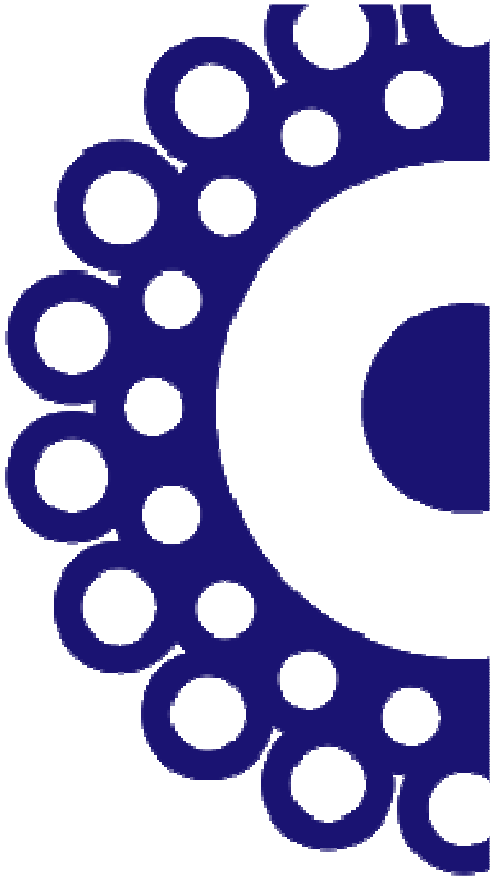

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Breakthrough Tissue Science for Unmet Medical Needs

Melbourne Tissue Engineering Community
CSIRO
September 2010

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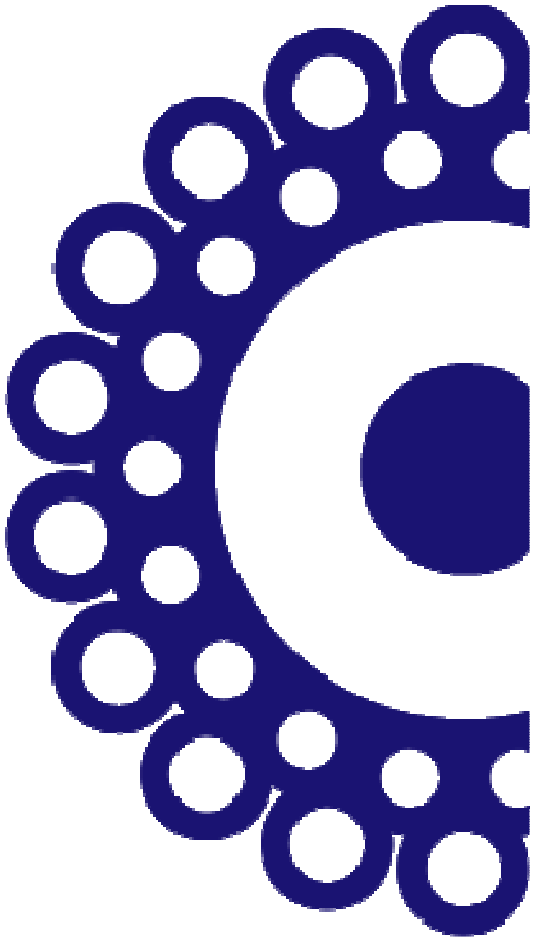


