



PLANT PHYSIOLOGY

Instructor: LE Thi Van Anh

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Me....

- LÊ Thị Vân Anh
- Researcher-Lecturer of USTH, PMAB department
- PhD thesis: rice root development, IRD Montpellier, 2010 – 2013
- Master in Biology at Ha Noi National University of Education (HNUE)
- Bachelor in Biology at at Ha Noi National University of Education (HNUE)



Me....

- Teaching: plant physiology, plant biotechnology
- Research field: plant biotechnology
- Lab: Plant cell biotechnology_IBT_VAST
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My current project:

Hairy root induction in *Paramignya trimeria*



Paramignya trimeria
Xáo tam phân

- Vietnamese valuable medicinal plant
- Anticancer activities to 11 cancer cell lines
- Liver protection
- Anti-inflammatory
- Highest bioactive compounds found in the roots
- Slow growth and development
- Over exploitation

My current project:

Hairy root induction in *Paramignya trimera*



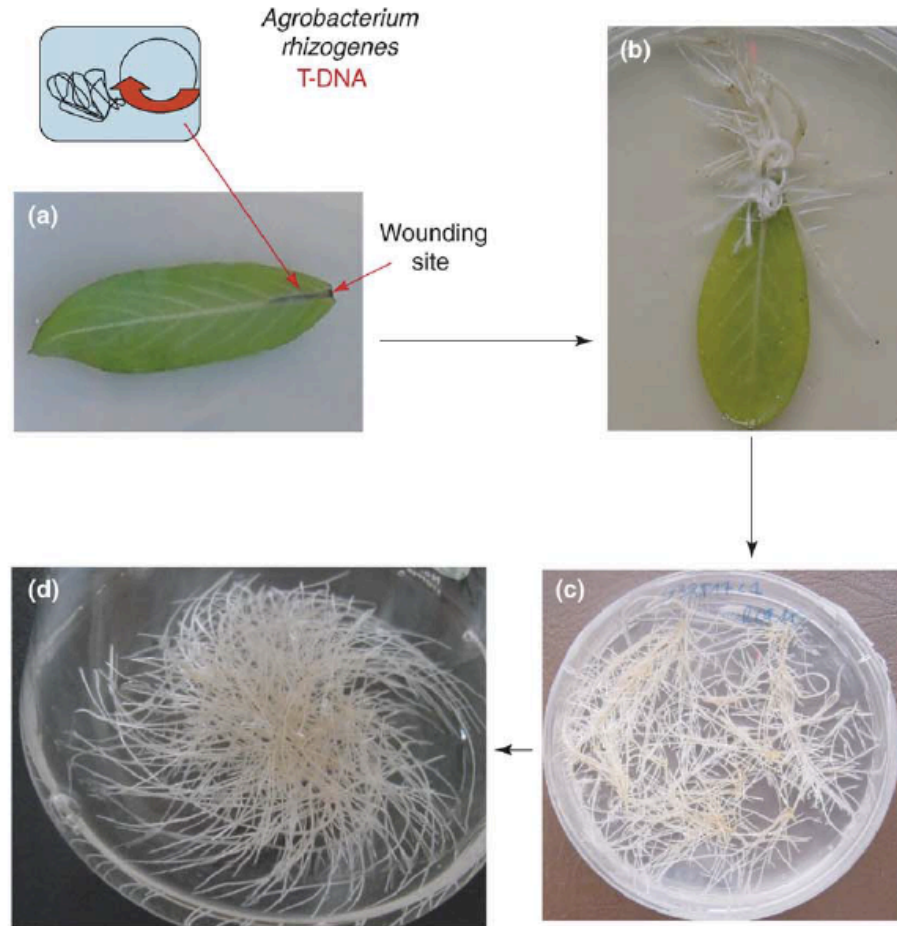
It is necessary to:

- Improve the development of roots system
- Faster growth and development

My current project:

