



Orthomimetics

Regenerative medicine for a mobile, active life

Why orthopaedics is more like dentistry
than one might think



What would you expect an x-ray of a 50-year-old's mouth to look like if it were taken in...

...1979?

What would you expect an x-ray of a 50-year-old's mouth to look like if it were taken in...



...1979?

What would you expect an x-ray of a 50-year-old's mouth to look like if it were taken in...



...1979?



...2009?

What would you expect an x-ray of a 50-year-old's mouth to look like if it were taken in...



...1979?



...2009?



...2029?

Increased awareness and adoption of multiple technologies to restore chemical, biomechanical, biological condition of the healthy mouth

First fluoride toothpaste

Dental Health Act (USA)

Increasing availability of advanced metal implants

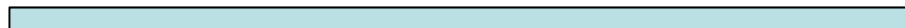
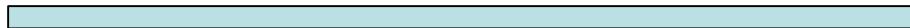
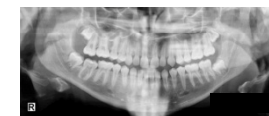
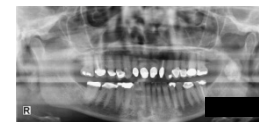
Increasing emphasis on treatments for gum disease

Application advanced of in-situ curing ceramic

FDA approval of YAG laser technology

Drug delivery systems adapted for dental treatments

1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	2020s	2030s
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What would you expect an x-ray of a 50-year-old's mouth to look like if it were taken in...



...2029?

Is this realistic?

What would you expect an x-ray of a 70-year-old sports-injury patient's knee to look like if it were taken in...

...1999?

What would you expect an x-ray of a 70-year-old sports-injury patient's knee to look like if it were taken in...



...2009?

What would you expect an x-ray of a 70-year-old sports-injury patient's knee to look like if it were taken in...



...2009?



...2029?

What would you expect an x-ray of a 70-year-old sports-injury patient's knee to look like if it were taken in...



...2009?



...2029?



...2049?

Increased awareness and adoption of multiple technologies to restore chemical, biomechanical, biological condition of the healthy articular joint.

Marrow stimulation techniques for articular cartilage repair developed

Increasing availability of advanced alloys

Cell, scaffold and molecular treatments showing promise

Resorbable polymers developed

Tissue preservative implants emerge

?Reimbursement for regenerative medical treatments clarified?

Emergence of total joint replacement

First application of autologous cell treatments for articular cartilage

1960s	1970s	1980s	1990s	2000s	2010s	2020s	2030s	2050s	2050s
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INCREASED AWARENESS AND ADOPTION OF MULTIPLE TREATMENTS WITH THE GOAL OF TREATING THE ARTICULAR JOINT AS A COMPLETE ORGAN

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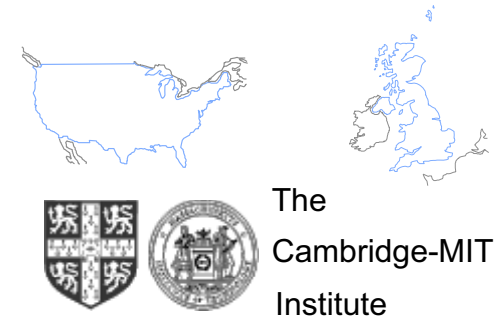


Background



Orthomimetics is the First Technology Spin-Out from the Cambridge-MIT Institute (“CMI”)

- ~£4.0m in funding from 2002-2006
- Access to facilities and expertise at Cambridge, MIT and Harvard
- Links to world-renowned surgeons, scientists and engineers who had previously developed products used in over 500,000 patients



Key Milestones Achieved Under CMI Funding

1. Development of a patent-protected technology platform
2. Production of working prototypes of two products
3. Successful completion of two large-animal, pre-clinical trials of lead product



