



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

**PhD Program in  
Biomedical Sciences**

## **Polo Didattico e Scientifico Vallisneri**

**Viale Giuseppe Colombo 3 (accesso pedonale)  
Via Ugo Bassi 58/B, Padova**

**Giovedì 8 febbraio 2018  
Aula G – piano rialzato  
Ore 15:00**

## **Seminario**

**Dr. Marco Terenzio**

**Dept. of Biomolecular Sciences,  
Weizmann Institute of Science, Rehovot, Israel**

# **Locally Translated mTOR Controls Axonal Local Translation in Nerve Injury**

Upon neuronal injury, protein synthesis is initiated locally in axons independently of cell bodies. How is this subcellular specificity in translation achieved? We show that mTOR is upregulated and activated at the lesion site in injured axons, due to local translation of mTOR mRNA. We further show that mTOR controls local translation in injured axons, including regulation of its own translation and that of retrograde injury signaling molecules such as importin  $\beta$ 1 and STAT3. Deletion of the mTOR 3'UTR in mice reduced mTOR in axons and decreased local translation after nerve injury. Both pharmacological inhibition of mTOR in axons or mTOR 3'UTR deletion decreased proprioceptive neuronal survival after nerve injury. Thus, localization at the RNA level provides spatiotemporal regulation of mTOR pathways.

**Dr. Alessandro Bertoli**

**Dr. Fiorella Tonello**

**Prof. Paolo Bernardi**