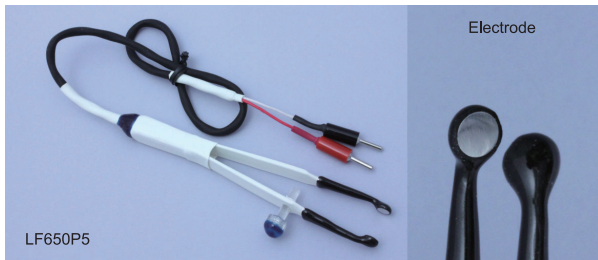


In vivo & In utero

LF650 series Tweezers with disk electrodes

Target sample : Mouse and rat' s skin, organs, retina, zebrafish' s fin, mouse embryo' s brain (in utero)



LF650 series Tweezers with asymmetric disk electrodes

Target sample : pinpoint area of mouse and rat' s organs, mouse embryo' s brain (in utero)



How to read catalogue no

LF650 P 5

Diameter of disk electrode
electrode materia T: Tungsten
S: Stainless steel
* A unit of diameter is mm

Series

- LF650P0.5 • LF650P5 • LF650S5
- LF650P1 • LF650P7 • LF650S7
- LF650P3 • LF650P10 • LF650S10

See Application 6, 9 and 11

How to read catalogue no

LF650 P 1 - 3

Diameter of disk electrode
Diameter of disk electrode
electrode materia T: Tungsten
S: Stainless steel
* A unit of diameter is mm

Series

- LF650P0.5-3 • LF650P1-3
- LF650P0.5-5 • LF650P1-5

LF659 series Tweezers with circular disk & needle electrodes

Target sample: Embryonic brain of the mouse & rat (in utero) etc.



How to read catalogue no

LF659 P 2-15

length of needle electrode (mm)
diameter of disk electrode (mm)
electrode material P: platinum
S: stainless steel

Series

- LF659P2-7 • LF659P2-15

LF661 series Tweezers with oval disk & needle electrodes

Target sample: Embryonic brain of the mouse & rat (in utero) etc.



How to read catalogue no

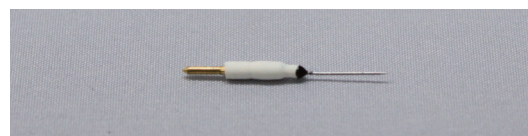
LF661 S 3x7

length of the major axis of disk electrode (mm)
length of the minor axis of disk electrode (mm)
electrode material S: stainless steel

Series

LF661S3X7

LF661SN Stainless steel needle electrode for LF661 series

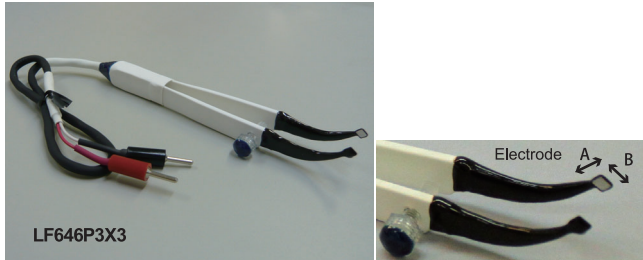


* Product specifications are subject to change without notice

In vivo

LF646 series Bow-shaped tweezer electrodes

Target sample: Mouse and rat' s muscle (local application) etc.



How to read catalogue no

LF646 P 3 X 3

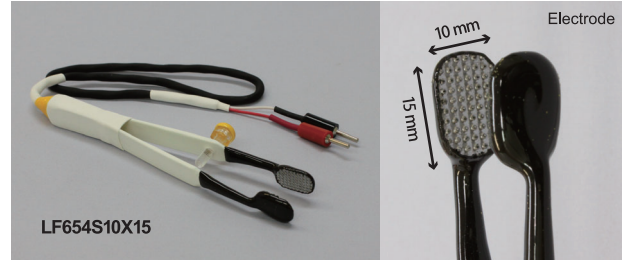
size of the electrode (A x B) (mm)
electrode material P: platinum

Series

LF646P3X3 LF646P5X5

LF654 series Tweezer with hubbly oval disk electrodes

Target sample: Mouse and rat' s liver, kidney, etc.



