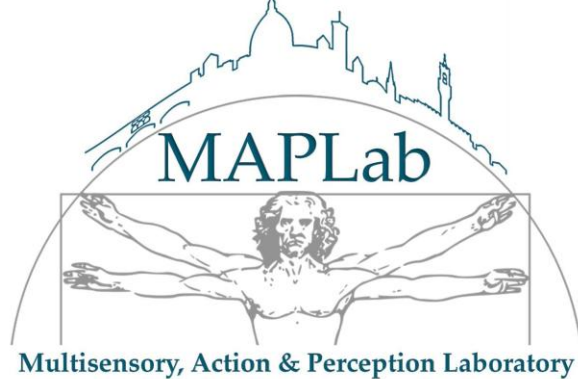UNIVERSITÀ DEGLI STUDI FIRENZE

NEUROFARBA
DIPARTIMENTO DI NEUROSCIENZE, PSICOLOGIA, AREA DEL FARMACO E SALUTE DEL BAMBINO
ECCELLENZA 2023-27

MAPLab

Multisensory, Action & Perception Laboratory

AVVISO DI SEMINARIO

Engineering brain activity patterns for therapeutics

09 FEBBRAIO ore 10:30

Plesso Didattico
La Torretta
Aula 02
Via della Torretta n. 16
50137 Firenze
Per info contattare
elisa.castaldi@unifi.it

Prof. M. Fatih Yanik
ETH Zurich

Brain networks are disrupted in numerous disorders. I will first discuss how the aberrant brain-wide activity patterns can be corrected by targeting distinct network motifs with multiple neuromodulators (using a vertebrate model of human epilepsy and autism). This systematic approach rescues behavior unlike any other. Next, I will present two technologies to realize such network corrections in humans: (1) Ultraflexible Tentacle Electrodes (UFTEs) that allow single-neuron-resolution network recordings simultaneously from many brain areas, where we can track hundreds of inter-areal neuronal ensembles year long, and we are soon starting the first human acute recordings. (2) AU-FUS technology that allows non-invasive delivery of drugs/RNA to specific brain circuits with thousand-fold enhanced focal concentration with millimeter precision across the BBB, where we successfully performed the first pre-clinical large animal studies. As example, I will show how precision delivery of anxiolytics to dorsal ACC by AU-FUS reduces chronic anxiety without side effects.