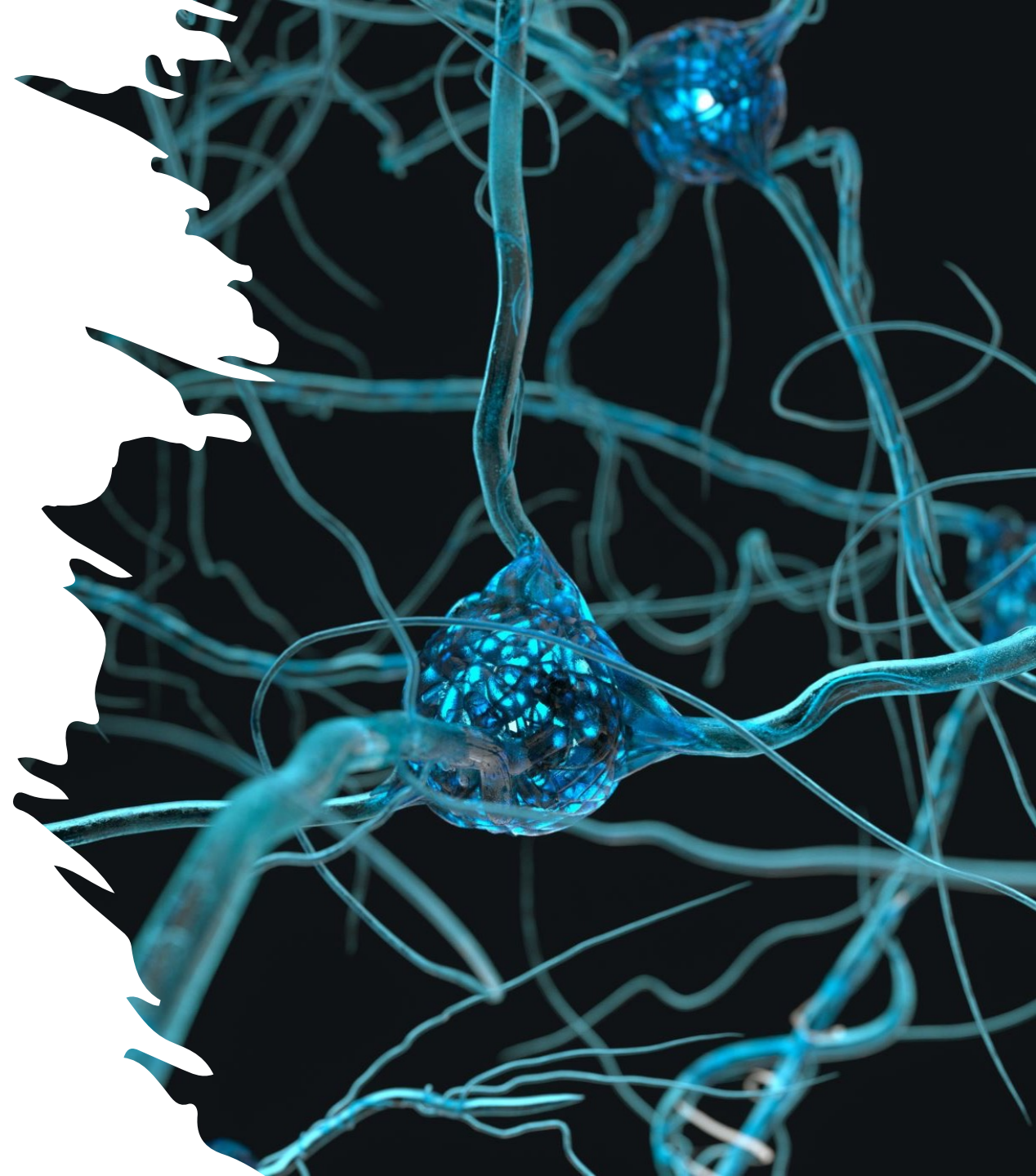




UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

# INTRODUCTION TO NEUROBIOLOGY

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**How does the nervous system control  
behavior?**

**How do we sense the environment?**

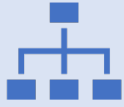
**How much of our brain function and behavior is  
shaped by our genes and by the environment?**

**What goes wrong in brain disorders?**



**NEUROBIOLOGY IS  
THE STUDY OF THE  
NERVOUS SYSTEM**

**Structure**



**Function**



**Genetics**



**Pharmacology**



**Pathology**



**Development**

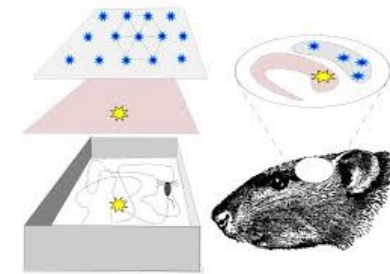


# Breakthrough Discoveries

## The Brain's Positioning System

**Place cells:** neurons that become active when an animal is in a specific location.

**Crid cells:** create a coordinate system for spatial navigation.



## Neural Plasticity

“Neurons that fire together, wire together,” suggesting that synaptic connections can be strengthened or weakened by experience.





# INFORMATION ON THE COURSE

Period and Year

Second semester - 3rd Year

Prerequisites:

Basic knowledge of general biology, genetics, and physiology (from previous courses).

Target skills and knowledge:

The main goal of the course is to provide a broad perspective on the nervous system, from molecules to behavior.

## **KNOWLEDGE**

- techniques used in neurobiology
- the function of sensory and motor systems
- the principles of neural development
- synaptic plasticity involved in learning and memory



# INFORMATION ON THE COURSE

## SKILLS

### Target skills and knowledge:

- Development of communicative skills to present and critically discuss the discipline with an appropriate scientific terminology
- Development of the ability to summarise, integrate and organise information



# INFORMATION ON THE COURSE

## Course unit contents:

### Cross-referencing

Methods used in neurobiology research

The visual system

The chemical senses: olfaction and taste

The auditory system

The somatic sensory system

The motor system

Nervous system wiring

Synaptic plasticity

Memory and learning

Brain disorders



# INFORMATION ON THE COURSE

## Planned learning activities and teaching methods:

The course is organized in lectures (48 hrs) with the aid of PowerPoint presentations (including images, diagrams, and videos).

Interactive quiz (**Wooclap platform**) will be presented to students during the lessons to verify their understanding of the topics being discussed.



## Study material:

All the teaching material used in the lectures (lecture slides, additional readings) will be available to students on the University Moodle platform





# Examination methods

10 multiple-choice questions

- The first part is passed only if students correctly answer to **at least 70%** of the multiple-choice questions. These questions **do not contribute** to the final mark

3 open questions

- 11 points for each question



# INFORMATION ON THE COURSE

The student's evaluation will be based on the following criteria:

## Assessment criteria:

- Knowledge of the topics presented in the lectures
- Accuracy of contents and clarity of explanation
- Ability to use appropriate scientific terminology
- Ability to elaborate concepts and link different topics exposed in the lectures



*"The brain is wider than the sky"*

Emily Dickinson