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Engineering long-lasting and spatially selective active neural interfaces for bioelectronic medicine

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Abstract: In a world where medicine is becoming more personalised the promise of Bioelectronic Medicine is that tiny implants will deliver energy in the form of electrical impulses, replacing pharmaceuticals, their conventional chemical counterparts. But how can we develop such tiny smart and autonomous implants that (need to) seamlessly interact with the tissue and live in the body for decades [1]? How can we protect all the components in such an implant while still maintaining the small form factor and essential flexibility [2]? How can we design electronics such that they remain better protected in such a harsh environment [3, 4]? How can we ensure autonomy under the above restrictions [5]? Eventually, how can we make our medicine more precise, i.e. increase the specificity at which we interact with the tissue [6, 7]? This talk will aim to address these questions and present an overview of how to engineer long-lasting and spatially selective active neural interfaces.

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