Orthomimetics' Key Milestones

- Closed £5.0m in Series A funding from consortium of blue-chip investors
- Recruited an experienced executive team and a world-class medical advisory board
- Achieved commercial-scale ISO-13485 certified manufacturing capabilities
- Developed a minimally invasive delivery system for the Company's lead product
- Raised >£2.3m in non-dilutive grant funding to support development of the Company's pipeline products
- Received CE-mark approval for Chondromimetic on 8th December 2008
- Commenced post-marketing clinical study (Recruitment on track; 9 procedures as of 1st August 2009)
- Distribution and clinical development agreement with leading orthopaedic distributor in Italy
- Heads of terms for distribution and clinical development agreements in negotiation for Germany, Benelux, UK/Ireland, South Africa and South Korea



Orthomimetics

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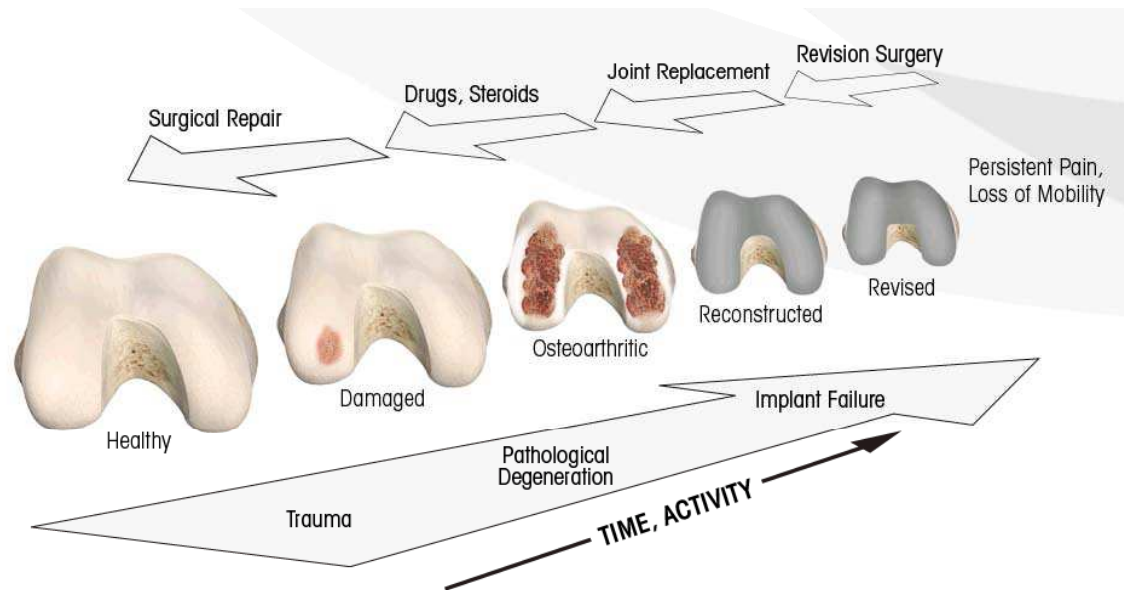
The business of joint preservation



Technology



OM Aims to be a Leading Global Provider of High-Margin Products that Reduce the Risk of Degenerative Joint Disease



Key Statistics – Worldwide

Annual expenditure on total joint replacement	\$36bn
Annual expenditure on revision joint replacement	\$4.5bn (12.5%)
Average life of a total joint replacement for a 65-year-old patient	17 years
Average life of a total joint replacement for a 45-year-old patient	10 years

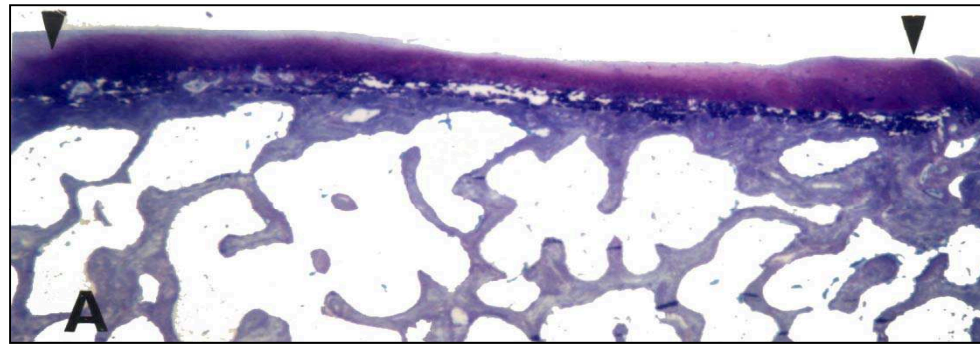
OM's Products are Poised to Raise the Standard of Care for Patients Suffering from Sports Injuries and Other Orthopaedic Trauma



