



INSIGHT SEMINAR: Force as messenger of axon outgrowth and regeneration

VITTORIA RAFFA

October 23, 2023

12:00 to 13:00

Blue Lecture Room

Extensive research suggests that the direct application of force is per se a powerful inducer of axon growth. Recently, we proposed a novel approach, namely *nano-pulling* to mechanically manipulate axons loaded with magnetic nanoparticles (MNPs) under the effect of external magnetic fields. The generated force vector can be used in mature neuron for inducing axon growth and synaptic maturation, in neural tissue for inducing axon regeneration and in neural precursor cells for promoting neural differentiation and inducing neuronal maturation. We elucidated the local mechanisms of signal mechanotransduction in response to active forces generated through magnetic nano-pulling. We demonstrated that the mechanical force induces a stabilization of axonal microtubules. The increase in microtubule assembly results in the increase in axonal transport and the activation

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Hosted by: Prof. Dr. Michael Krieg