

# DSV Seminars 2019



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE

DIPARTIMENTO DI  
SCIENZE DELLA VITA

## *Master Degree in Neuroscience*

December 17, 2019 - 14:30

Aula exCla, C1 Building – Via Valerio, 6/1

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*Invited by prof. Lorenzo Cingolani*

## **Beyond synaptic plasticity: the role of intrinsic excitability and structural plasticity in cerebellar motor learning**

Currently, prevailing theories of learning and memory are based on synaptic plasticity as the main underlying cellular mechanism (long-term potentiation and depression, i.e. LTP and LTD, respectively). However, a growing body of evidence suggests that synaptic plasticity might be complemented by other forms of neuronal plasticity, such as activity dependent changes in neuronal morphology ('structural plasticity') and activity-dependent changes in membrane excitability ('intrinsic plasticity'). In this seminar, by using the mouse cerebellum as a model, we will show (1) structural modifications of climbing fibers dependent on the growth associated protein 4 (GAP-43) that may contribute to motor memory engrams and (2) recent evidence suggesting that the modulation of intrinsic excitability dependent on the SK2-type calcium-gated potassium channel are essential for specific forms of motor learning.