

## סמינריון

הנדך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום א' 29.08.2021  
(כ"א באלול, תשפ"א), בשעה 11:00 באמצעות הזום : <https://technion.zoom.us/j/5490831144>

מרצה : עביר חסן

מנחה : פרופ'ח שלי צליל

על הנושא :

### **MECHANICAL COMMUNICATION IN THE SENSORY NERVOUS SYSTEM**

The seminar will be given in English

תקציר ההרצאה :

Mechanical communication between muscles and neurons is essential for proprioception, which is the ability to sense the motion and position of body parts. Proprioception requires the transduction of muscle-generated deformations into sensory neuronal impulses. In proprioceptive organs, the mechanical coupling between the sensory neuron and the muscle is mediated by a connective structure composed of accessory cells and an extracellular matrix (ECM). In this talk, I will describe our work studying the role of ECM mechanics and mechanical forces in proprioceptor development and function using as a model system the proprioceptive sensory organ of the fruit fly

We show that a change in ECM composition alters the mechanical properties of the sensory organ, resulting in short-wavelength buckling of the accessory cells upon muscle contraction and low compressive strain within the organ. We further show that this transition interferes with the ability of the organ to propagate muscle-generated deformations correctly to the neuron and consequently interferes with the generation of normal calcium signal and coordinated locomotion. We can explain these results using a simplified theoretical model of an elastic beam interacting with an elastic network under a compressive force.

Continuing on this work, we show that muscle-generated mechanical forces are required for proper development and maintenance of the proprioceptive organ.

בברכה,

שפ"א א"ח את' סאא

מרכז הסמינרים