How to read catalogue no

LF654 P 10 X 15

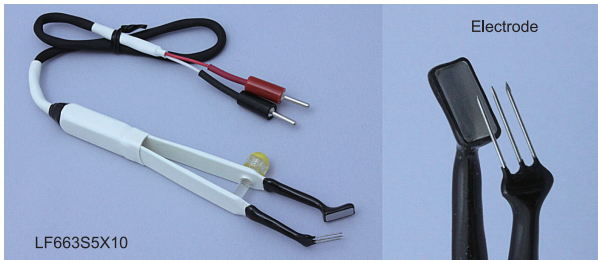
width of the disk electrode (mm)
length of the disk electrode (mm)
electrode material P: platinum
S: stainless steel

Series

- LF654S10X15
- LF654P10X15
- LF654S15X10
- LF654P18X10
- LF654S18X10

LF663 & 664 series Tweezers with fork & rectangular electrodes

Target sample : Mouse and rat' s skin



How to read catalogue no

LF663 P 3 X 6

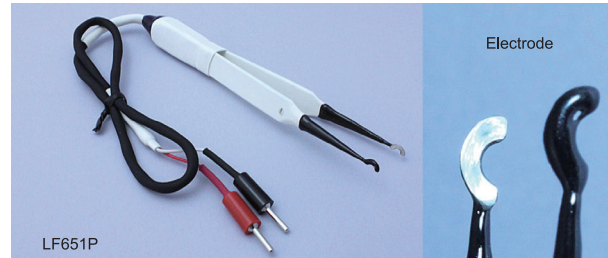
electrode size (W x H)
electrode materia T: Tungsten
S: Stainless steel
no of needles
* A unit of size is mm

Series

- LF663S5X8
- LF663P3X6
- LF663S5X10
- LF663P5X5
- LF664S10X15

LF651P Tweezers with U-shape platinum electrodes

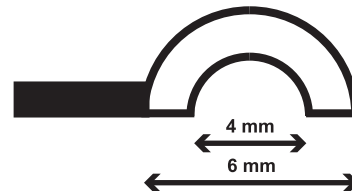
Target sample : Mouse embryo' s spinal cord



Specifications

ID: 4mmΦ

OD: 6mmΦ

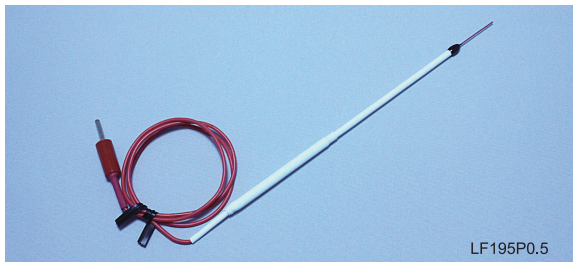


See Application 11

In vivo

LF195 series Platinum needle electrode

Target sample : Xenopus embryo



How to read catalogue no

LF195 P 0.5

Diameter of electrode tip

electrode materia: platinum coating

* A unit of diameter of electrode tip is mm

Series

LF195P0.3

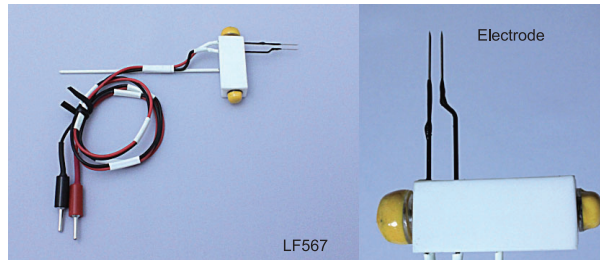
LF195P0.5

Used with LF700P20E (see LF700 series)

See Application 4

LF567 Needle electrode (variable gap)

Target sample : Honey bee' s brain, newborn mouse' s brain etc.



Specifications Variable gap: 0.5-20mm, Diameter of electrode tip: 0.5mm

See Application 8

LF675AG5 Tweezer-type electrodes for the eye

Target sample: retina of the adult mouse



Spec of the electrodes

5 mm in diameter

LF653 series Tweezer-type triple electrodes

Target sample: embryonic mouse or rat' s brain (motor cortex, visual cortex, hippocampus, etc.)

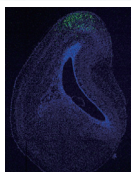
The 3rd electrode is movable



*Optional fixed-type 3rd electrode is available on request.



E18.5 mouse brain that were electroporated at E13.5. GFP expression is seen locally in the motor cortex.



E18 mouse brain that were electroporated at E13. GFP expression is seen locally in the caudal (visual) area of the cortex.

Series

How to read catalogue no

- LF653P3-3×5
- LF653P5-5×6
- LF653S3-3×5
- LF653S5-5×6

Contact us for other variations available.

