer

What is the difference between plants₁ and plants₂?

- Plants₁ are all photosynthetic organisms whereas plants₂ are only part of them
- Plants₂ is a taxonomic (evolutionary, phylogenetic) definition based on having leaves, stems, tissues etc. They are **Vegetabilia** kingdom.
- Some Animalia could be plants₁ but not plants₂

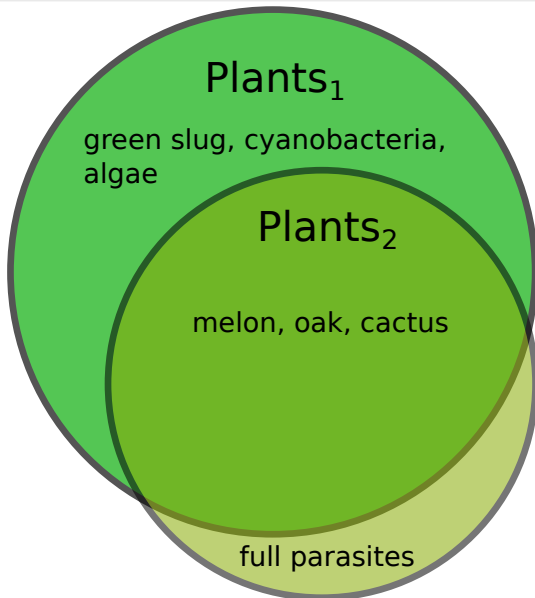


Ways of life

Energy and food



Plants₁ and plants₂: examples



Plants₁, plants₂ and life styles

- Plants₁ are **photoautotrophs**
- Plants₂ are photoautotrophs too but there are exceptions: **fully parasitic plants**. Formally, many parasitic plants are plants₂ but not plants₁
- Carnivorous plants (like sundew or Venus flycatcher) are all photoautotrophs! They “eat” animals to obtain fertilizers: nitrogen and phosphorous.



Pterospora



Mycoparasite



Hydnora



Root parasite



Pilostyles



Internal parasite



Dodder



Stem parasite



Photosynthesis

Chemistry of life

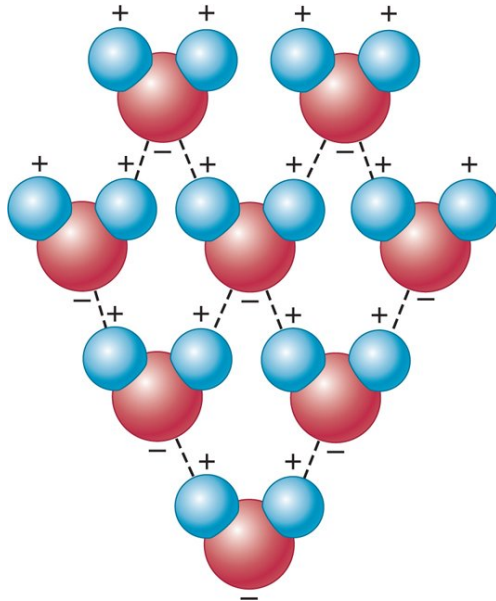


Very basics of chemistry

- Atoms
 - Protons
 - Neutrons
 - Electrons
- Atomic weight
- Isotopes
- Elements
- Periodic table: rows and columns
- Chemical bonds: ionic, covalent, hydrogen
- Valence and group
- Molecules
- Molecular weight



Water with hydrogen bonds



Final question (2 points)



Final question (2 points)

What is molecular weight of sulfuric acid, H_2SO_4 ?



Summary

- Some plants₂ are formally not plants₁: fully parasitic plants
- “Carnivorous” plants are not carnivores
- We will need to know multiple chemical terms (see in the lecture)



For Further Reading



A. Shipunov.

Introduction to Botany [Electronic resource].

2010—onwards.

Mode of access:

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



Th. L. Rost, M. G. Barbour, C. R. Stocking, T. M. Murphy.

Plant Biology. 2nd edition.

Thomson Brooks/Cole, 2006.

Chapter 2.

