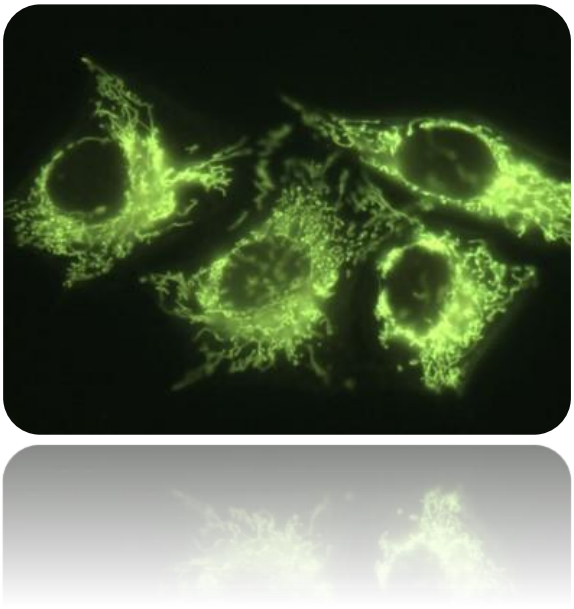
Product Specification

AIE™ Cancer Yellow



Product Description

- The product can target and illuminate only the cancer cell mitochondria
- The product has been tested working on

✓ ***Human cervix HeLa***	✓ ***Human lung HCC827***	✓ ***Human lung A549***
✓ ***Human breast MDA-MB-231***	✓ ***Human breast MCF-7***	✓ ***Human liver HepG2***
		✓ ***Human lung PC-9***

- The product can be excited by 405 nm laser of confocal microscope after co-cultured with cell and the greenish-yellow signal can be collected above 500 nm.
- The product can be used for quick cell imaging as well as fixed localized imaging.
- The product can serve as a photosensitizer to generate reactive oxygen species (ROS) to induce cell apoptosis, which can be used for photodynamic therapy.

