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## Optical control of cell calcium

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We propose a non-invasive optical calcium ion specific regulation technique based on femtosecond laser, which achieves precise regulation of subcellular calcium signals by femtosecond laser, analyzes subcellular calcium storage and regulation mechanisms, and deeply explores the calcium ion signal transduction and function of subcellular structures. We have proposed a new method for precise regulation of laser calcium ion specificity for the first time internationally, and developed femtosecond laser based femtosecond SOC channel specific regulation technology. This further achieves precise regulation of neural signals and hallucination implantation in conscious mouse brains. We developed CaMEL technology using the excitation characteristics of femtosecond laser, achieving precise control of subcellular structural calcium signals. This revealed the basic processes of storage, release, transmission, and recovery of key subcellular structural calcium ions such as nucleus and mitochondria, elucidated the key mechanisms of communication, signal transduction, and maintenance of cellular homeostasis in subcellular calcium networks, and discovered their key calcium regulatory physiological functions.



**Short Bio:**

**Hao He** received his PhD degree in Electronic Engineering from the Chinese University of Hong Kong. He is a professor of Shanghai Jiao Tong University, China.