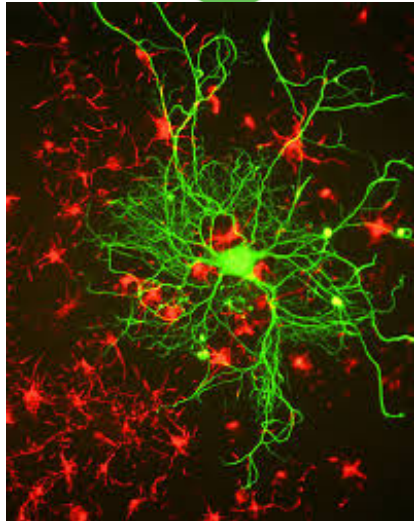
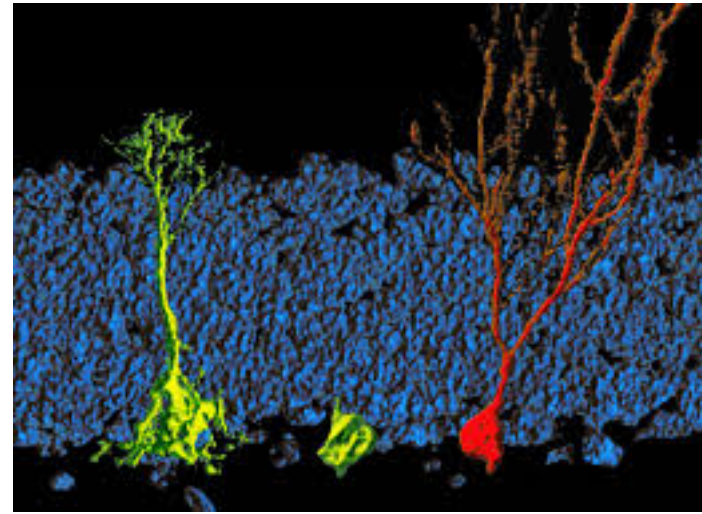




Master in Cellular and Molecular Biology

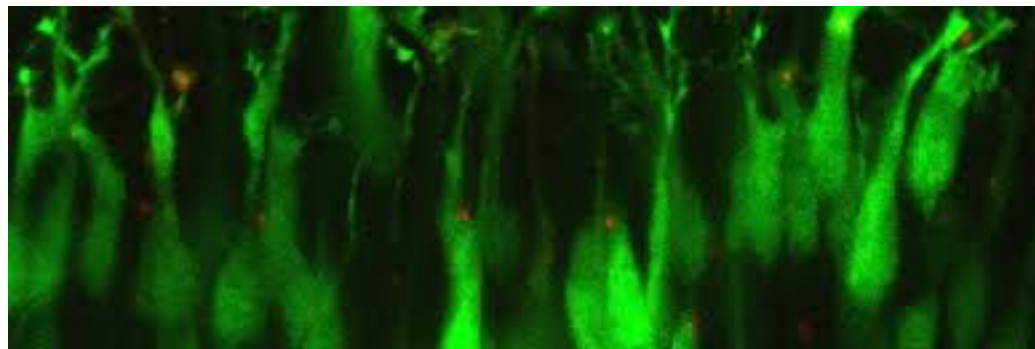
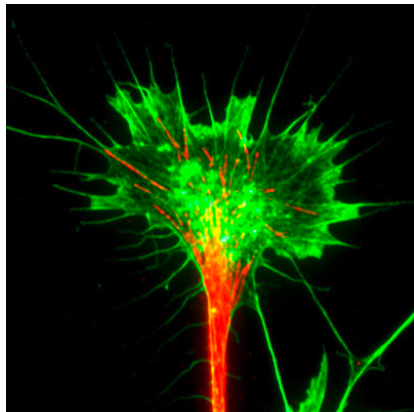
University of Torino

Neurobiological Curriculum



Developmental Neurobiology

a.a. 2016-2017





RESEARCH

TEACHING

Biological Sciences
(1 year: Cell & Tissue biology)

Developmental Neurobiology
(CMB – EMN-master online)



Silvia De Marchis

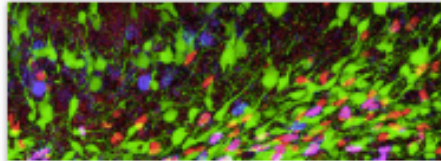
Associate Professor at the Department of Life Sciences and
Systems Biology, University of Turin



Dipartimento di Scienze della Vita e Biologia dei Sistemi

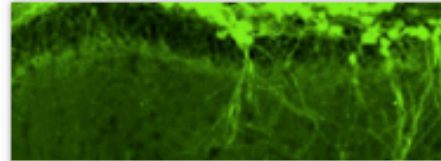


UNIVERSITÀ
DEGLI STUDI
DI TORINO



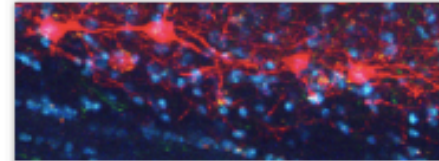
Neurobiology of brain plasticity

We are interested in understanding the mechanisms that regulate development and repair of the central nervous system.



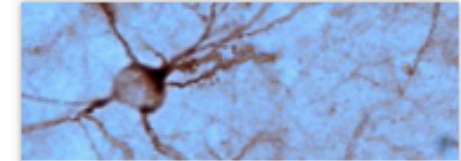
Neurophysiology of neurodegenerative diseases

We study the deficits of electrical signals of nerve cells at the basis of some neurodegenerative and psychiatric disorders.