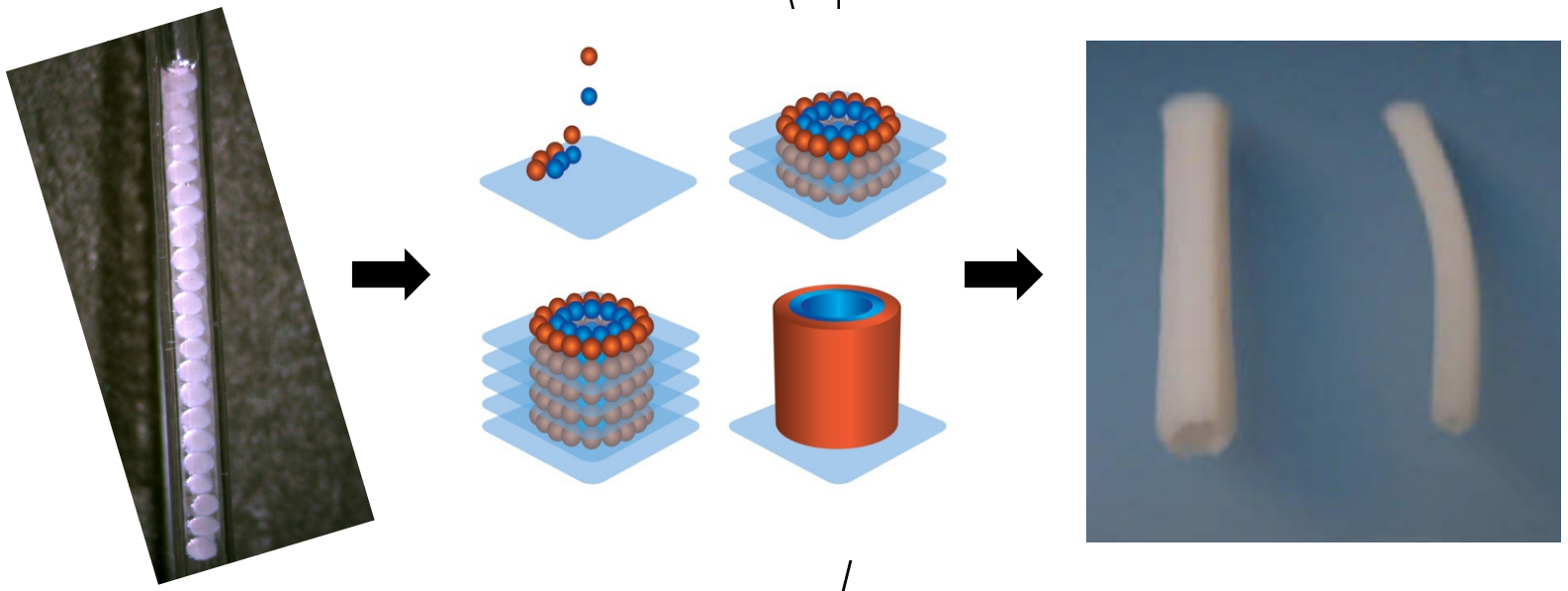
Our mission

Organovo is focused on delivering breakthrough three dimensional biology capabilities to create tissue on demand for research and surgical applications.

NovoGen Tissue Printing Is A Novel Proprietary Process To Create Biological Constructs

Organ Printing is machine printing of cells Using "bio-ink" – spheres of cells

…enabling the formation of biological, native structure, autologous tissue



- Start with any adherent cell type
- Aggregate spheres formed
  - 100-500 µm, ~10^3-10^4 cells each
- Bioprinter places cell spheres into pattern

- Spheres fuse to form final tissue
- Able to print simple tissues today
- Create 3D cell environments
- Current successful structures: tubes, cylinders, sheets

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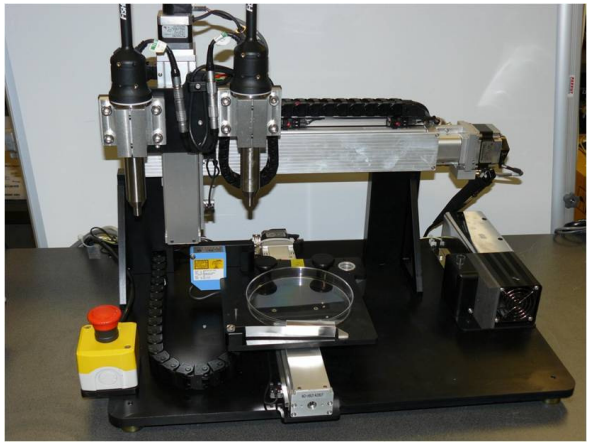
NovoGen MMX Is Organovo's Proprietary Bioprinting System

Challenges in the field…

- Most tissue engineering requires scaffold for structural support; useful polymers can be difficult to find
- Scientists need highly accurate method to create 3D cellular environment
- Many cell types do not grow well in standard 2D conditions
- Need gradient to study cell behavior in response to conditions
- Need automated process to reduce variability of manual processing

…easy to use modular NovoGen bioprinters have been developed



NovoGen MMX Bioprinter

- Can create tissue from cells alone
- Ability to deposit semi-solid droplets to create 3D structures
- Suitable for many cell and gel types
- Proprietary software with intuitive programmable features
- Supports sterile production*

