

## CellPlayer™ HeLa NuLight Green

Essen BioScience Catalog Number: 4490

### Storage

Liquid Nitrogen

*Note: Cells can be thawed and cultured immediately upon receipt or stored in liquid nitrogen for long-term storage. Storage at -80°C is not recommended. Cells should be used within 1 year of delivery.*

### Presentation

1mL,  $1 \times 10^6$  cells/mL in 90% FBS, 10% DMSO

### Recommended Media and Components

Ham's F-12 + GlutaMAX™-1 (Cat# 31765 Gibco/Life Technologies; Low riboflavin media for fluorescence imaging)

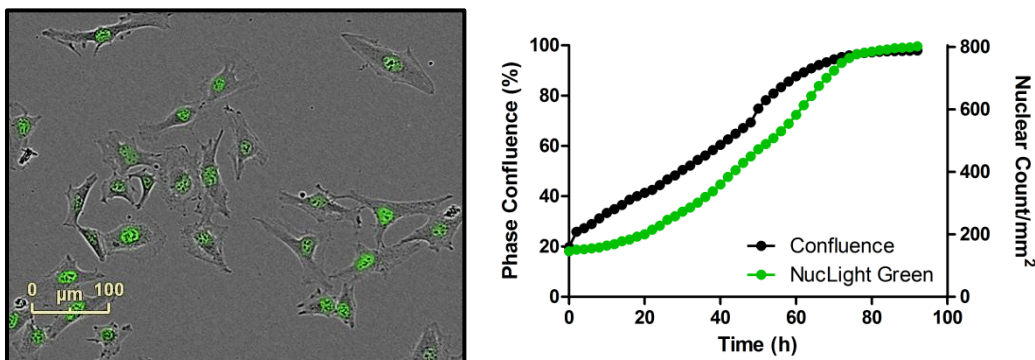
10% FBS (Cat# SH30071 Thermo Hyclone)

1% Pen/Strep (Cat# 15140 Gibco/Life Technologies)

0.5µg/ml Puromycin (Cat# A11138-03 Gibco/Life Technologies)

### Background

Each vial contains a stable population of 1million HeLa cells expressing the NuLight Green fluorescent protein restricted to the nucleus. Parental HeLa cells were purchased from ATCC (Cat# CCL-2). HeLa cells were transduced with the Essen CellPlayer NuLight Green Lentivirus (Cat# 4475; EF1α, puromycin) at an MOI of 3 (TU/cell) in the presence of 8µg/ml polybrene following the standard Essen protocol. This resulted in ≥70% transduction efficiency. 48 hours post infection, the complete population of cells were grown for 3-5 days in complete growth media containing 1µg/ml Puromycin to select for cells expressing NuLight Green. NuLight Green expressing cells are maintained in complete media containing 0.5µg/ml Puromycin. Following selection, a panel of validation assays designed to evaluate the effects of nuclear label expression on functional cell biology was completed. These assays include comparisons of cell morphology, growth/proliferation, and migration between stable populations and the parent populations from which they were derived (see below). In addition, all cells in our NuLight Green catalog has been certified mycoplasma free by ATCC and our stable populations have been unambiguously authenticated using ATCC's Short Tandem Repeat (STR) profiling.



**Figure 1: HeLa NuLight Green Cell Line.** 1 vial of HeLa NuLight Green cells was thawed into a 75cm<sup>2</sup> tissue culture treated flask and imaged in IncuCyte ZOOM. Left: HD-Phase Contrast and Green Fluorescent blend. Right: Phase confluence and nuclear counts over time. HeLa NuLight Green cells reach 80% confluence in a 75cm<sup>2</sup> flask after 3-4 days.

