"Plant physiology part 1"			
Institute of Plant Genetics Polish Academy of Sciences	Coordinator: dr hab. Lidia Błaszczyk, prof. IPG PAS	Lecturer: dr hab. Danuta Babula-Skowrońska IPG PAS (A) dr hab. Izabela Pawłowicz IPG PAS (B)	

General information:

Number / form (s) / type (s) of	A series of lectures, 14 didactic hours
classes	(supervised by lecturers)
Didactic cycle	winter semester 2024/2025
Language	English
ECTS credits	2

Objective of the course (A):

To understand basic principles of plant cell structure and properties

Topics:

- 1. Structure of plant cells (2 hr) [05/11/2024]
- 2. Anabolic/catabolic reactions (2 hr) [19/11/2024]
- 3. Oxidation/reduction reactions (1 hr) [3/11/2024]
- 4. Hormones (1 hr) [3/12/2024]
- 5. Hormonal interactions (1 hr) [17/12/2024]

Effects of the course (in terms of knowledge, skills):

- 1. Student will repeat and expand his/her knowledge on the structures and properties of plant cells.
- 2. Student will learn about methods used in studying cellular structures.
- 3. Student will learn about metabolism and differences between anabolic and catabolic reactions.
- 4. Student will learn about redox reactions and their roles in the regulation of subcellular processes and plant physiology during development.
- 5. Student expand his/her knowledge on the role of hormones in plant growth and development and in the response to stress factors.
- 6. Student will learn about the selected cross-talk processes of hormone signaling in the regulation of plant growth and development.

Objective of the course (B):

To understand water relations in plants

Topics:

- 1. Water functions in plant cells (1 hr) [17/12/2024]
- 2. Water transport in plants (2 hr) [07/01/2025]

- 3. Factors involved in maintaining water homeostasis (2 hr) [14/01/2025]
- 4. Role of aquaporins in hydraulic and mesophyll conductance regulation (2 hr) [04/02/2025]

Effects of the course (in terms of knowledge, skills):

- 1. Student will learn about water roles in dissolving and transport of nutrients, carbon dioxide assimilation and synthesis of assimilates.
- 2. Student will learn about active and passive water transport (diffusion, osmosis, water potential).
- 3. Student will learn about water absorption, water conductance and transpiration SPAC (soil-plant-atmosphere-continuum).
- 4. Student will learn about different types of aquaporins (water channels), their roles in water and carbon dioxide transport.

Course content:

- Basics of plant cell biology and physiology
- Introduction to metabolism aspects of plant development and stress response

Teaching methods / techniques:

lectures in English, on site lectures [no zoom lectures unless pandemic situation occurs]

Evaluation of learning outcomes:

• written exam