* Requires only low cost Level II Biosafety Cabinet

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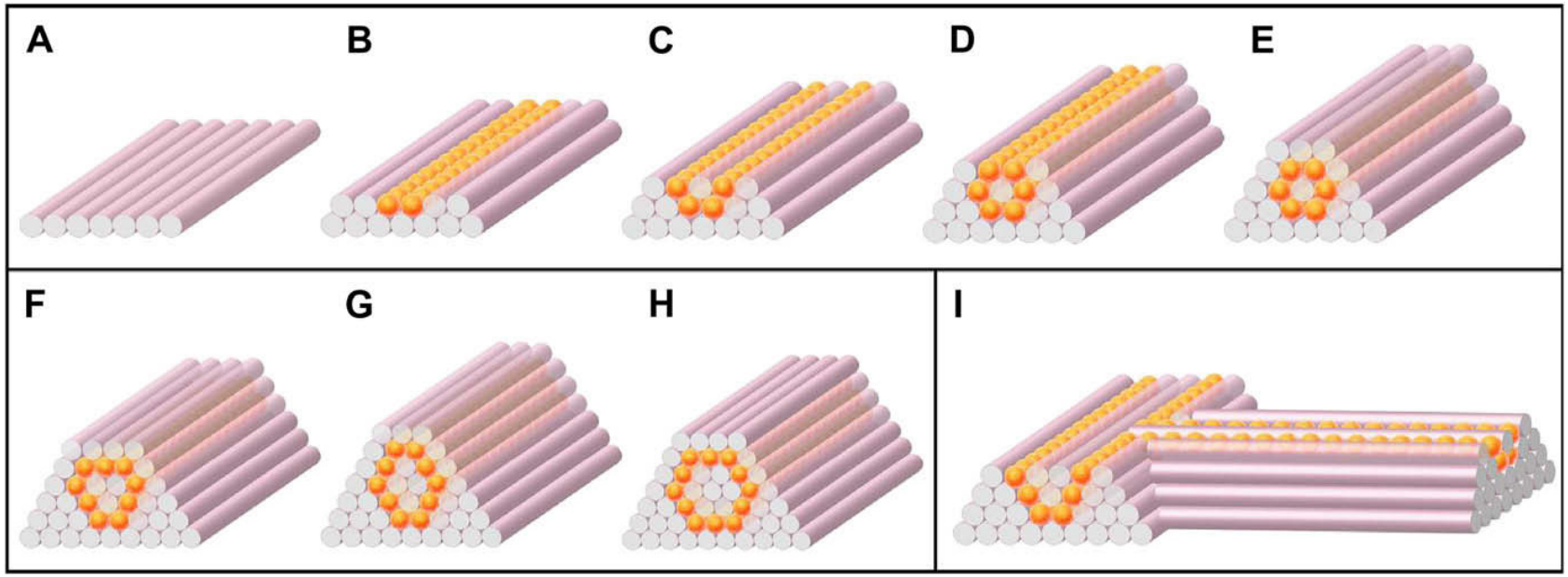
Architecture of Conduit Constructs Based on Scaffold Free Bioprinting Method



Organovo's NovoGen Bioprinting is based on a scaffold free bioprinting process. The cellular "inks" are supported architecturally by hydrogel. The hydrogel can later be removed, thus leaving only the 3D cellular structure. The system allows deposition of any structure; traditional challenges like diffusion must be considered to keep tissues viable.

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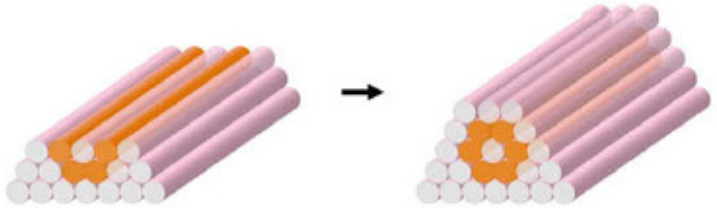
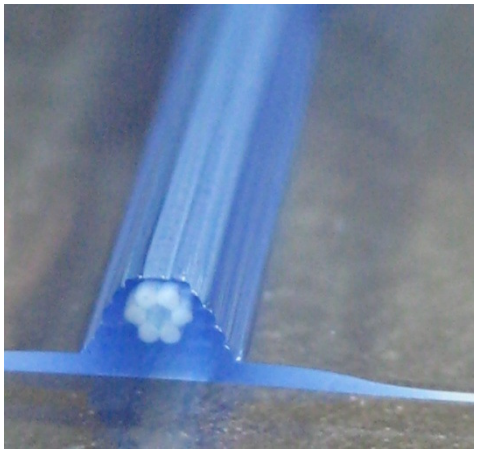
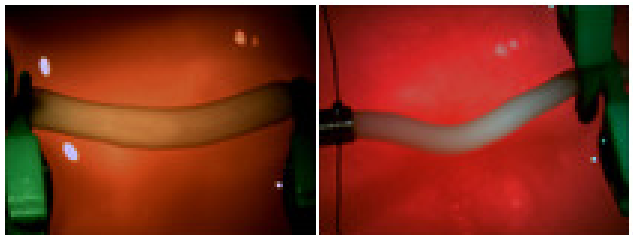
Bioprinted Constructs Have Been Shown to Quickly Build Collagen



