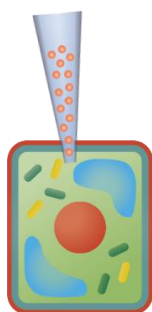


## Single Cellome™ Unit SU10

## Delivery to a Cultured Plant Cell and Plant Tissues



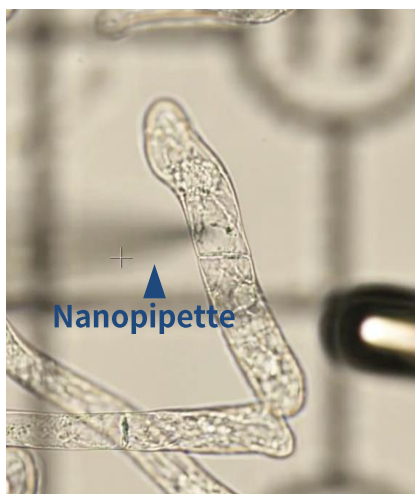
SU10 is a novel technology that enables the delivery of target substances directly into cells (nucleus or cytoplasm) using a "nano" pipette made of a glass capillary with an outer tip diameter of tens of nanometers.

It is specifically designed to transfect cells that are difficult to introduce substances to using conventional methods.

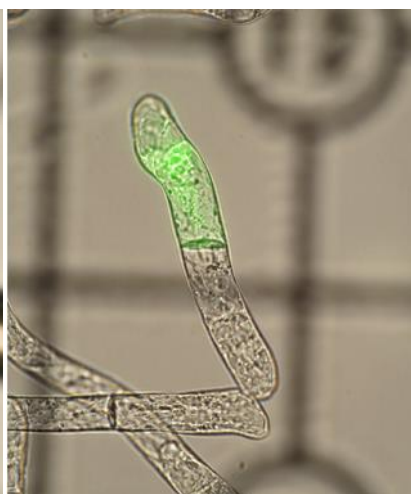
This application note provides examples of delivering fluorescent reagents into plant cells with rigid cell walls and high swelling pressure using the SU10.

## Delivery to a Cultured Plant Cell with the SU10

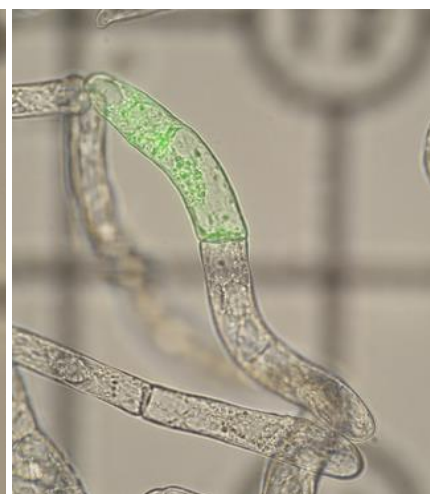
Before the delivery



After the delivery



One day later



Merge(Bright Field/FITC)

Provided by Dr. Daisuke Kurihara (Higashiyama Group, Nagoya University)

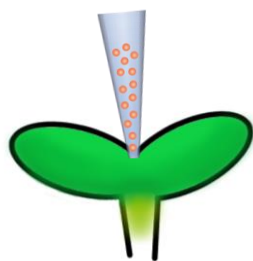
## Experimental Conditions

Cell : BY-2 (Glass bottom dish with grid)

Reagent : 5 mg/ml FITC-dextran (MW 70,000)