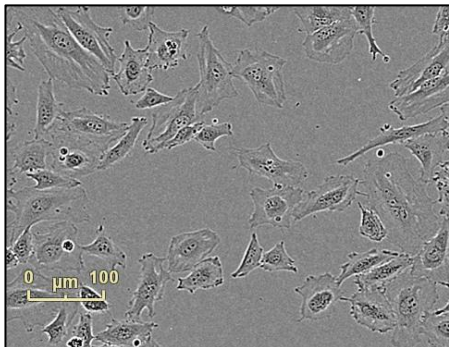


## Validation Assays

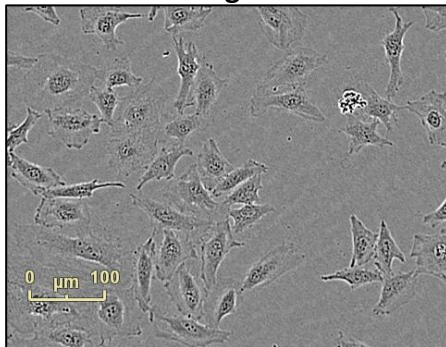
The following experiments were completed using an IncuCyte ZOOM (10x)

### 1. Morphological Comparison

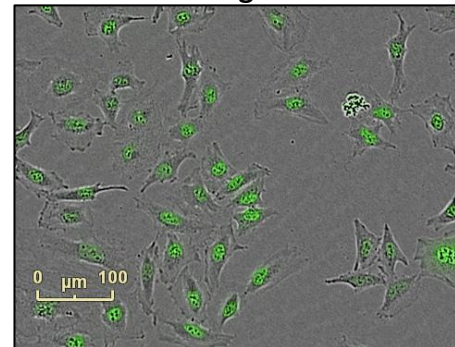
#### Parental HeLa



#### HeLa NuLight Green



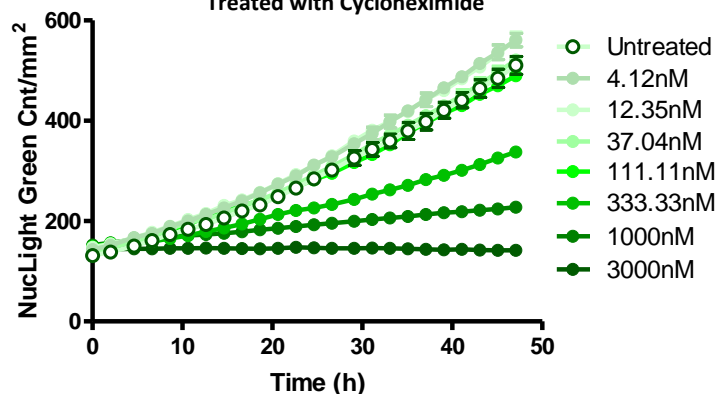
#### HeLa NuLight Green



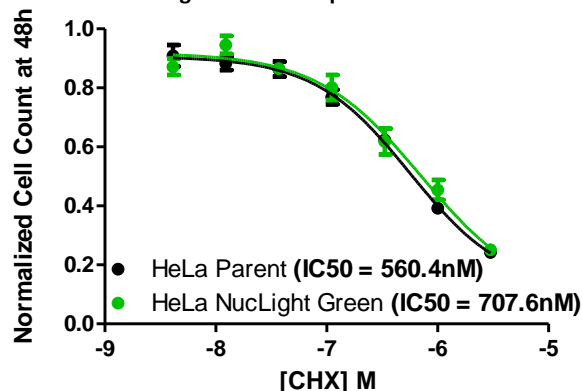
**Results:** No significant alterations in cell morphology were observed between parental HeLa cells and the HeLa NuLight Green stable population.

