

# Controllable NOdonor < NO-Rosa5 >

For more information : [https://www.funakoshi.co.jp/exports\\_contents/81329](https://www.funakoshi.co.jp/exports_contents/81329)

**Controllable NOdonor** (original name; NO-Rosa5) is a novel NO donor controllable by visible light.

## Background

Nitric Oxide (NO), a gaseous free radical, is one of the signaling molecules physiologically produced by NO synthases. NO plays a key role in a wide range of biological processes.

However, NO is extremely unstable in physiological condition, so it is difficult to handle NO molecule in biological experiments. This made it difficult to analyze further function of NO in cells.

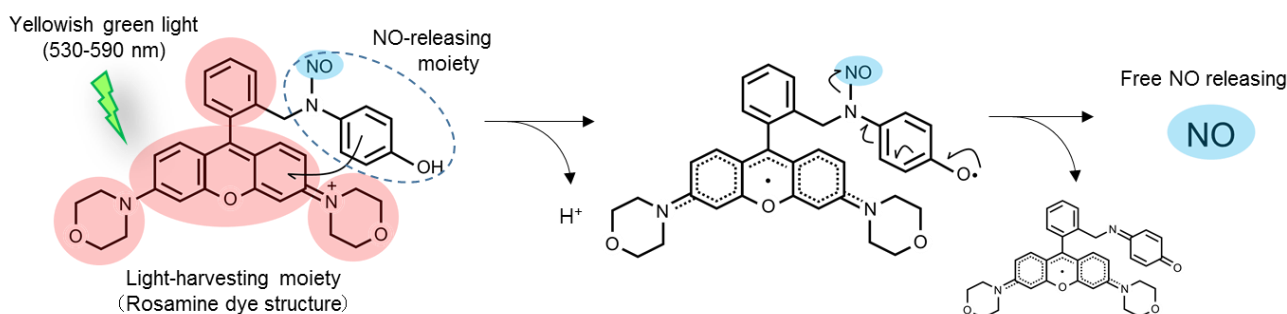
To overcome this point, "NO donors", compounds that release NO molecules in aqueous buffers, have been used in NO research. Although NO donors are valuable tools, but have never been temporospatially controllable.

Controllable NOdonor (original name; NO-Rosa5) is a novel NO donor which can be controlled by visible light.

Controllable NOdonor has two moieties, Rosamine fluorescent dye as light harvesting group and *N*-nitrosoaminophenol structure as NO releasing moiety triggered by photo-induced electron transfer (PeT). It shows low photo-toxicity, low cytotoxicity, and efficient NO releasing by visible light irradiation.

This product has been commercialized with the support of Nagoya City University.

## Principle



## Features

- NO releasing is controllable by visible light.  
\* Please pay attention to environmental light source.
- Low photo-toxicity and cytotoxicity under recommended concentration (10 μM).