LF653 P 3 - 3 × 5

length of the third electrode (mm)

width of the third electrode (mm)

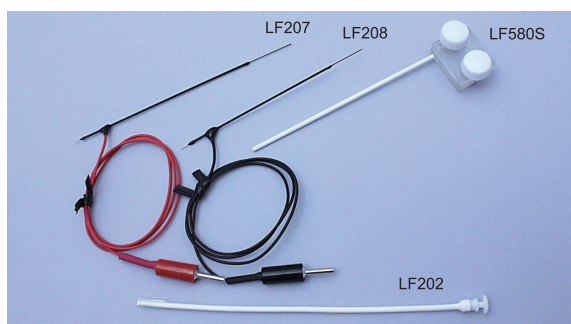
diameter of the disk electrode (mm)

electrode material P: platinum S: stainless steel

An adaptor for triple electrodes (D120) is required for the connection of the LF653 electrodes to the electroporator.

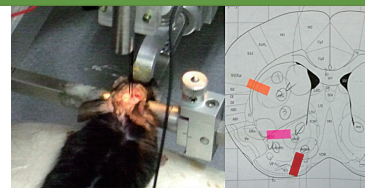
LF200S Injection needle electrode with holder

Target sample : Adult mouse' s brain



Components

- LF207 injection needle (anode)
- LF208 injection needle (cathode)
- LF580S electrode holder
- LF202 Cleaning wire



Specifications Electrode tip of LF208 & LF207 ID: 0.15mmΦ OD: 0.3mmΦ Length of conductive part: 0.5mm

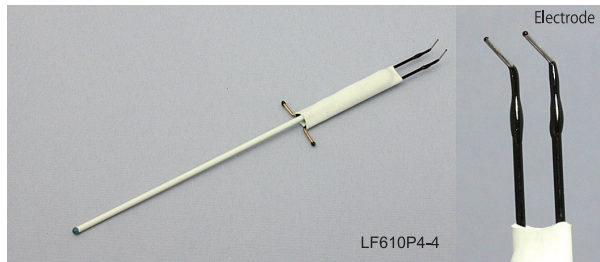
* Product specifications are subject to change without notice

In ovo

LF610 series

Fixed platinum needle electrode (for routine work)

Target sample : chick embryo' s organ or tissue derived from ectoderm (i.e. neural tube)



How to read catalogue no

LF610 P 2 - 1

length of conductive part
gap between electrodes
electrode material: platinum
* A unit of length and gap is mm

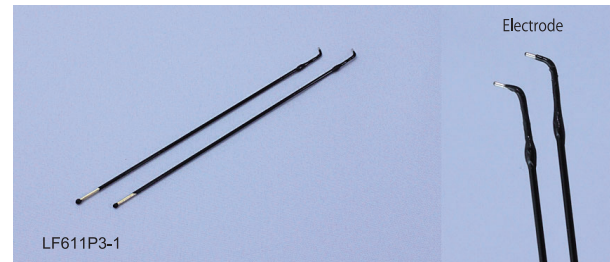
Series

- LF610P1.5-1
- LF610P2-1
- LF610P4-1
- LF610P4-2
- LF610P4-3
- LF610P4-4

LF611 series

Platinum needle electrode

Target sample : chick embryo' s organ or tissue derived from ectoderm (i.e. neural tube)



How to read catalogue no

LF611 P 3 - 1

length of conductive part
length from electrode tip to bent part
electrode material: platinum
* A unit of length is mm

Series

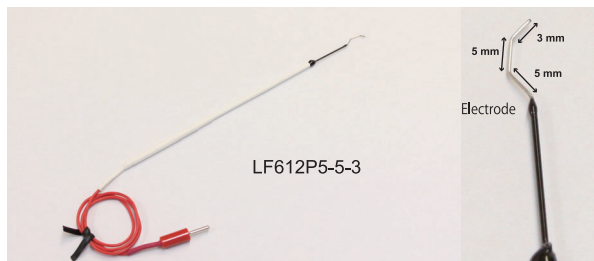
- LF611P3-1
- LF611P7-2
- LF611P7-3
- LF611P7-4
- LF611P7-5
- LF611P8-2

See Application 1

LF612P series

U-shaped electrode for the limb bud

Target sample: chick embryonic limb bud etc.



