

Introduction to Botany. Lecture 3

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Outline

1 Questions and answers

2 Ways of life

- Energy and food

3 Photosynthesis

- Chemistry of life



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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



Ways of life

- How to obtain energy?
 - 1 From sun light: **phototrophy**
 - 2 From chemical reactions with inorganic matter (“rocks”): **lithotrophy**
 - 3 From breaking organic molecules into inorganic (typically, carbon dioxide and water): **organotrophy**
- How to obtain building blocks?
 - 1 From assimilation of carbon dioxide: **autotrophy**
 - 2 From other living beings: **heterotrophy**



Plants₁, plants₂ and life styles

- Plants₁ are **photoautotrophs**
- Plants₂ are photoautotrophs too but there are exceptions: **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



Final question (2 points)



Final question (2 points)

What is molecular weight of sulfuric acid, H_2SO_4 ?



Summary

- Some plants² are not plants¹: parasitic plants
- Carnivorous plants are not carnivores



For Further Reading



A. Shipunov.

Introduction to Botany [Electronic resource].

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Mode of access:

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



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

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Thomson Brooks/Cole, 2006.

Chapter 2.