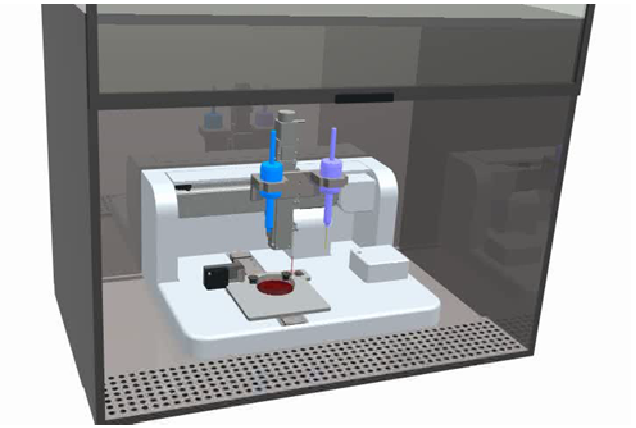
Day 0 Day 10



Tube inside hydrogel prior to full fusion



Bioprinted vascular construct in perfusion bioreactor; collagen builds and burst pressure grows over ten days after attachment



Organovo's Team Brings Together the Expertise and Drive Required for Success

Keith Murphy,

President, CEO

Brief Bio:

Chemical Engineering, MIT

Process Development lead, *Nutropin Depot*, Alkermes (1st launched product)

Director of Process Development, Amgen

Global Operations Leader,

Prolia (denosumab), Amgen

Executive Program, UCLA Anderson School of Business

Gabor Forgacs, PhD

Scientific Founder

George Vineyard Professor of Biophysics, University of Missouri

Brief Bio:

Expert on Embryonic Biophysics

Principal Investigator, National Science Foundation - Frontiers in Biological Research Grant – "Understanding and employing biological self-assembly"

5 year Multi-institutional project

Fulbright Fellow

Marie Csete, MD, PhD

Exec. Vice President, R&D

Brief Bio:

Chief Scientific Officer, California Institute of Regenerative Medicine[1]

MD, Columbia University

PhD, Developmental Biology, Caltech

Board Certs: Anesthesiology & Critical Care Medicine

Director, Transplant Anesthesia, UCSF, UCLA

Director, Stem Cell Core Facility, Emory University and Georgia Tech

Rich Law,

Research Scientist

Brief Bio:

PhD, Chemical & Biomolecular Engineering, Univ. of Pennsylvania

Group Leader, Amgen

Senior Engineer, Intel

[1]California's Proposition 71 $3B State Regenerative Medicine Fund

Organovo's SAB Is a Key Contributor to Scientific and Clinical Success

Advisory Board

David Mooney, PhD – Harvard University
- Professor of Bioengineering, Harvard University
- Faculty, Wyss Institute for Biologically Inspired Engineering
- Expert in cell-cell signaling

Gordana Vunjak-Novakovic, PhD – Columbia University
- Professor of Biomedical Engineering, Columbia University
- Co-wrote the text on cell culture in tissue engineering

Glenn Prestwich, PhD – University of Utah
- Professor of Chemistry (Biomaterials)
- Accomplished entrepreneur (Four biomedical companies launched)

Craig Kent, MD – Chief of Surgery, Univ. Wisconsin
- Former Chairman, Society for Vascular Surgery
- Extremely well published in vascular biology
- Well funded preclinical research lab
- Site of significant preclinical work for Organovo