How to read catalogue no

LF612 P 5 - 5 - 3

length of the distal part of the electrode (mm)
length of the middle part of the electrode (mm)
length of the proximal part of the electrode (mm)
electrode material P: platinum

Series

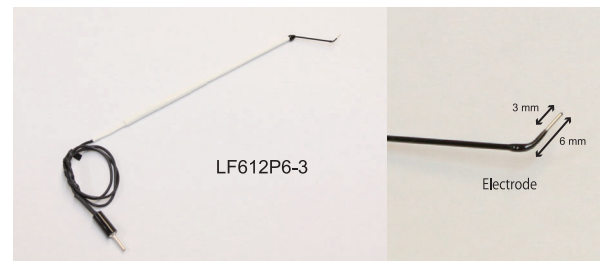
- LF612P5-5-3

* Used with LF612P series electrodes.

LF612P series

L-shaped electrode for the limb bud

Target sample: chick embryonic limb bud etc.



How to read catalogue no

LF612 P 6 - 3

length of the conductive part of the electrode (mm)
length of the tip of the electrode (mm)
electrode material P: platinum

Series

- LF612P6-3
- LF612P7-3
- LF612P7-1
- LF612P7-5

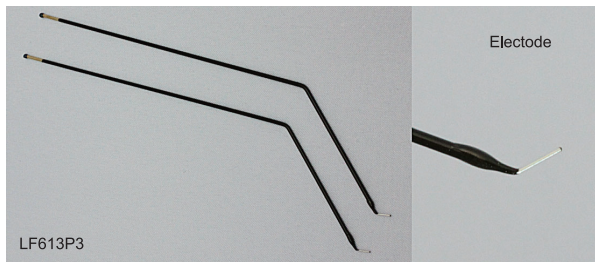
* Used with LF612P5-5-3 electrodes.

In ovo

LF613series

Z-Shape platinum electrode*

Target sample : chick embryo' s organ or tissue derived from endoderm and mesoderm



How to read catalogue no

LF613 P 3

length of conductive part
electrode material: platinum
* A unit of length is mm

Series

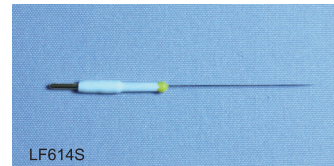
- LF613P1
- LF613P2
- LF613P3
- LF613P5

* Used with LF611 or LF614 series electrodes

LF614series

Tungsten & stainless steel needel electrode

Target sample : pinpoint area of chick embryo' s organ or tissue derived from endoderm and mesoderm



How to read catalogue no

LF614 T

electrode material T: Tungsten
S: Stainless steel

Series

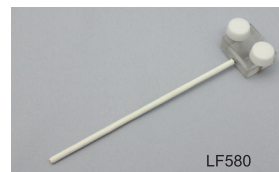
LF614T (5pcs) *1 LF614S (1pc) *2

*1 Diameter of needle tip: 200µmΦ

*2 Diameter of needle tip: 100µmΦ, Length of conductive part: 1mm

LF580

Electrode holder



Electrode gap: 1-10mm (1mm increment)
Compatible electrodes: LF611 • LF613

LF615C

Electrode holder



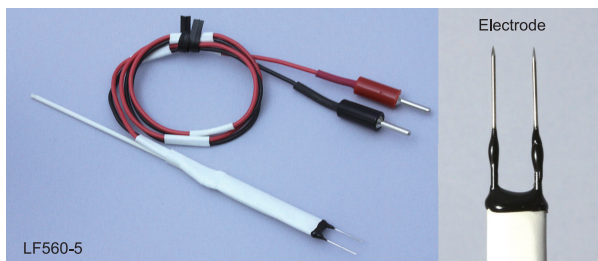
Compatible electrodes: LF614T LF614S

In vivo

LF560series

Fixed gap needle electrode

Target sample : Mouse and rat' s muscle, newborn rat' s brain etc.