Demonstrations

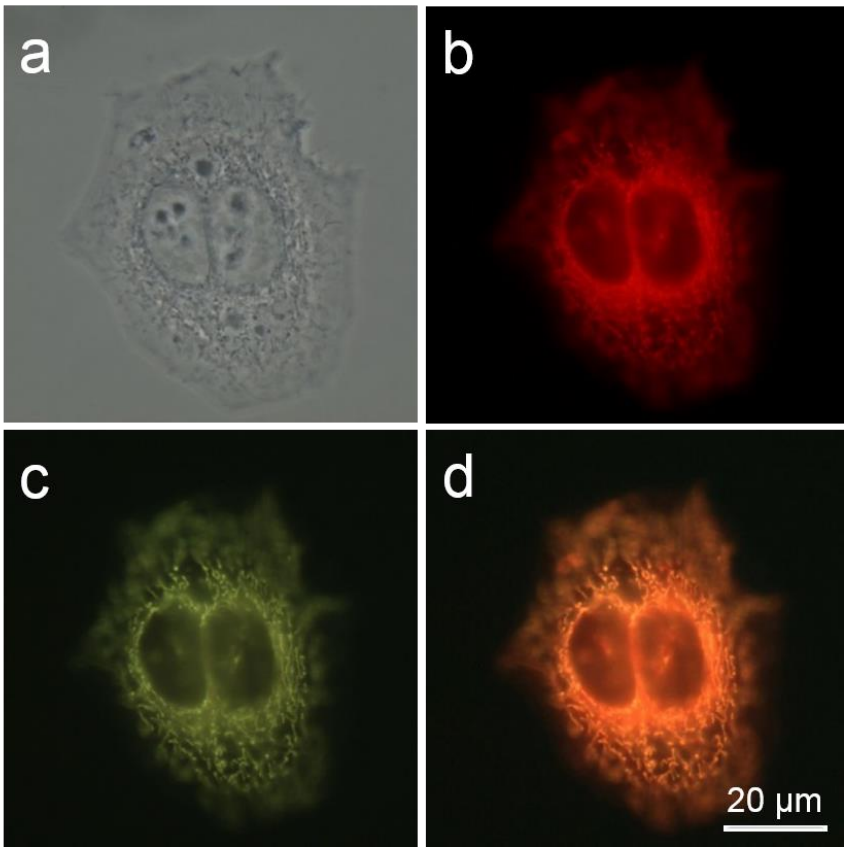


Figure 1: Co-localization imaging of HeLa cells stained with MitoTracker Red and AIE™ Cancer Yellow. (a) Bright-field image and (b and c) fluorescent images of HeLa cells stained with (b) MTR (50 nM) and (c) AIE™ Cancer Yellow (200 nM) for 20 min. (d) Merged image of panel (b) and (c). λ_{ex}: 540-580 nm (MTR) and 400-440 nm (AIE™ Cancer Yellow); scale bar = 20 μm.

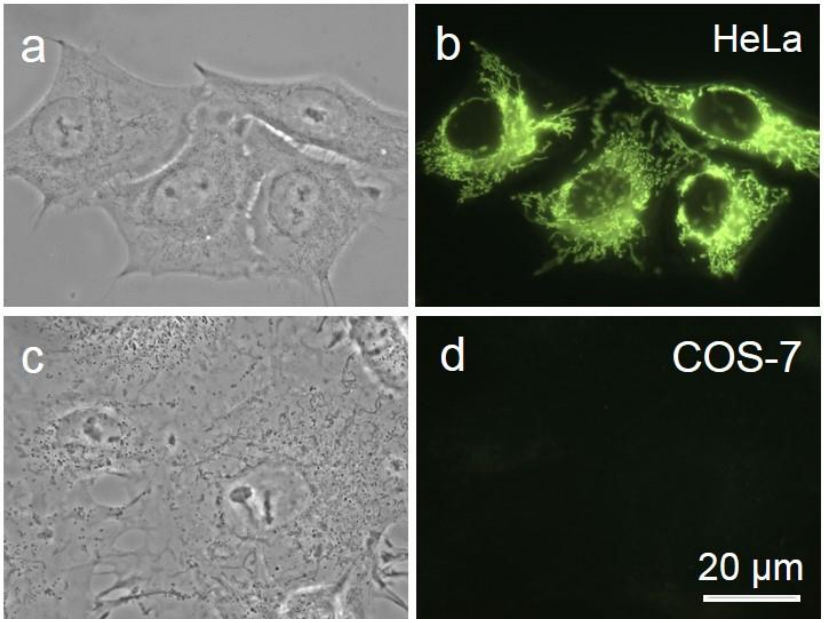


Figure 2: Differentiation of cancerous HeLa cells from normal COS-7 cells by AIE^{TM} Cancer Yellow. (a and c) Bright-field and (b and d) fluorescent images of (a and b) HeLa cells and (c and d) COS-7 cells incubated with 200 nM of AIE^{TM} Cancer Yellow for 20 min.