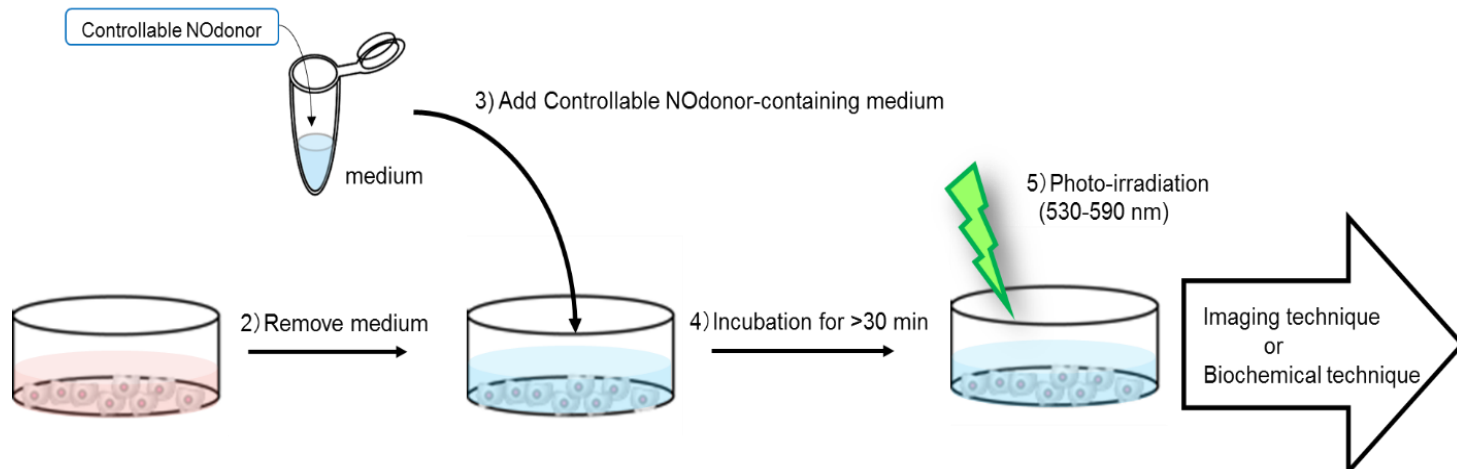
## Application

- Spatio-temporal control of NO molecules in cultured cells and tissues  
Light sources: Xenon light source with equipped with a 530-590 nm band-pass filter  
Validated equipment MAX303 (Asahi Spectra)  
He-Ne 543 nm laser in confocal microscopy

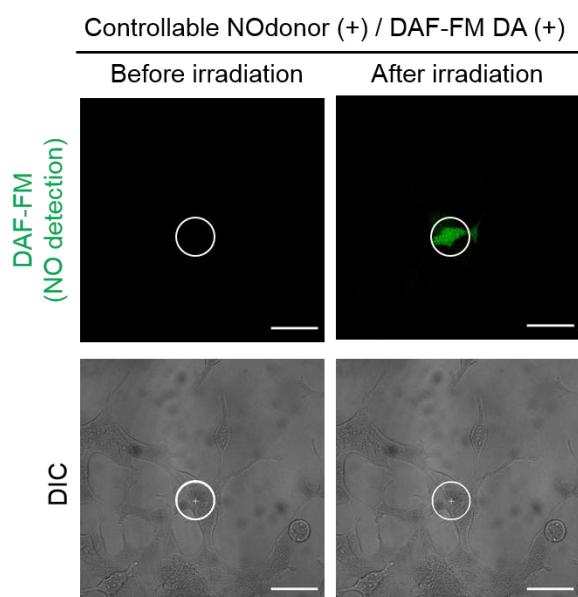
**NOTE : This product is NOT an imaging dye of NO.**

## Procedure

### 1) Preparation of Controllable NOdonor-containing medium



## Data example



### Fig. *In cellulo* region-specific NO generation with Controllable NOdonor

HEK293T cells were firstly treated with DAF-FM DA (NO detection reagent, 10  $\mu$ M) for 30 min. After washing, the cells were subsequently treated with 10  $\mu$ M Controllable NOdonor for 60 min. The dish was photo-irradiated inside the indicated white circle ( $r=31 \mu$ m) using a 543 nm laser of confocal microscopy.

Left; before irradiation, Right; after irradiation. Only inside the white circle, NO was detected. (scale bar = 40  $\mu$ m)

## Reference

- Ieda *et al.*, *Sci. Rep.*, **9**, 1430 (2019)  
Structure-efficiency relationship of photoinduced electron transfer-triggered nitric oxide releasers.
- Ieda *et al.*, *Chem. Pharm. Bull.*, **67**, 576-579 (2019),  
*In cellulo* and *ex vivo* availability of yellowish-green-light-controllable NO releaser.
- Okuno *et al.*, *Org. Biomol. Chem.*, **15**, 2791-2796 (2017)  
A yellowish-green-light-controllable nitric oxide donor based on N-nitrosoaminophenol applicable for photocontrolled vasodilation.

## Product Information

[ Manufacturer : FNA ]

Product Name	Code	Size	Storage
Controllable NOdonor < NO-Rosa5 >	FDV-0032	0.25 mg	-20°C

NOTE | ※ All products here are research use only, not for diagnostic use.  
※ Specs might be changed for improvement without notice.  
※ Numbers after '#' represents product code.

※ Company name and product name are trademark or registered mark.  
※ Please contact your local distributors for orders, quote request and inquiry.

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