GORYO CHEMICAL

For research use only

CaSiR-1™ / CaSiR-1 AM

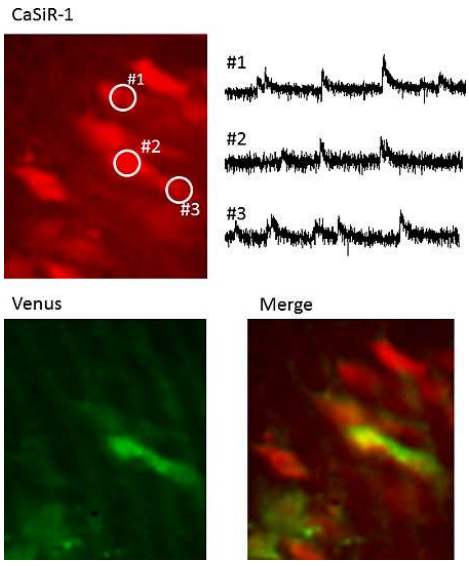
Catalog No.	Material	Amount	Storage	Stability
GC401 GC402	**CaSiR-1™**	1mg × 1 vial 50μg × 20 vials	Store <-20 ℃, desiccate and protect from light Storage of the DMSO/dye solution is NOT recommended	1 year (unopened)
GC403	**CaSiR-1™** AM	50μg × 20 vials		

CaSiR-1™ / CaSiR-1™ AM

The calcium ion is an critical intracellular second messenger and is involved in many biological phenomena. Fluorescence imaging is the primary method for analysis of calcium behavior. The fluorescence wavelength region for most available calcium probes is limited to around 500-580 nm. CaSiR-1™ and CaSiR-1™ AM are near-infrared calcium probes which have fluorescence maximum wavelength at 664 nm. Multicolor imaging is possible between CaSiR-1™ or CaSiR-1™ AM and other fluorescent probes or fluorescent proteins which have fluorescent wavelengths in visible range such as Hoechst, Fluorescein, Rhodamine, GFP, YFP and RFP etc. The near-infrared region has greater tissue penetration, less overlap with the spectrum of background autofluorescence and exhibits less phototoxicity to cells and tissue.

CaSiR-1™ changes fluorescent intensity greatly when it binds to calcium. For example, fluorescent intensity rises more than 1000-fold when the calcium concentration is changed from 0 μM to 39 μM. Little to no fluorescence is detected when the calcium concentration is 0 μM.

CaSiR-1™ is introduce to the cell by microinjection, patchclamp and electroporation, etc. CaSiR-1™ AM, an acetoxymethyl ester of CaSiR-1™ is cell permeable. After permeating cell membrane, CaSiR-1™ is hydrolyzed by an esterase to allow CaSiR-1™ to stay within the cell (Figure 1). Using these methods, it is possible to measure intracellular calcium concentration fluctuation based on the change in fluorescence intensity of CaSiR-1™ within living cells. Measurement of an action potential in a neuron demonstrates the calcium concentration fluctuation in the cell when CaSiR-1™/CaSiR-1™ AM is used.



CaSiR-1™ AM was loaded to a mouse brain slice in which a fraction of neurons expressed Venus (a mutant of YFP). Ca2+ imaging was done. CaSiR-1™ is shown as red color and Venus is shown as green. The fluorescent signal changes demonstrating a transient elevation of intracellular [Ca2+] associated with Ca2+ sparks in cranial nerves. This experiment was done to compare Ca2+ behavior in neurons when YFP is expressed and not expressed. Multicolor imaging is possible, including Ca2+ imaging of samples showing specific cells labeled with a fluorescent protein.

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