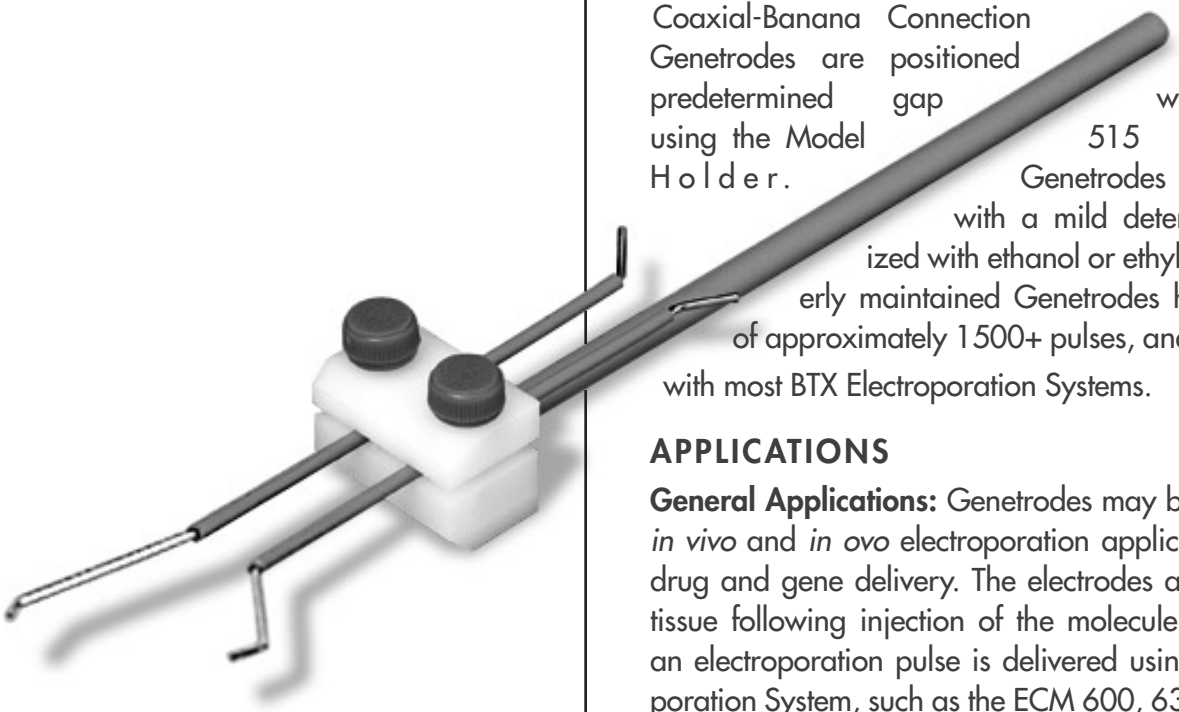
Genetrodes™

TECHNICAL SPECIFICATIONS MODELS 508, 510, 512, 514, & 516



The BTX Genetrodes are needle-style reusable electrodes that are used for a variety of applications. Genetrodes come in five models, with each model consisting of a pair of electrodes. The Model 508 and 510 Genetrodes are straight electrodes with gold tips. The Model 512, 514, and 516 Genetrodes are bent L-shaped electrodes with gold tips. These electrodes are connected to a Model 465 Square-Post Connection Cable and interfaced with a pulse generator via a Model 5343 Coaxial-Banana Connection Cable. The Genetrodes are positioned in parallel at a predetermined gap within a tissue using the Model 515 Genetrode Holder. Genetrodes may be cleaned with a mild detergent and sterilized with ethanol or ethylene oxide. Properly maintained Genetrodes have a life span of approximately 1500+ pulses, and are compatible with most BTX Electroporation Systems.

APPLICATIONS

General Applications: Genetrodes may be used for many *in vivo* and *in ovo* electroporation applications, including drug and gene delivery. The electrodes are placed into a tissue following injection of the molecule of interest, and an electroporation pulse is delivered using a BTX Electroporation System, such as the ECM 600, 630, 830, T820 or 2001. The electric field introduced by the Genetrodes causes transient pores to form in the cells of the tissue, allowing uptake of the molecules into the cells.

***In Vivo* Applications: Model 508 and Model 510 Genetrodes:** The model 508 Genetrode with a sharp 5mm electrode tip is a general *in vivo* electrode. The model 510 is the same electrode but with a 10mm tip. Genetrodes have been used for a variety of applications. Eide et al. used the Genetrodes along with the ECM 830 to introduce plasmid DNA into free swimming embryonic Xenopus laevis.[2] Dean et al. used the Genetrodes on mouse cornea, which resulted in a 30-fold higher expression than that obtained with Lipofectin.[3] Murphy et al. used the Genetrodes with ECM 830 to introduce plasmid DNA into a mouse cerebellum, where he concluded that electroporation is a viable means of transferring genes to the central nervous system.[4] Aihara and Miyazaki used these electrodes with a T820 to transfer genes into murine muscle tissue, significantly increasing expression levels over DNA injection alone.[5]

The Electroporation Experts

BTX®

A Division of Genetronics, Inc.

11199 Sorrento Valley Road,
San Diego, CA 92121-1334 U.S.A.
Phone: 1-800-2465, (858) 597-6006
Fax: (858) 597-9594

***In Ovo* Applications: Model 512, 514, and 516 Genetrodes**: The model 512, 514, and 516 electrodes are all suitable for *in ovo* gene transfer studies. Kos used the Genetrodes with the T820 to successfully introduce expressing plasmids and morpholino antisense oligonucleotides *in ovo* [1] and Paquette et al. used the Genetrodes to drive plasmid DNA into the neural tube of a developing egg in which widespread gene expression was observed.[9] An electrode similar to model 514 has been used with a T820 by Muramatsu in his *in ovo* studies.[5] He concludes that electroporation is superior to both lipofection and microparticle bombardment.[6]

TECHNICAL SPECIFICATIONS

Standard Capabilities

Voltage Range:	0 – 200 Vdc
Pulse Length Range:	1µs - 99msec

Physical Characteristics

***In Vivo* Genetrodes**	**Model 508**	**Model 510**
Electrode Length:	5mm	10mm
Shaft Configuration:	long	long

In Vivo Genetrode tips are invasive, gold coated and 0.5mm in diameter. The shafts are straight and 0.8mm in diameter.

***In Ovo* Genetrodes**	**Model 512**	**Model 514**	**Model 516**
Electrode Length:	5mm	3mm	1mm

In Ovo Genetrode tips are non-invasive, gold coated and 0.5mm in diameter. The shafts are 0.8mm in diameter and L-shaped.

Generator Compatibility:	ECM® 630, 830, 2001, 600, & T820
Monitoring:	Enhancer 400 Recommended
Genetrode Holder Interelectrode Gaps:	1-10mm

ORDERING INFORMATION

Model	Description	Part Number
508	*In vivo* straight electrode w/ 5mm gold tip	10-001849-01
510	*In vivo* straight electrode w/ 10mm gold tip	10-001849-02
512	*In ovo* L-shaped electrode w/ 5mm gold tip	10-001850-01
514	*In ovo* L-shaped electrode w/ 3mm gold tip	10-001850-02
516	*In ovo* L-shaped electrode w/ 1mm gold tip	10-002509-01
515	Genetrode Holder	10-002560-01
465	Square-Post Connection Cable	06-700044-01
5343	Coaxial-Banana Connection Cable	06-700042-01
4001	Enhancer 400 w/ Computer & Printer	01-001483-01

REFERENCES

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