

Dipartimento di Biotecnologie e Bioscienze – UNIMIB

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Engineering synthetic tools for the inhibition of cell excitability

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Abstract: We engineer genetically encoded potassium (K⁺) channels, which can be remotely controlled (gated) by light and by other physical stimuli, such as infrared (IR) radiation and ultrasound (US) waves that penetrate human tissues without negative side effects. The control over ion channel activity by remote stimuli paves the way for genuine non-invasive control of cell activity in vivo. Design and engineering of the channels is performed by reiterated steps of rational and irrational design, high throughput screening and in vitro and in vivo functional testing. I will show a couple of examples of engineered channels that find useful application in research and are promising biomedical tools.

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