Actiflash

The photoinducible protein activator

Actiflash is a small steroid ligand that activates engineered proteins upon light induction. Use it to precisely control your protein activity down to the single cell level in live cell cultures and animals.

Key features

1. High spatiotemporal resolution: Actiflash selectively activates appropriate fusion proteins upon UV or IR laser illumination

2. Fast & non-invasive method relying on optical light induction

3. Wide applicability: activates any ER^{T2} – fused protein, a system extensively used for tamoxifen induction

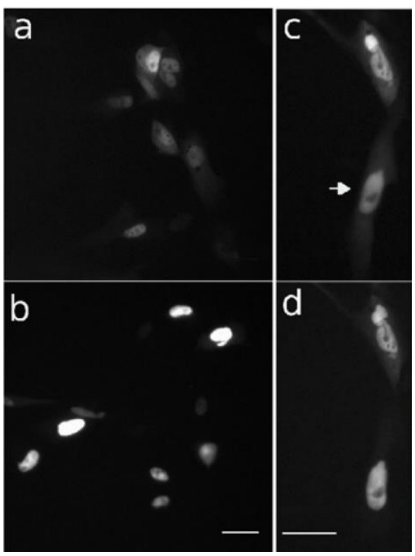
4. Straightforward protocol: Actiflash is cell-permeant. Simply incubate your cells or organisms with Actiflash and illuminate at the desired time.

Actiflash has been validated on:

- ✓ Cultured cells (CV-1, MDCK & HEK)
- ✓ Zebrafish embryos (up to 48 hpf)

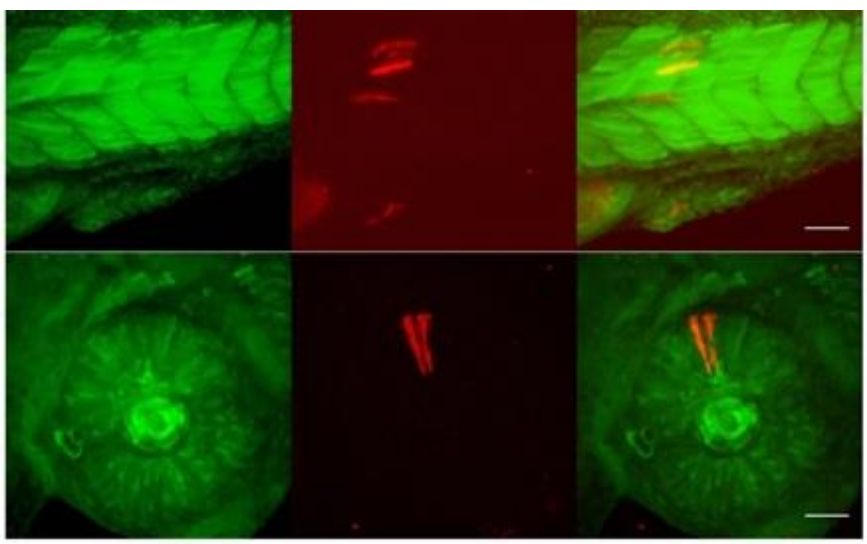
Results

Single-cell control of nuclear translocation using Actiflash



CV-1 cells were transfected with gfp-nls-ERT, incubated with Actiflash and imaged either before (a & c) or 60 min after (b & d) UV illumination. Nuclear GFP-nls-ERT translocation was selectively activated in one cell, indicated with an arrow in c, using two-photon illumination (750nm, 10mW for 10s). Scale bar: 25µm

Local photoactivation of dsRed expression in 48 hpf zebrafish embryos using Actiflash



ef1fi:loxP-egfp-loxP-dsRed zebrafish embryos were injected with cre-ERT mRNA at the one-cell stage and further incubated with 3 mM Actiflash. dsRed was expressed at the single cell level after UV illumination with two-photon excitation, 750nm, 20mW for 10s. Scale bar: 50mm

Left: reproduced with permission from D. K. Sinha et al, Photocontrol of Protein Activity in Cultured Cells and Zebrafish with One- and Two-Photon Illumination, Chem. Bio. Chem., 2010, 11, 653-663.

Right: experiments performed by Pierre Neveu, Michel Volovitch & Sophie Vriz

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