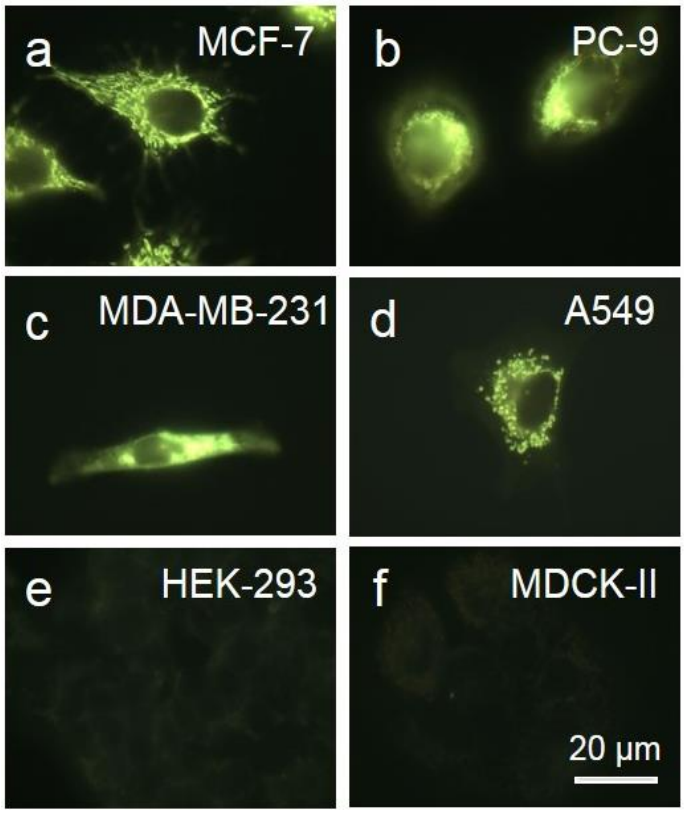


Figure 3: Differentiation of cancer cells from normal cells by AIE^{TM} Cancer Yellow. (a f) Fluorescent images of different (a d) cancer cells and (e f) normal cells stained with AIE^{TM} Cancer Yellow (200 nM) for 20 min. λ_{ex}: 400-440 nm.

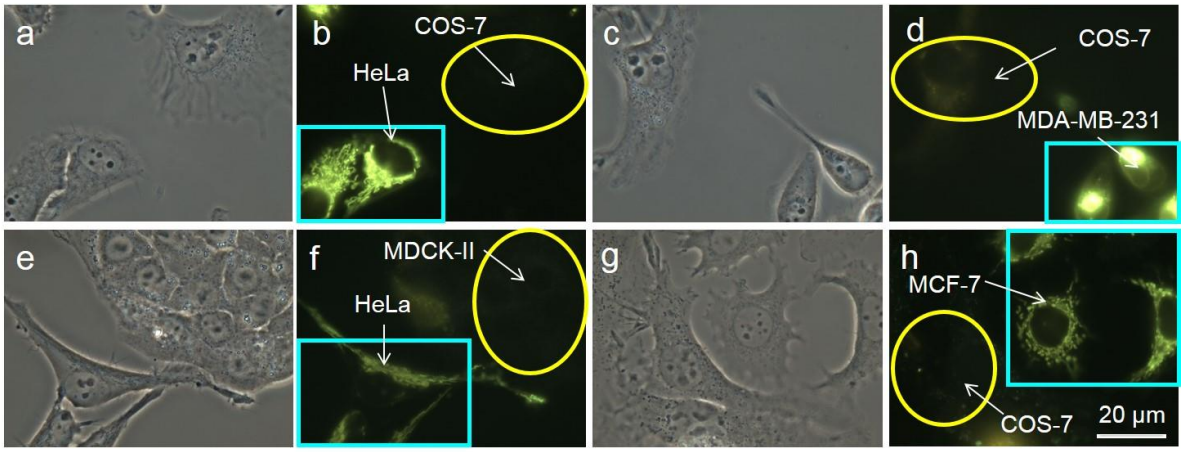


Figure 4: Co-culture different combinations of cancer cell and normal cell in culture medium with AIE™ Cancer Yellow. (a, c, e and g) Bright-field images and (b, d, f and h) corresponding fluorescent images of (a and b) HeLa and COS-7 cells, (c and d) MDA-MB-231 and COS-7 cells, (e and f) HeLa and MDCK-II cells and (g and h) MCF-7 and COS-7 cells incubated in Dulbecco's Modified Eagle Medium (DMEM) with AIE™ Cancer Yellow. Light blue rectangles represent cancer cells and yellow circles represent normal cells. All the images share the same scale bar: 20 μm.