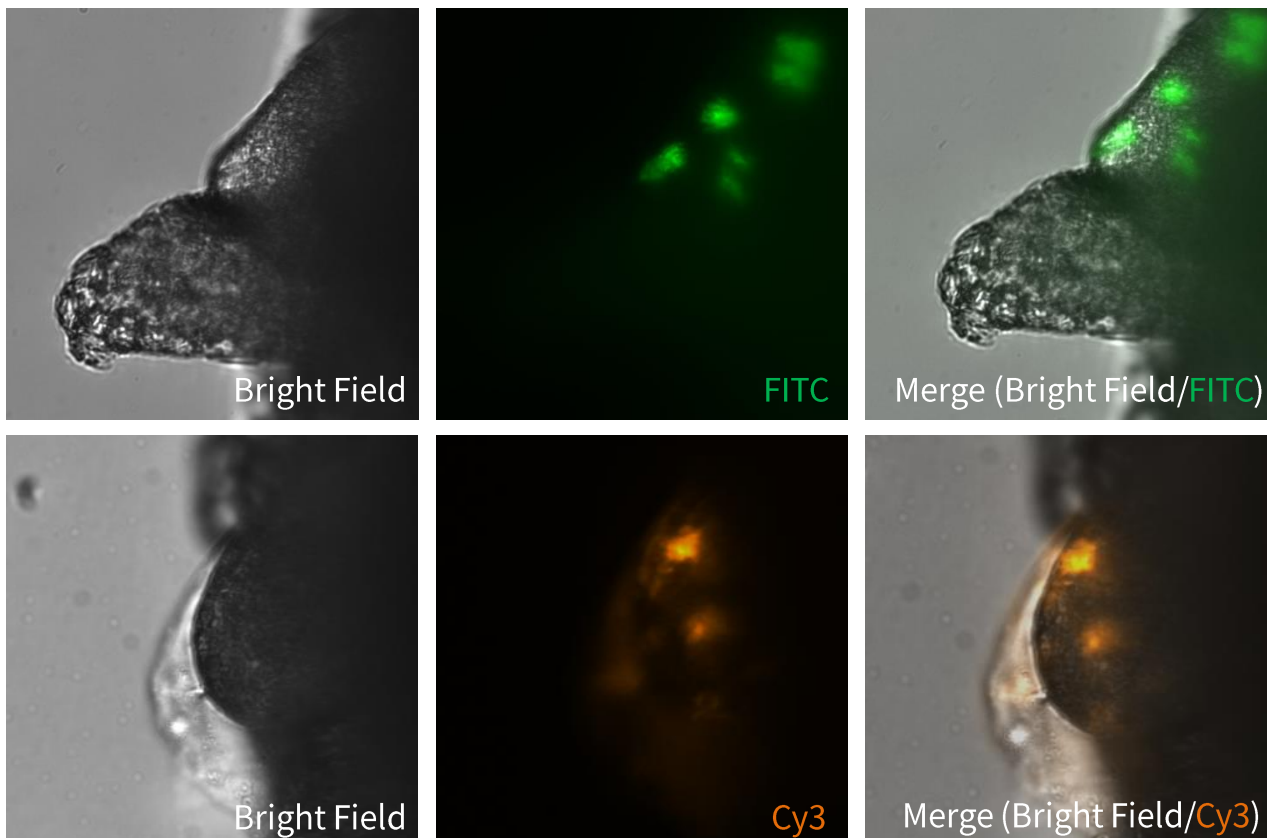
## Results

- ◆ The fluorescent signal was observed one day after the SU10 delivery, indicating that the cells were still alive.
- ◆ The nanopipette tip can penetrate a rigid plant cell wall.
- ◆ The SU10 can be used to deliver to cells with a high swelling pressure. The delivery by the SU10 is based on an electrochemical mechanism and does not use pneumatic or hydraulic pressure.



The SU10 can deliver substances into plant tissues as well as cultured cells.

Applying this technology to genome editing of crops and the development of plant-derived medicines is expected to dramatically change these industries and contribute to the SDGs (Goal2: Zero Hunger, Goal3: Good Health and Well-Being).



### Experimental Conditions

Plant tissue: Apical meristem of white radish sprouts (fixed in 60 mm dish)  
Reagent : 10 mg/ml FITC-dextran (MW 70,000) or Cy3-oligonucleotide (50  $\mu$ M)  
Evaluation: Tissues were observed just after delivery with the fluorescence microscopy

### Results

- ◆ The fluorescent signals were observed in apical meristematic tissue after the SU10 delivery.
- ◆ The average success rates are 31.1% (maximum 71.4%) for FITC-dextran and 45.5% (maximum 58.3%) for Cy3-oligonucleotide. Five to 13 cells were delivered per nanopipette and the delivery success rate was calculated.

**The SU10 has the potential to deliver various substances directly into specific cells within tissues of various plant species.**

### Yokogawa Electric Corporation Life Business Headquarters

2-9-32 Nakacho, Musashino-shi, Tokyo, 180-8750 Japan

Phone: +81-422-52-5550

E-Mail: SingleCell@cs.jp.yokogawa.com

<https://www.yokogawa.com/solutions/solutions/life-innovation/>

Subject to change without notice.

All Rights Reserved, Copyright © 2022, Yokogawa Electric Corporation

Printed in Japan, 2022 [ Ed:01 ]