Hairy root induction in *Paramignya trimeria*

Hairy root
development
Stephanie Guillon, 2006

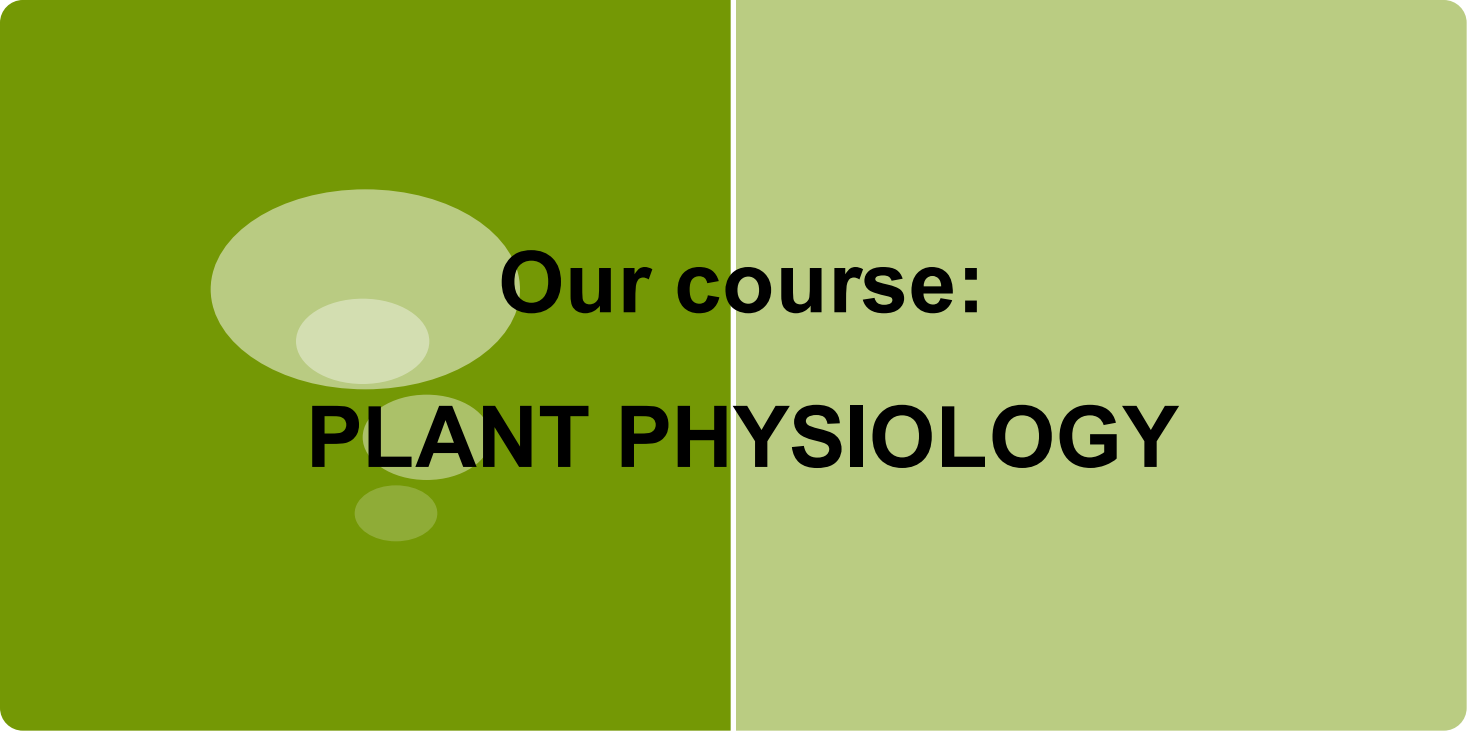


TRENDS in Biotechnology

You are well come to joint in our project

And you?





Our course:
PLANT PHYSIOLOGY

What is **plant physiology**?

- Wikipedia: “Plant physiology is a **sub-discipline of botany** concerned with the **functioning of plant**”



- My definition: “Science of how plants **develop, grow, and respond to their environment** at the cellular and biochemical level”

What does this include?

- Structure and anatomy as it relates to plant function
- Water and nutrient uptake and movement
- Sources of energy for growth and development
- Responses to the environment (light, temperature, water)
- Plant responses to stresses (abiotic and biotic)
- Aspects of plant biotechnology

What types of science are involved?