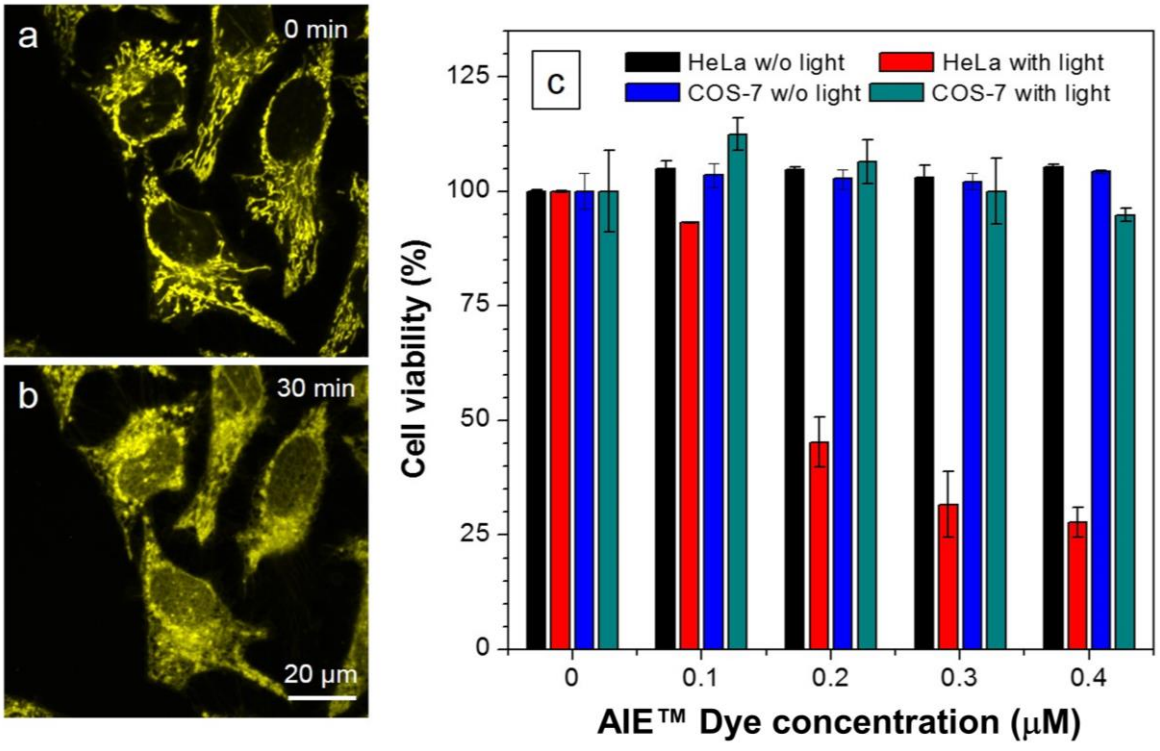


Figure 5: AIE™ Cancer Yellow selectively kills cancer cells through PDT. (a and b) Change in mitochondrial morphology before and after white light irradiation. (c) Cell viability of HeLa cells and COS-7 cells stained with different concentrations of AIE™ Cancer Yellow in the absence or presence of white light irradiation.

Recommended storage condition

Store away from sunlight at 2-8 °C

Product parameters

Purpose	Mitochondria staining and induce cell apoptosis
Color:	Orange powder
Imaging platform:	Fluorescence microscope Confocal microscope
Pack size and quantity:	10 μmol
Detection method:	Fluorescence
Excitation/Emission (nm):	430±20/560±50
Recommended transport condition:	Room temperature
Product declaration:	Only used for research. Do not apply to any detection procedure.

AIEgen Probe for Cancer Cell Discrimination (Yellow)

Introduction

- This product stains the mitochondria with yellow fluorescence.
- After incubation with this product, cells can be observed under fluorescence microscope and yellow signals can be obtained at following optical condition:

  Excitation/Emission = 400 ±80 / 550 ±50 nm
- This product can be co-stained with blue and red mitochondrial probes for a whole spectrum fluorescence given that there is no FRET happen.

Material Preparation and Microscope Recommendation

- **Stock solution prepare:** AIE™ Cancer Yellow (0.1 mM) stock solution is prepared with the 0.200 μmol of AIE™ Cancer Yellow in 2 mL DMSO.
- **Fluorescence Microscope:** The cells could be imaged under a fluorescence microscope (λ_{ex} = 400 – 440 nm, diachronic mirror = 455 nm and emission filter = 465 nm long pass.)