How to read catalogue no

LF560 S 5

gap between electrodes
electrode material: stainless steel
* A unit of gap is mm

Series

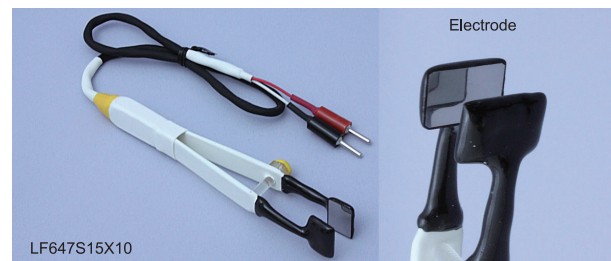
LF560S5 LF560S10 LF560S15

Diameter of electrode tip : 0.5mmΦ

LF647series

Tweezers with rectangular (square) electrodes

Target sample : Mouse and rat' s pancreas, black porgy' s gonad



How to read catalogue no

LF647 P 1X2

electrode size (W x H)
electrode material T: Tungsten
S: Stainless steel
* A unit of size is mm

Series

- LF647P1X2
- LF647P2.5X1
- LF647S10X15
- LF647P2X2
- LF647P3X5
- LF647S15X10
- LF647P2X5
- LF647S5X10
- LF647S20X20

See Application 3

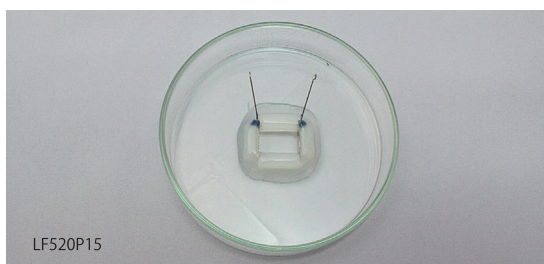
* Product specifications are subject to change without notice

Ex vivo

LF520 series

Bath with plate electrodes on petridish

Target sample: mouse or rat' s embryo (whole mount culture), extracted organ or tissue



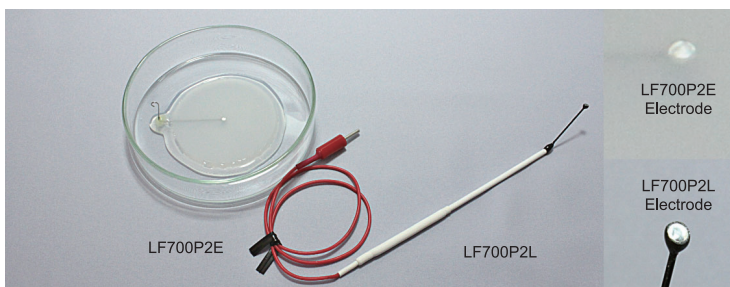
Series	How to read catalogue no
<ul style="list-style-type: none"> • LF520P5 • LF520P20 • LF520P15* • LF520P25 <p>* For whole mount culture</p>	<p>LF520 P 5</p> <p>gap between electrodes electrode material: platinum coating</p> <p>* A unit of gap between electrodes is mm</p>

See Application 5

LF700 series

Platinum disk electrode on petridish & on rod

Target sample: mouse or rat' s sliced tissue (i.e. hippocampus)



How to read catalogue no
<p>LF700 P 2 E</p> <p>Type of electrode: E: Petridish type L: Rod type Diameter of disk electrode electrode material: platinum coating</p> <p>* A unit of diameter is mm</p>

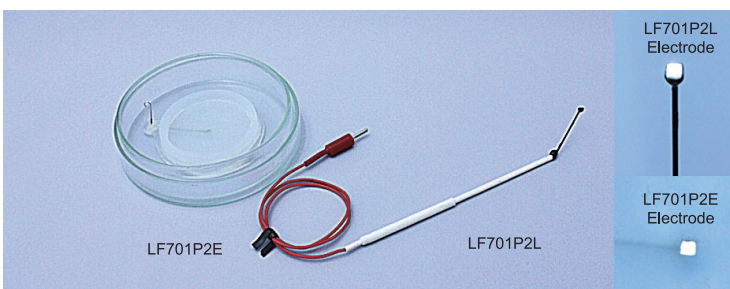
S-E-S	Petridish type	Rod type
	<ul style="list-style-type: none"> • LF700P2E • LF700P3E • LF700P4E 	<ul style="list-style-type: none"> • LF700P1L • LF700P2L • LF700P3L
	<ul style="list-style-type: none"> • LF700P5E • LF700P7E • LF700P10E 	<ul style="list-style-type: none"> • LF700P4L • LF700P5L • LF700P7L
	<ul style="list-style-type: none"> • LF700P20E 	<ul style="list-style-type: none"> • LF700P10L • LF700P20L

See Application 10

LF701 series

Platinum square electrode on petridish & on rod

Target sample: mouse or rat' s sliced tissue, planarian, early chick embryo etc.