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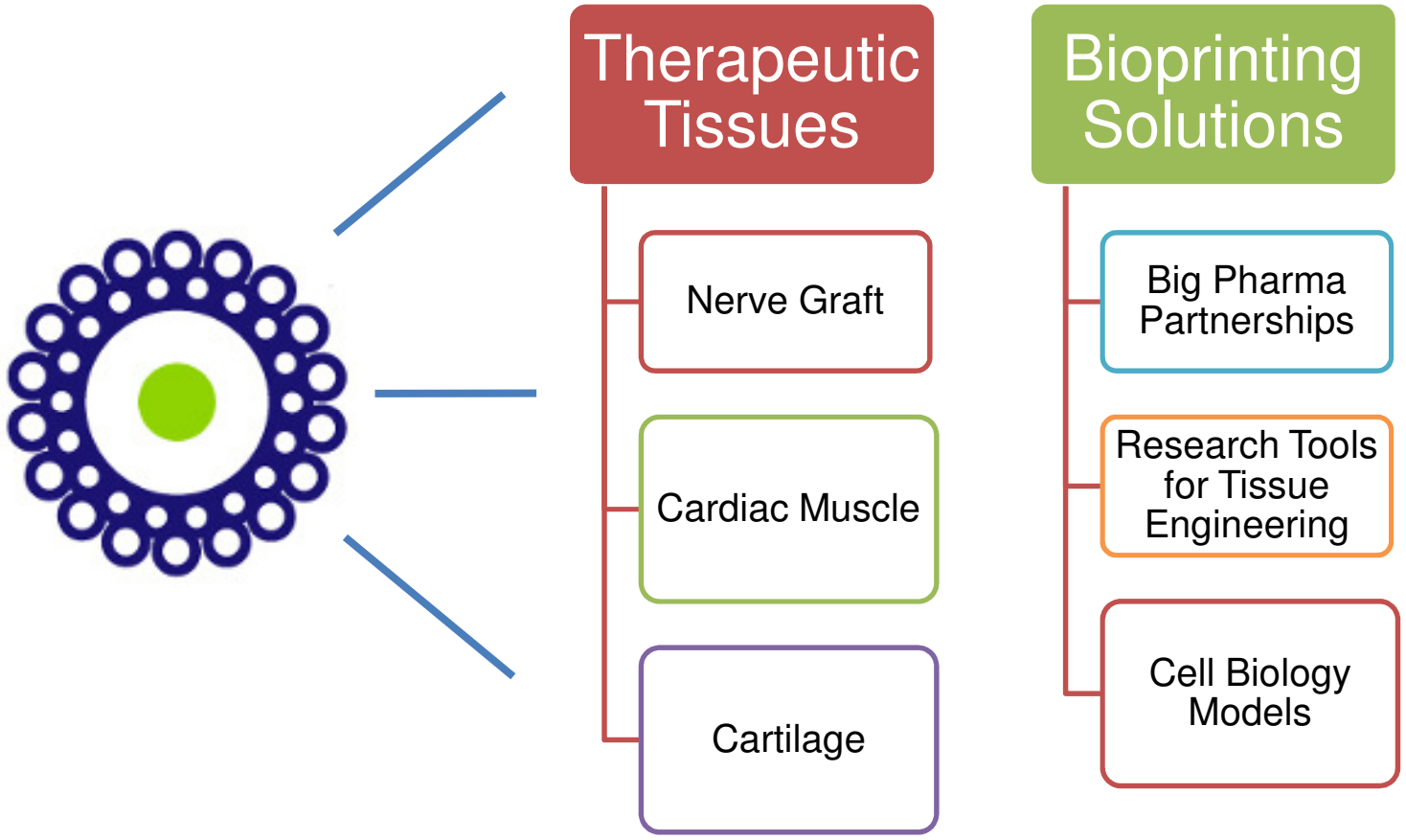
Organovo is Focused on Developing Product Pipeline to Fully Leverage the Ability to Organ Print



Organovo is Focused on A Strong Pipeline of *Simple Tissue* Geometries that Can Move Quickly to Market

Product (Clinical study dates)

- Nerve Conduit[1] (2012-2013)
- Cartilage Graft[2] (2012-2013)
- Blood Vessels[1] (2012-2013)
- Cardiac Muscle[2] (2014)

[1] **Current areas of preclinical development**

[2] **Area with low cost path to proof of concept**

Blood vessel indications: Peripheral Bypass & Dialysis AV Access

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Organovo Has Significant Qualitative and Quantitative Market Research on Key Markets

Nerve Conduit Provides $1B Early Access Market

- Significant negatives to sural nerve harvest for autograft
  - Current Synthetic conduits have limited utility
  - Can be useful in over 1/3 of current surgeries
  - Additional opportunities in peripheral neuropathy