  # Note: Confocal Microscopy – Recommended with 405 nm laser as excitation (Power 2 %, at researcher's discretion).

Before Your Experiment, You might NEED

1. Live Cells
2. Culture media
3. Buffer PBS solution
4. DMSO
5. Milliphore Water
6. 10 mM HEPES in MEM

Protocol (Recommended)

Cell Culture	The live cells were cultured in medium containing 10 % fetal bovine serum and antibiotics (100 units/mL penicillin and 100 μg/mL streptomycin) in a 5 % CO_2 humidity incubator at 37 °C.
Cell Imaging	1. **Prepare:** The cells were grown overnight on a petri dish (35 mm) with a coverslip. 2. **Staining**: The live cells were stained with 200 nM of AIE™ Mitochondrial Yellow for 20 min (by adding 4 μL of a 0.1 mM stock solution in DMSO to 2 mL culture medium). 3. **Wash:** The live cells were washed with PBS three times after incubation with the product. 4. **Before imaging:** Imaging medium (10 mM HEPES in MEM) was added to the dish. 5. **Ready to go:** The cells were observed under a fluorescent microscope through the observation window.
Differentiate Cancer Cells from Normal Cells	1. Cancer cells (HeLa, MDA-MB-231, MCF-7, PC9 and A549 etc) and normal cells (COS-7, LX2, MDCK-II etc) were grown overnight on a plasma-treated 25 mm round coverslip mounted to the bottom of a 35 mm petri dish with an observation window. 2. The live cells were stained with 200 nM of the probe for 20 min (by adding 4 μL of a 0.1 mM stock solution of the probe in DMSO to 2 mL culture medium). 3. The live cells were washed with PBS three times after incubation with dyes. 4. 2 mL of imaging medium (10 mM HEPES in MEM) was added to the dish. 5. The cells were then imaged by fluorescent microscope.
Note	1. Drill a hole of around 10 mm diameter in the middle of the dish. Place cover slide over the dish using paraffin. 2. Add the CCCP carefully into the dish after imaging by confocal microscope as the disturbance to the cells should be minimized for comparing the morphological change.

Fluorescent Spectrum

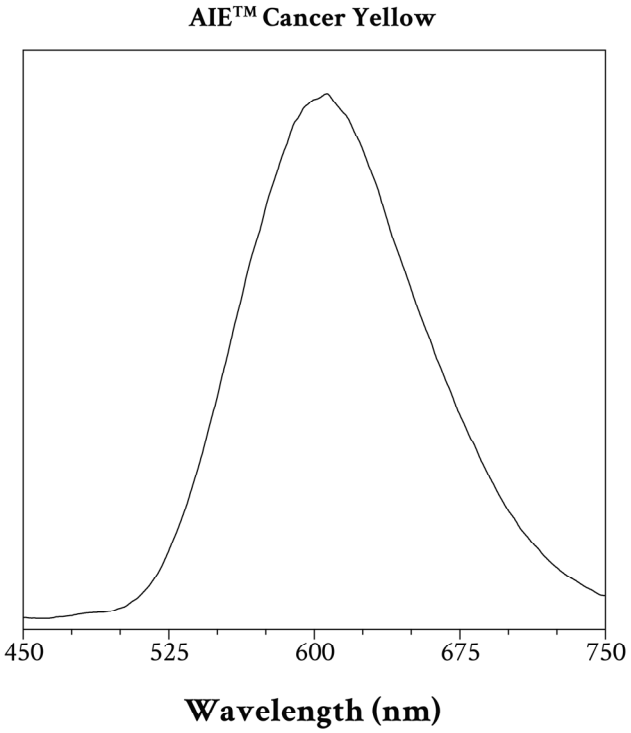


Figure 1 Photoluminescent spectrum of AIE™ Cancer Yellow probe in aggregation state. Excitation: 430 nm

Reference

1. Gui, C.; Zhao, E.; Kwok, R. T. K.; Leung, A. C. S.; Lam, J. W. Y.; Jiang, M.; Deng, H.; Cai, Y.; Zhang, W; Su, H.; Tang, B. Z. "AIE-active theranostic system: selective staining and killing of cancer cells." *Chemical Science,* **2017**, *8*, 1822–1830.

2. Optical information and suggested storage conditions:

Item	Ex/Em	Qty	Storage Condition*
AIE™ Cancer Yellow	430/550 nm	10 μmol	• ≤–20 ℃ (Upon receive this product) • Avoid Light • Keep Dry

* Remember to warm up to room temperature upon opening the vial