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## Organic actuators for cell opto stimulation

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Organic conjugated molecules and their aggregates in fibrils, nanoparticles or thin films have specific affinity to biological molecules. They allow establishing almost seamless interfaces with plasma membranes. The interface region is diffuse, with variable yet finite thickness and heterogeneous composition, supporting both electronic and ionic transport. Once in contact with biomolecules, optical stimulation of the organic actuators can transduce the stimulus into a bio-chemical response. There are by now many demonstrations of the efficacy of such soft-soft interfaces, in vitro and in vivo, up to the recent demonstration of a retina prosthesis based on poly thiophene nanoparticles that allow rescuing vision in blind model animals of retinitis pigmentosa [1]. In this talk, I will review recent results based on different approaches and I will discuss in more details which phenomena might be involved in the hybrid coupling.

[1] José Fernando Maya-Vetencourt et al. "SUBRETINALLY INJECTED SEMICONDUCTING POLYMER NANOPARTICLES RESCUE VISION IN A RAT MODEL OF RETINAL DYSTROPHY" *Nature Nanotechnology* **15** (8), 698-708 (2020)