- Plant biology/botany
- Plant anatomy
- Ecology and Environmental biology
- Cell biology
- Inorganic and Organic Chemistry
- Biochemistry
- Molecular biology

OUTLINE

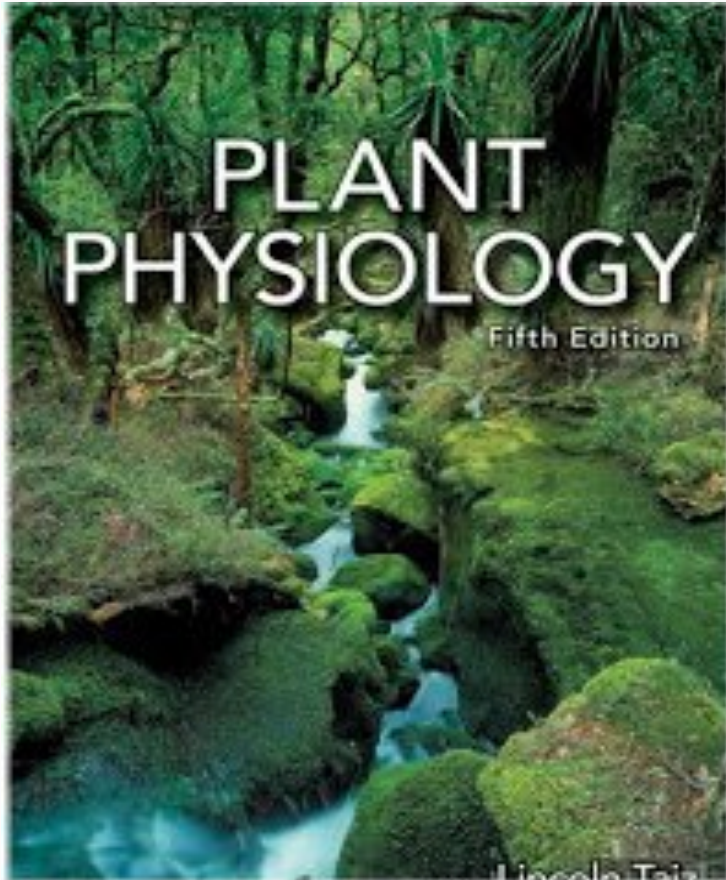
- Plant cell, tissues, organs: basic structure and function
- Transport and translocation of water and solutes
- Photosynthesis and Respiration
- Plant growth and development
- Plant and light response
- Plant hormone and plant tissues culture
- Plant – environment interactions

Learning outcome

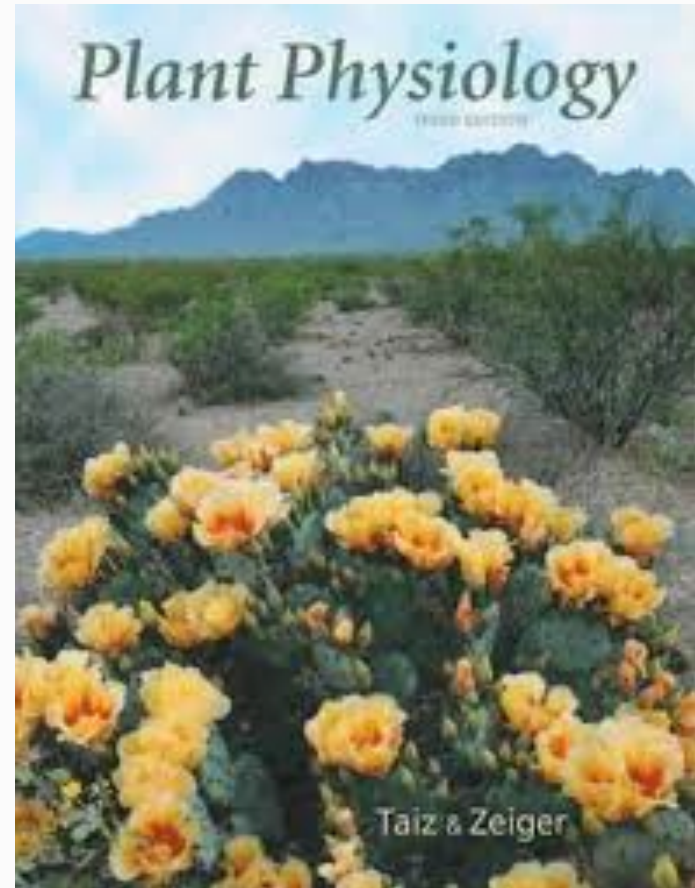
By the end of this course, students are able to:

- Describe, discuss the basic **concepts, keywords or terms** used in plant physiology
- Describe the **basic process** in plant such as nutrient uptake, photosynthesis, respiration, plant-environment interaction, plant growth and development...
- Acquire skills of **self-study** so that they can find detail information about any processes in plant physiology

Learning materials...



