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Cell mitosis research related reagents

Featured reagents in this brochure are useful for the research of cell mitosis and chromosome dynamics. Especially helpful for observation of mitosis process in live cell, analysis of chromosome transport and spindle assembly checkpoint (SAC) and verification of microtubule regulation by γ-tubulin.

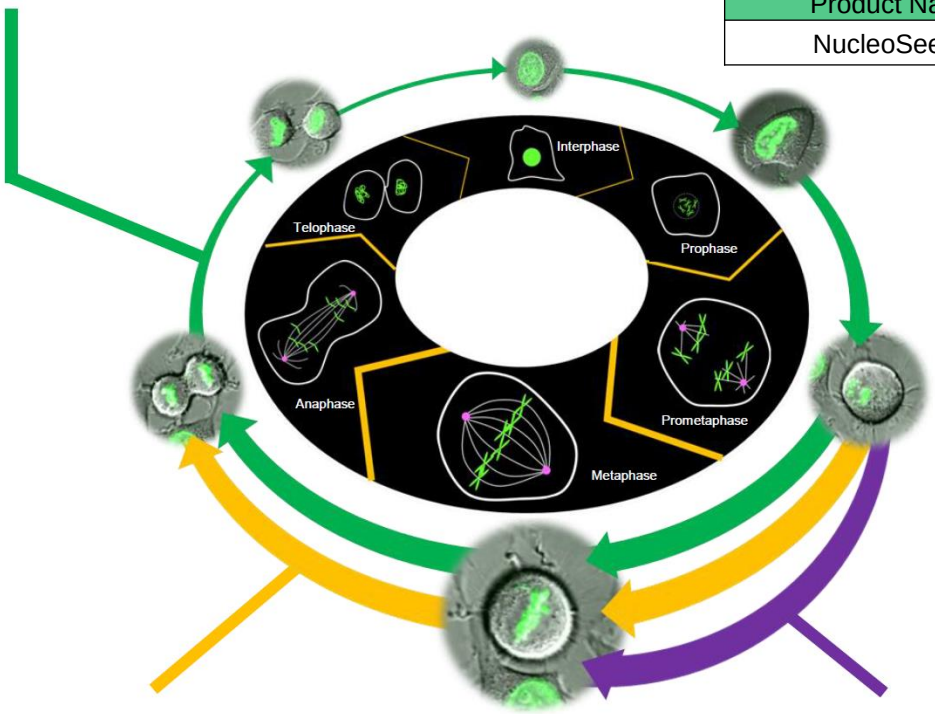
Live imaging of nucleus and chromosome

NucleoSeeing

<Live Nucleus Green>

- ✓ Low cytotoxicity, green fluorescent live imaging reagent of nucleus / chromosome.
- ✓ Compatible with serum, mitosis process can be observed in live cells.

Product Name	Code	Size
NucleoSeeing	FDV-0029	0.1 mg



γ-tubulin specific inhibitor

Gatastatin G2

- ✓ Specific inhibitor for γ-tubulin.
- ✓ Little effect on α/β-tubulin polymerization.
- ✓ Block nucleation of microtubule from centrosome
- ✓ Induces abnormal chromosome alignment and multipolar formation in mitotic cells.
- ✓ Useful for functional analysis of γ-tubulin in mitosis.

Product Name	Code	Size
Gatastatin G2	FDV-0040	0.1 mg

Chromosome movement regulation by light

PCEI-HU

<Photoswitchable CENP-E Inhibitor>

- ✓ Can control motor protein CENP-E dependent chromosome movement in prometaphase by light.
- ✓ Chromosome movement can be
  - stopped by visible light
  - resumed by UV light
- ✓ Until all chromosomes are aligned to the metaphase plate, movement can be controlled.

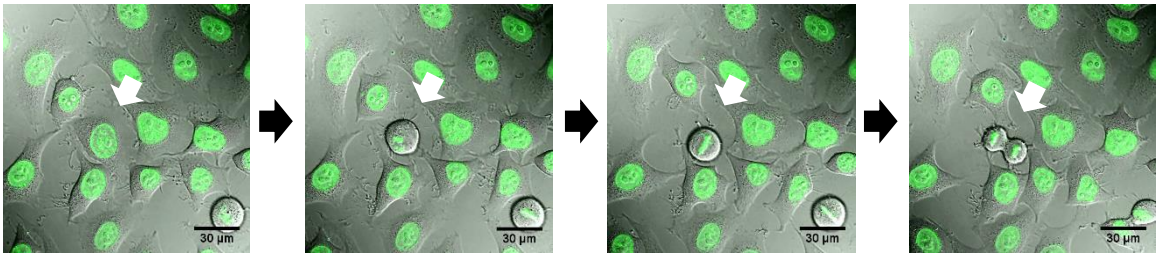
* Does not work with NucleoSeeing.

