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| Nota di bibliografia | Includes bibliographical references. |
| Nota di contenuto | Editorial: application of genetically encoded indicators to mammalian central nervous system --Monitoring activity in neural circuits with genetically encoded indicators --Putting a finishing touch on GECIs --Genetically encoded Ca² indicators; expanded affinity range, color hue and compatibility with optogenetics --Investigating neuronal function with optically controllable proteins --Exploration of genetically encoded voltage indicators based on a chimeric voltage sensing domain --Engineering a genetically-encoded SHG chromophore by electrostatic targeting to the membrane --Imaging activity in astrocytes and neurones with genetically encoded calcium indicators following in utero electroporation --Intracellular calcium dynamics in cortical microglia responding to focal laser injury in the PC::G5-tdT reporter mouse --Wide-field Ca² imaging reveals visually evoked activity in the retrosplenial area --Habituation of glomerular responses in the olfactory bulb following prolonged odor stimulation reflects reduced peripheral input. |
| Sommario/riassunto | Genetically encoded indicators emerged as promising tools for cell type-specific and chronic recording of neuronal population activity. |

Since publication of the first prototypical genetically encoded Ca2+ indicators (Cameleons) in 1997, we have witnessed remarkable evolution of the field, with rapid improvement of indicator performance as well as expanded application to many model organisms in the neuroscience community. Challenges still remain, however, concerning the mammalian central nervous system: limited sensitivity of indicators to subtle changes in activity, slow signal kinetics, cytotoxicity after a long-term and high-level expression of indicators, and variable performance across cell types. In addition to improvement of the indicators per se, development of strategies that allow combined use of the indicators and optogenetic tools is also desired. In this Research Topic, we recruited top researchers in the field and their young colleagues to present their cutting-edge research as well as insightful opinions on the following subtopics:1) Latest breakthroughs on development of genetically encoded indicators2) Novel scientific findings obtained with genetically encoded indicators3) Wishlist for the next-generation genetically encoded indicators4) Guideline for selecting an appropriate indicator5) Optimal methodology for indicator delivery to mammalian CNS.