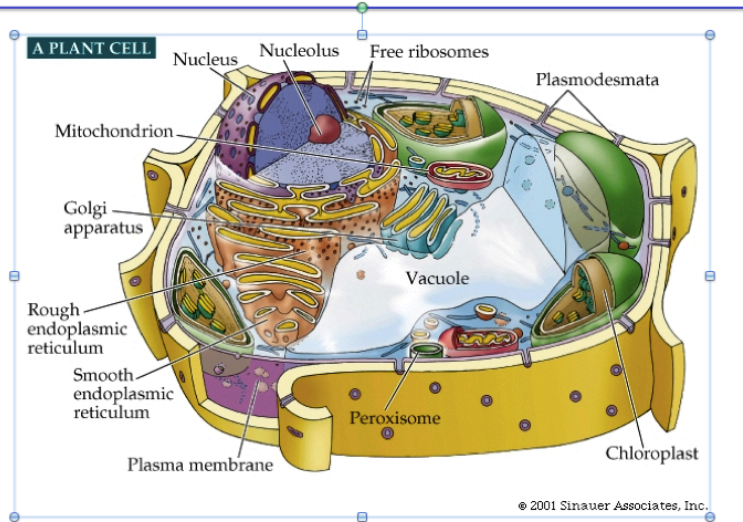
Fifth edition



Third edition

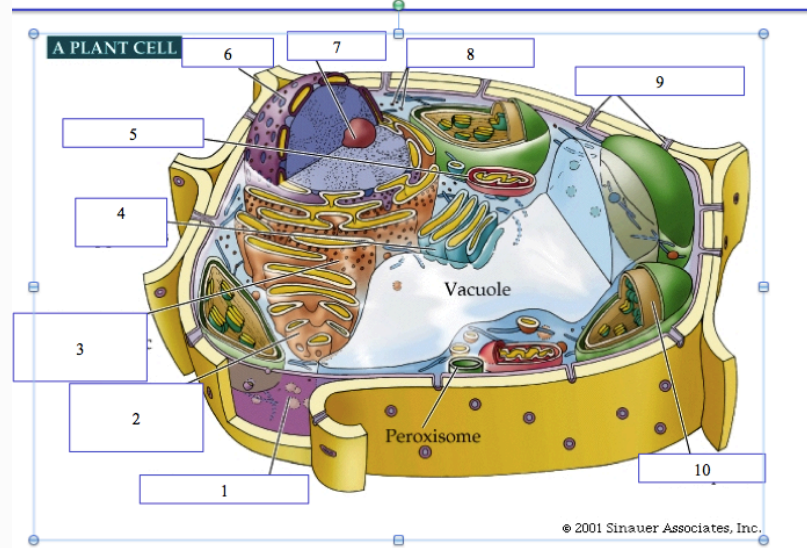
Learning materials...

1. Plant cell



My presentation

1. Plant cell



1. Plant cell

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Your handout

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Learning materials...

Articles

Roles and activities of Aux/IAA proteins in *Arabidopsis*

Jason W. Reed

Auxin-Responsive DR5 Promoter Coupled with Transport Assays Suggest Separate but Linked Routes of Auxin Transport during Woody Stem Development in *Populus*

Rachel Spicer^{1*}, Tracy Tisdale-Orr², Christian Talavera³

The Plant Cell, Vol. 18, 3171–3181, November 2006, www.plantcell.org © 2006 American Society of Plant Biologists

Subcellular Trafficking of the *Arabidopsis* Auxin Influx Carrier AUX1 Uses a Novel Pathway Distinct from PIN1 ^W

Jürgen Kleine-Vehn,^a Pankaj Dhonukshe,^a Ranjan Swarup,^b Malcolm Bennett,^b and Jiří Friml^{a,1}

How to learn...

- + Base on the main content in my presentation
- + Complete the handout in each lesson
- + Communication; contribution in all activities during lesson to learn efficiently
- + Reading book, articles... to achieve good understanding

Assessment...

- + Attendance: 10%
- + Exercise. : 20%
- + Final exam: 70%

Students absent in exercise section are **not allowed** to attend the final exam.

Some rules...

- **No computers, laptops, cellphones** in the class.
- **No eating/sleeping** in the class.
- **Feel free to stop me** when:
 - + You do not understand;
 - + You would like to discuss
 - + You have the questions
 - +
- **Be active**