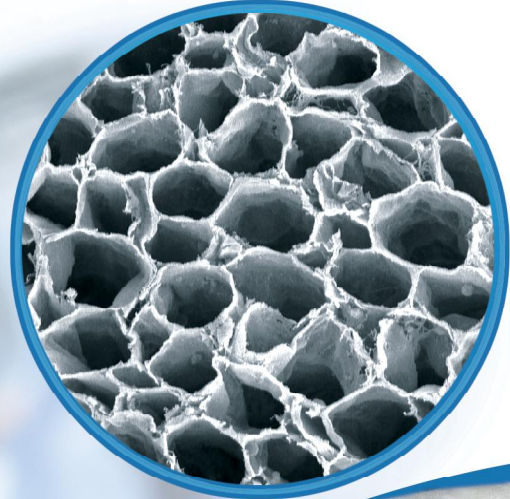


# Still using empty tubes?

## Structure matters.

*Avance*<sup>®</sup>  
Nerve Graft



## It's time to rethink nerve repair.

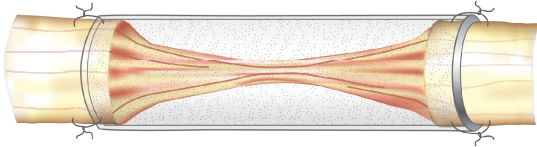
Avance<sup>®</sup> Nerve Graft is the only commercially available processed human nerve allograft for bridging peripheral nerve discontinuities and was developed based on the principle that the human body created the optimal nerve structure for regeneration.

 **AxoGen**<sup>®</sup>  
Nerve Regeneration

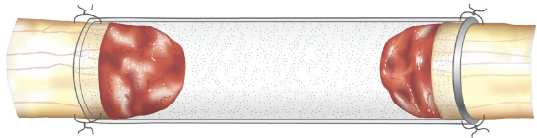
# Rethink nerve repair.

## Empty nerve tubes

- Empty tubes provide only gross alignment of the nerve.
- Repair with an empty nerve tube relies on the formation of a fibrin bridge; cell migration & axonal extension occurs within and is restricted by the thinnest cross-sectional area of the bridge.



- In empty nerve tubes, a fibrin bridge may not form or may break down during regeneration, which can result in failed repair or neuroma.

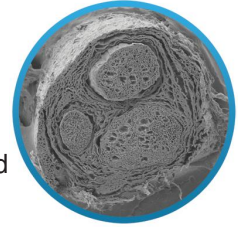


- Tube material degrades over time.

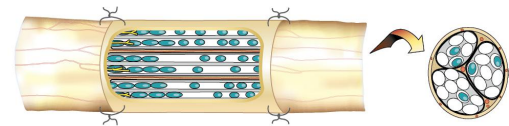
# Avance®

## Nerve Graft

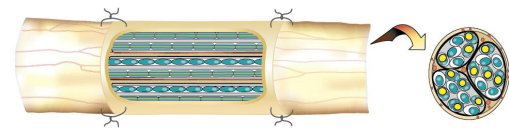
- Avance® Nerve Graft provides the micro-architecture of human peripheral nerve.
- The 3-dimensional architecture inherent to the nerve is maintained to provide structural support for regenerating axons. Proprietary processing clears cellular and noncellular debris providing a clear pathway for regeneration.



- Avance® Nerve Graft supports cellular migration and axonal growth.



- Avance® Nerve Graft provides an organized and continuous scaffold across the full length of the gap.



- Graft revascularizes and is remodeled into the patient's own tissue.

The strengths and limitations of empty nerve tubes should be considered when evaluating nerve repair treatment options. Empty nerve tubes can be effective in gaps under 5 mm however reliability diminishes in gaps above 5 mm.

In a peer reviewed published clinical study of empty nerve tubes, 100% meaningful recovery was reported in gaps of less than 5 mm<sup>1</sup> however other studies found 34% of repairs failed for gaps of 5 mm or greater<sup>1</sup>, 35% of repairs had tube related complications<sup>3</sup> and 31% of repairs required revision in gaps 2.5 – 20 mm (sensory, mixed, motor)<sup>4</sup>.

Peer reviewed published clinical studies for Avance® Nerve Graft include Cho, et al., *The Journal of Hand Surgery*, November 2012<sup>2</sup>, Brooks, et al., *Microsurgery*, January 2012<sup>5</sup>, Karabekmez, et al., *Hand*, 2009<sup>6</sup>, and Ducic, et al., *Annals of Plastic Surgery*, February 2012<sup>7</sup>.

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Phone Toll Free 888.AxoGen1 (888.296.4361) or 386.462.6800  
Fax 386.462.6801

CustomerCare@AxoGenInc.com  
www.AxoGenInc.com

### REGULATORY CLASSIFICATION

Avance® Nerve Graft is processed and distributed in accordance with US FDA requirements for Human Cellular and Tissue-based Products (HCT/P) under 21 CFR Part 1271 regulations, US State regulations and the guidelines of the American Association of Tissue Banks (AATB). Additionally, international regulations are followed as appropriate.

### APPLICATION FOR USE

Avance® Nerve Graft is processed nerve allograft (human) intended for the reconstruction of peripheral nerve discontinuities to support axon regeneration across the gap.

1. Weber, et al. 2000. *Plastic Recon Surg* 106(5):1036-1045.
2. Cho, et al. 2012. *J Hand Surg Am* 37(11):2340-9.
3. Chiriack, et al. 2011. *J Hand Surg (Eur)* 37E(4):342-349.
4. Wangenstein and Kalliainen, 2009. *Hand (NY)*.
5. Brooks, et al. 2011. *Microsurgery* 32(1):1-14.
6. Karabekmez, et al. 2009. *Hand (NY)* 4(3):245-249.
7. Ducic, et al., 2012. *Ann Plast Surg* 68(2):180-7.

Images contained herein are graphic representations of repairs with empty nerve tubes and repairs with Avance® Nerve Graft. Photographs of micro-architecture are actual SEM images of Avance® Nerve Graft.

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