### 2. Proliferation – Real-Time Cell Counts Using the CellPlayer™ Kinetic Proliferation Assay

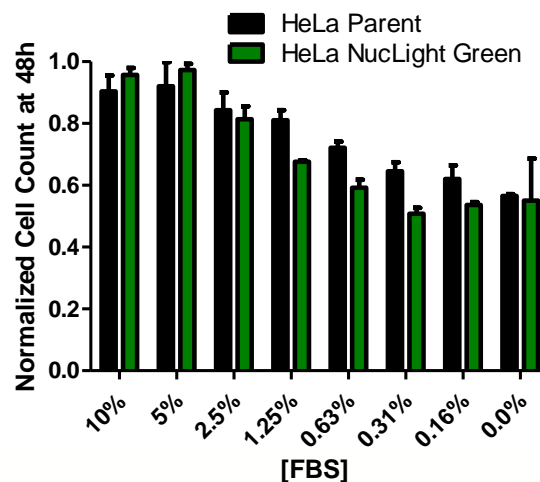
#### Real-Time Cell Counts of HeLa NuLight Green cells Treated with Cycloheximide



#### Cycloheximide Pharmacology: HeLa NuLight Green Compared to Parent Cells

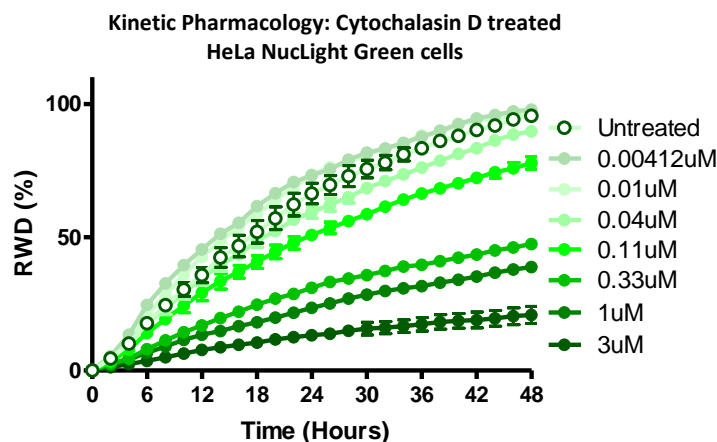
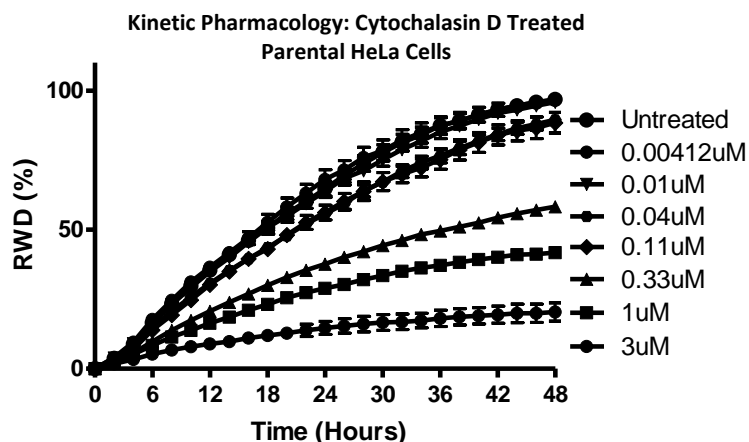


**Results:** Real-time cell counting revealed inhibition of HeLa NuLight Green cell growth at cytostatic CHX concentrations  $\geq 333$ nM (Top Left). At the 48 hour endpoint, identically treated parental controls were stained with Vybrant DyeCycle Green and counted. Pharmacological analysis at the endpoint revealed similar CHX IC50 concentrations for both parent and NuLight populations (Top Right). Both Parent and NuLight populations were also grown in decreasing serum conditions. Endpoint values revealed similar growth characteristics in all concentrations (Bottom).





### 3. Cell Migration



**Results:** The migration kinetics of parental HeLa and the stable HeLa NuLight Green population were evaluated using the label-free Essen CellPlayer 96-well Cell Migration assay in conjunction with the Essen WoundMaker tool (Cat# 4443). Cells were treated with decreasing concentrations of cytochalasin D, a potent inhibitor of actin polymerization. Concentration dependent inhibition of wound closure was observed in both parental and stable NuLight Green HeLa cell lines at concentrations of CytoD  $\geq 0.11\mu\text{M}$  using the relative wound density (RWD) metric. Pharmacological analysis using the area under the curve (AUC) of the kinetic traces revealed a slight shift in  $\text{IC}_{50}$  values for cytochalasin D treatment.

