

Worm on the Run – A versatile force-sensing platform for the study of freely moving nematodes

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To study the interplay of microorganisms with their physical environment we have developed an integrated Lab-on-a-Chip type platform capable of measuring mechanical forces exerted during locomotion of microorganisms^{1,2}. Using this platform we found that crawling behaviors and thrust forces of moving *C. elegans* correlate to the structure of their microenvironment as the worm adjusts its behavior via mechanical sensing of its surroundings³. The sense of touch is crucial to these nematodes: 6 touch receptor neurons (mechanoreceptor neurons) allow the animal to detect external mechanical feedback with the environment, as well as internal forces⁴. Using our platform we were able to quantify forces, as well as locomotion parameters such as speed, amplitude of sine wave, and wavelength. In this seminar I will introduce the measurement platform, sensing principle and its application to freely moving *C. elegans* in conjunction with optogenetic manipulation⁵.

References:

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