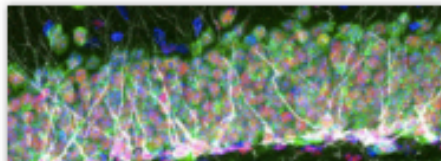
Brain development and disease

We study cellular and molecular mechanisms underlying neural development and neurodegeneration, to understand brain function and develop new therapeutic strategies.



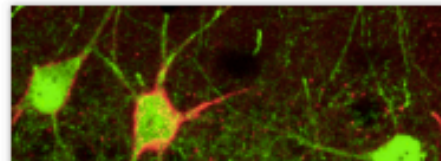
Clinical neurobiology

We study the immune-pathogenesis of multiple sclerosis and the responsivity of patients to pharmacological treatments, in order to develop new diagnostic tools.



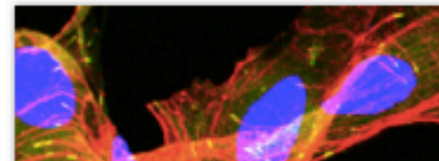
Adult neurogenesis

Our research is focused on persistent neurogenesis in adult mammals. We study both neural stem cell niches and parenchymal neurogenesis in order to foster brain repair.



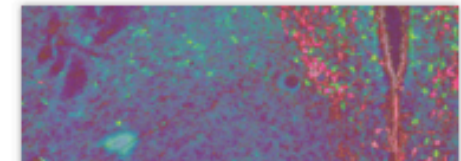
Neuropsychopharmacology

The focus of our research is delineating the neural circuitry underlying anxiety, stress response and mood at molecular and cellular levels.



Nerve regeneration

The focus of our research is the definition of innovative strategies of tissue engineering for improving peripheral nerve repair and regeneration.



Neuroendocrinology

Our goal is the study of the interactions among steroid hormones and the nervous system, their roles in the differentiation and plasticity of neural circuits.



My research activity is focussed on **Adult Neurogenesis**

Neuroblast migration (in vitro models; HGF; BDNF)

The generation and maintenance of specific OB neuron subtypes
(intrinsic vs extrinsic factors)

olfactory enrichment → adult neurogenesis
(dopaminergic interneurons)

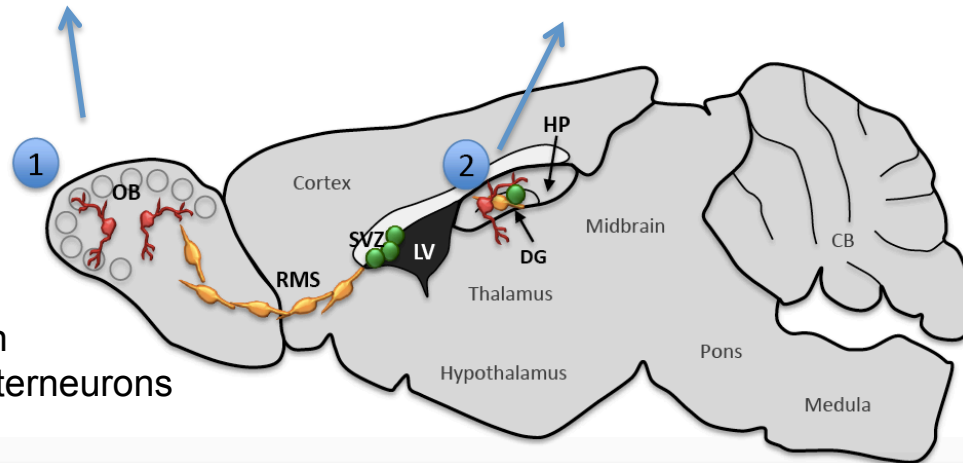
Basic processes
neuronal
development

Psychiatric
disorders



Regulation of neural stem cell function

Sensory input
Activity-dependent regulation
of TH in dopaminergic OB interneurons
→ COUP-TFI function



DEVELOPMENTAL NEUROBIOLOGY

Academic year 2016/2017

Course ID SVB0064

Teacher [Prof. Silvia De Marchis](#)

Degree course Cellular and Molecular Biology


Year 1st year

Teaching period Second semester

Type Distinctive

Credits/Recognition 6

Course disciplinary sector (SSD) BIO/06 - anatomia comparata e citologia

 **Delivery** Blended

Language English

Attendance Lessons optional and laboratories mandatory

Type of examination Written and oral (optional)

Course organization:

- Lectures on basic principles + specialized lectures/seminars
- Work in small group (pairs or trios): discuss scientific papers on specific topics
- Work on moodle platform (documents - videos – web sites – tasks)

Reference book: Development of the Nervous System – Dan H. Sanes 3° Ed. (Elsevier 2012)

Results of learning outcomes

KNOWLEDGE AND UNDERSTANDING

- neural induction
- neural patterning
- neural progenitors potential and differentiation
- neuronal circuits development
- main technical and experimental approaches

APPLYING KNOWLEDGE AND UNDERSTANDING

- ability to grasp the core concept of a scientific problem in the field of developmental neurobiology
- ability to find appropriate experimental approaches to address a specific question in the field
- ability to find and elaborate data related to gene expression/distribution in the developing nervous system starting from public available resources (i.e. Allen Brain Atlas)

INDEPENDENT JUDGEMENT

- interpretation and discussion of scientific data.

COMMUNICATION SKILLS

- discussion and presentation of scientific papers and/or active participation to scientific discussion following seminars

LEARNING SKILLS

- learning skills will be fostered through activities with peers working in group

Learning assessment methods

Examinations will be based on material covered in lectures, assigned readings, and online activities.

Final exam will be on the moodle platform: it will consist in 3 open questions.

Upon student's request, an integrative oral examination can be taken (written/oral: 1/1).

IMPORTANT: Early registration to the e-learning platform (moodle) is mandatory !

Final note: evaluation of final exam + bonus (Continuous evaluation – max 2 points)