#### Related Products

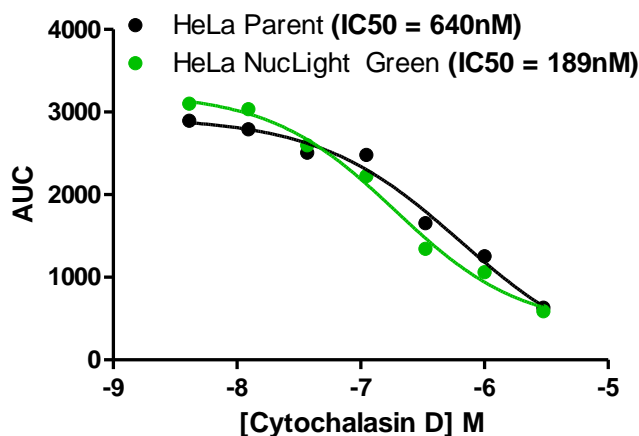
##### **NuLight/CytoLight Reagents:**

Cat.# 4475 CellPlayer NuLight Green (Lenti, EF-1 alpha, puro)  
 Cat.# 4481 CellPlayer CytoLight Green (Lenti, EF-1 alpha, puro)  
 Cat.# 4513 CellPlayer CytoLight Green (Lenti, CMV, no selection)

##### **NuLight Cell Lines:**

Cat.# 4485 CellPlayer HT-1080 NuLight Red  
 Cat.# 4487 CellPlayer MDA-MB-231 NuLight Red  
 Cat.# 4489 CellPlayer HeLa NuLight Red  
 Cat.# 4491 CellPlayer A549 NuLight Red  
 Cat.# 4506 CellPlayer HUVEC NuLight Green  
 Cat.# 4453 CellPlayer HUVEC CytoLight Green

#### **Kinetic Pharmacology: AUC Analysis and $\text{IC}_{50}$ Calculation**



Cat.# 4476 CellPlayer NuLight Red (Lenti, EF-1 alpha, puro)  
 Cat.# 4482 CellPlayer CytoLight Red (Lenti, EF-1 alpha, puro)

Cat.# 4486 CellPlayer HT-1080 NuLight Green  
 Cat.# 4488 CellPlayer MDA-MB-231 NuLight Green  
 Cat.# 4490 CellPlayer HeLa NuLight Green  
 Cat.# 4492 CellPlayer A549 NuLight Green  
 Cat.# 4511 CellPlayer Neuro-2a NuLight Green  
 Cat.# 4512 CellPlayer Neuro-2a NuLight Red



**Protocols and Procedures****Thawing and Culturing Cells**

1. The recommended seeding density for HeLa NuLight Green cells is 10,000 to 15,000 cells/cm<sup>2</sup>. For example, one vial of HeLa NuLight Green cells is sufficient to seed 2 to 3 T25 flasks or 1 T75 flask. From this, calculate the number of flasks needed.
2. Prepare the flasks and culture media. To maintain expression of NuLight Green label, it is recommended that cells are maintained in complete media (F-12 + 10% FBS) containing 0.5µg/ml Puromycin. Puromycin can be removed for experiment/assay set-up.
3. Remove the vial containing HeLa NuLight Green from liquid nitrogen.
4. In a 37°C water bath, quickly thaw the vial by gentle agitation. Be careful not to submerge entire vial to avoid contamination. This process should take no more than 2 minutes. Remove vial when only a tiny ice crystal remains.
5. Wipe vial with 70% ethanol. In a biosafety hood, aliquot cells into sufficient complete media to distribute among the flasks set up in Step 2.
6. Gently rock the culture flasks to evenly distribute the cells and place in 37°C incubator.

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**CellPlayer™ HeLa NuCLight Green Cells**

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