How to read catalogue no
<p>LF701 P 2 E</p> <p>Type of electrode: E: Petridish type L: Rod type length of square electrode electrode material: platinum coating</p> <p>* A unit of square is mm</p>

S-E-S	Petridish type	Rod type
	<ul style="list-style-type: none"> • LF701P2E • LF701P5E • LF701P7E 	<ul style="list-style-type: none"> • LF701P2L • LF701P3L • LF701P5L
	<ul style="list-style-type: none"> • LF701P10E • LF701P20E 	<ul style="list-style-type: none"> • LF701P7L • LF701P10L • LF701P20L

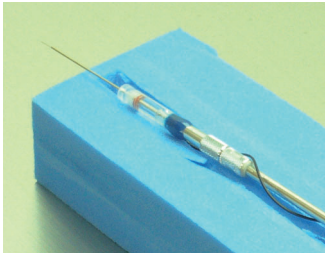
See Application 2

* Product specifications are subject to change without notice

In vitro

LF230 Glass capillary holder with wire electrode

Target sample: single mammalian or plant cell etc.



* Glass capillary and manipulator rod are not included

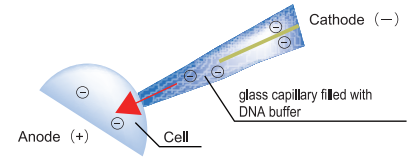
Procedure of electroporation with LF230

1. Place the tip of a glass capillary on cell membrane
2. Electroporate a cell
3. Make a pore on cell membrane and introduce genes into a cell

Advantage of LF230

- Able to quantify the amount of DNA introduced into a cell
- Minimize a damage caused by buffer

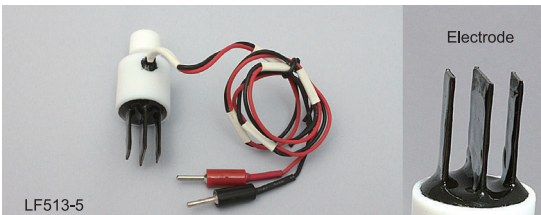
Schematics of L230 with glass capillary



LF512 · 513 · 514 series

Plate electrode for cultured cells

Target sample: Human corneal keratocyte cells · Dental pulp cells · NC65 · BCEC



LF513-5

Electrode

Series	
• LF512-5	• LF513-5
• LF513-4	• LF514-5

How to read catalogue no
LF512 - 5 gap between electrodes no of plate electrodes <small>* A unit of gap between electrodes is mm</small>

Schematics of plate electrode

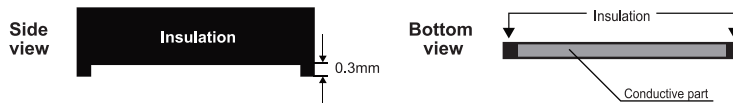


Plate electrodes for cultured adherent cells

Each plate electrode has a 0.3mm height insulated foot at both ends of the bottom. When an electrode is placed in a dish, as the conductive part of an electrode will not touch cells directly, a foot minimizes the damage on cells.

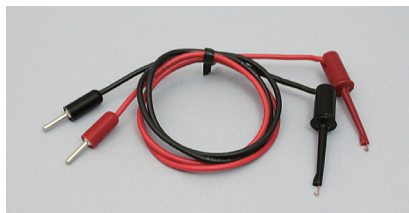
Cables & Accessory

D200 Footswitch



Compatible with CUY21EDIT · CUY21Vivo-SQ · CUY21EX
Able to apply DC pulse by footswitch

D117 Hook cable



Compatible with CUY21EDIT · CUY21Vivo-SQ · CUY21EX
Able to connect an electrode by hook

D115CB Connector cable



Compatible with CUY21EDIT · CUY21Vivo-SQ · CUY21EX
Able to connect a tweezers type electrode directly

D112CB High voltage connector cable



Compatible with CUY21EDIT · CUY21Vivo-SQ · CUY21EX
Connect a main device to a polarity changer DU902

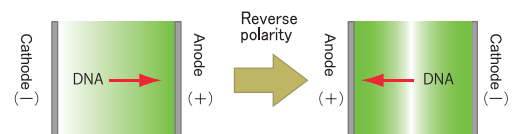
DU902 Polarity changer



Compatible with CUY21EDIT · CUY21Vivo-SQ · CUY21EX
D112CB cable is not included

Increase transfection area by reversing polarity between electrodes

Polarity Change



Genes are expressed intensively around anode side as DNA charged with negative is pulled over to anode

Transfection can be expanded by just reversing polarity between electrodes