



**Friday, 10th April - h 14:00**  
Seminars room, NICO

## **Building up cortical organization: molecular and cellular mechanisms**

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The timing and proper formation of the neocortex is genetically programmed during development and can be profoundly altered by a number of abnormal genes that control regionalization, proliferation, differentiation and cell migration. In addition, thalamocortical inputs are important in shaping area-specific functional properties, possibly through activity-dependent mechanisms.

The lab is interested in understanding how regional identity, once established at progenitors level, is maintained in differentiated cortical pyramidal neurons during corticogenesis, and whether specific neuronal sub-populations or cortical circuits are peculiar of distinct functional neocortical areas. We are interested in a family of transcription factors, the COUP-TF family, which are involved in regional and cell-type specification of the dorsal and ventral telencephalon during development. Our recent data illustrate that COUP-TFI regulates different phases of cortical development in generating specific cell types in each brain region according to precise time schedules and to its region- and temporal-specific expression gradient.

During my presentation, I will do an overview on how transcription factors, including the COUP-TFs, can control the early and late organization of the cerebral cortex by acting on regionalisation, cell migration, connectivity, cell-type specification and neuronal activity. I will also illustrate some molecular and cellular mechanisms underlying cell-type specificity and morphological maturation across cortical areas, with particular emphasis on layer V projection neurons. Finally, I will speculate on how spontaneous neural activity could participate in setting up area-dependent neuronal circuits in the immature neocortex.

Host:  
**Silvia De Marchis**

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