Comments from neurosurgeons:

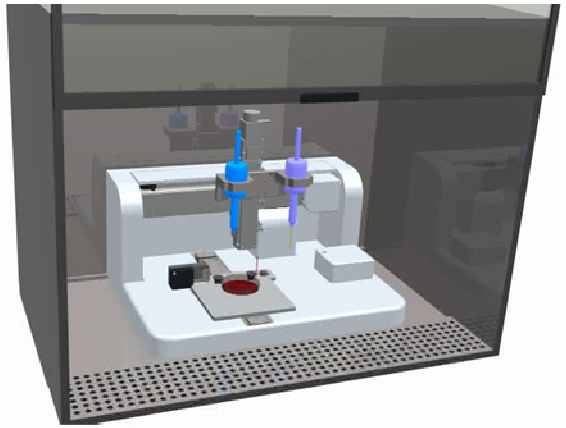
"Synthetic conduits can't be used in any gap larger than 2-3 cm"

"Current nerve harvest is a long process and leaves permanent deficit for the patient"

Organovo Has Used The Past 18 Months and Initial Seed Funding to Make Major Strides

- **Moved operations forward –** opened site in San Diego, tech transfer from University of Missouri
- **Advanced the science –** Two NIH SBIR grants**,** animal studies by U. Missouri, blood vessel proof of concept trial design w/U. Wisconsin, primary human cells in use
- **Established Bioprinter Market –** Developed award-winning NovoGen MMX Bioprinter; sales increasing steadily

- **Confirmed the market –** Quantitative and qualitative market research that gives us very high confidence in our plan
- **Created partnership opportunities** – First big pharma deal inked, others in discussions



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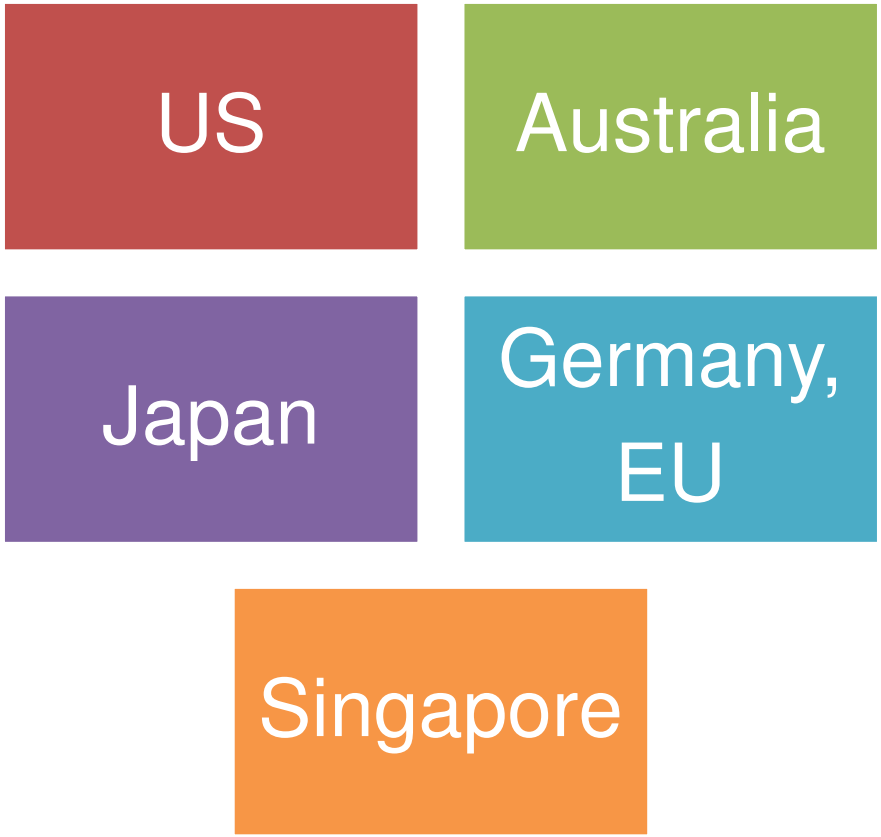
Organovo Seeks a Global Presence with National Centers of Excellence



Breakthrough science.

Demonstrated market need.

The experience to deliver on the promise.

Investor information:
Keith Murphy, CEO
(310) 729-9053
kmurphy@organovo.com

Website:
http://www.organovo.com