

# DSV Seminars 2019



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE

DIPARTIMENTO DI  
SCIENZE DELLA VITA

## *Master Degree in Neuroscience*

December 3, 2019 - 15:30

Room Bachelet , A Building

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*Invited by prof. Lorenzo Cingolani*

## Neural Circuits of Emotion Discrimination

The prefrontal cortex (PFC) is implicated in processing of the affective state of others through nonverbal communication. This social cognitive function is hypothesized to rely on an intact cortical neuronal excitatory and inhibitory balance. Here, combining *in vivo* electrophysiology with a behavioral task for affective state discrimination in mice, we show a differential activation of medial PFC (mPFC) neurons during social exploration that depends on the affective state of the conspecific. Optogenetic manipulations revealed a double dissociation between interneurons' role in social cognition. Specifically, inhibition of mPFC somatostatin (SOM+), but not of parvalbumin (PV+) interneurons, abolishes affective state discrimination. Accordingly, synchronized activation of mPFC SOM+ interneurons selectively induces social discrimination. As visualized by *in vivo* single-cell microendoscopic Ca<sup>2+</sup> imaging, an increased synchronous activity of mPFC SOM+ interneurons, guiding pyramidal neurons inhibition, is associated with affective state discrimination. Our findings provide new insights into the neurobiological mechanisms of affective state discrimination.