Product Name	Code	Size
PCEI-HU	FDV-0037	50 µg

Application data of NucleoSeeing

Long term time lapse imaging of mitotic cells

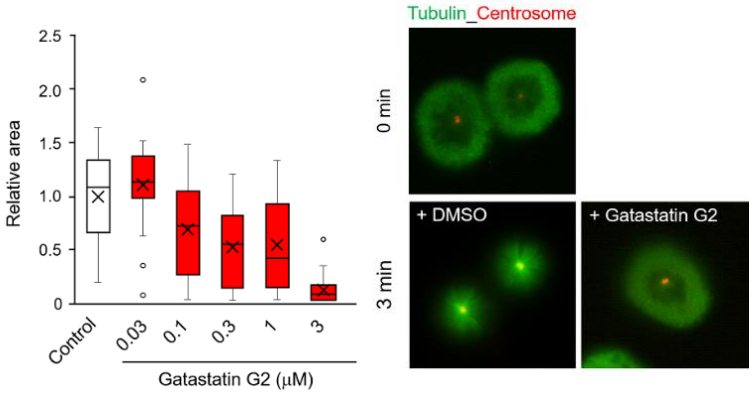
HeLa cells on the glass bottom dish were treated with 0.5 μM NucleoSeeing in 10% FBS containing DMEM for 1.5 hours. After treatment of NucleoSeeing, cells were observed for 20 hours by confocal microscopy without any washout or medium change (Time lapse condition: Ex 488/Em 500 600 nm, 60x oil lens, 10 min interval). Several mitotic cells were observed (white arrow indicated cells in the mitotic process).



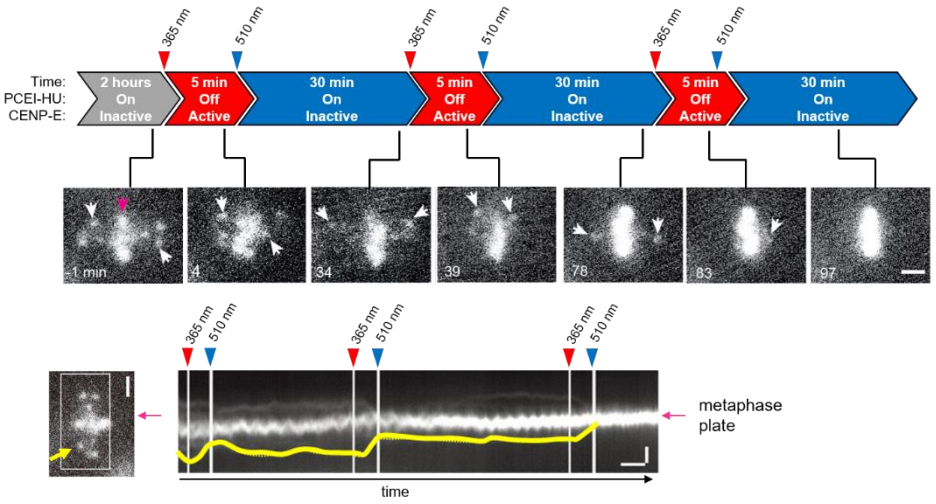
Application data of Gatastatin G2

Gatastatin G2 blocks centrosome-derived microtubule (MT) formation in mitotic cells

HeLa cells (6.0 x 10^3 cells) were seeded, cultured for 1 hour, and subsequently treated with S-trityl-L-cysteine (STLC; 20 μM) for 6 hours. Then, the cells were washed with ice-cold medium and incubated on ice to depolymerized MT for 1 hour. The cells were treated with 1% DMSO, or 0.03-3 μM Gatastatin G2 for 15 min on ice. During the process of drug treatment on ice, control cells were fixed with MeOH (as 0 min in the figure). After drug treatment, the cell media was exchanged with warm (30°C) media containing drugs and the cells were further cultured at 30°C for 3 min. The cells were fixed with MeOH and stained by immunocytochemistry with anti-α-tubulin and anti-pericentrin for centrosomes. Gatastatin G2 clearly inhibited MT initiation from centrosomes dose-dependently in mitotic cells.



Application data of PCEI-HU



Live cell imaging of mitotic chromosomes in PCEI-HU treated LLC-PK 1 cells

LLC-PK1 cells were treated with near-infrared DNA staining dye (SiR-DNA, 1 μM) and subsequently 1 μM PCEI-HU and 20 μM MG132 for 2 hours in darkroom. Cells were irradiated with UV light (365 nm) and Vis (510 nm) repeatedly and monitored in live-cell (Upper figure).
Movement of a specific chromosome (yellow arrow) was analyzed in kymograph (Lower figure). While after UV irradiation, chromosomes moved to metaphase plate, but after Vis irradiation chromosomes left from metaphase plate. The chromosome was repeatedly regulated by UV/Vis cycles until chromosomes reaching to the metaphase plate.

NOTE

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