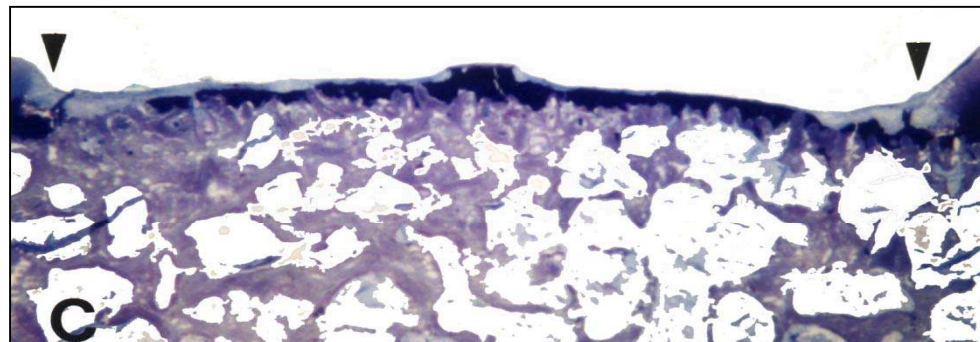
OM's proprietary technology platform enables the production of high-margin products that support the regenerative repair of soft tissues (such as cartilage, ligaments and tendons) and the bone to which they are anchored

The ability to heal both cartilage and subchondral bone provides a major advantage for the treatment of patients treated only several months after injury.

Healthy
subchondral bone



Subchondral bone
6 months after
articular cartilage
injury



Chondromimetic, the first product



Chondromimetic is a Porous, Resorbable Tissue Regeneration Scaffold that Supports the Separate Yet Simultaneous Repair of Articular Cartilage and the Underlying Bone



Chondral layer:
collagen/GAG

Osseous layer:
collagen/GAG/calcium phosphate



Defect prepared to create a cylindrical osteochondral recipient site



Chondromimetic scaffold inserted into defect



Blood containing marrow-derived stem cells impregnate the scaffold



Cells implement repair, replacing scaffold with newly formed tissue



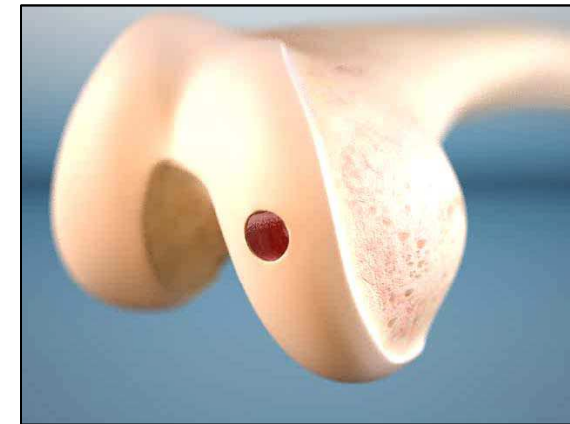
Defect filled with newly formed bone and cartilage

Chondromimetic is a Porous, Resorbable Tissue Regeneration Scaffold that Supports the Separate Yet Simultaneous Repair of Articular Cartilage and the Underlying Bone



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Defect prepared to create a cylindrical osteochondral recipient site



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Defect filled with newly formed bone and cartilage

...and Produced a Surgeon-Designed Procedure Pack Harnesses these Properties to Ensure Rapid, Accurate Delivery.



Procedure pack



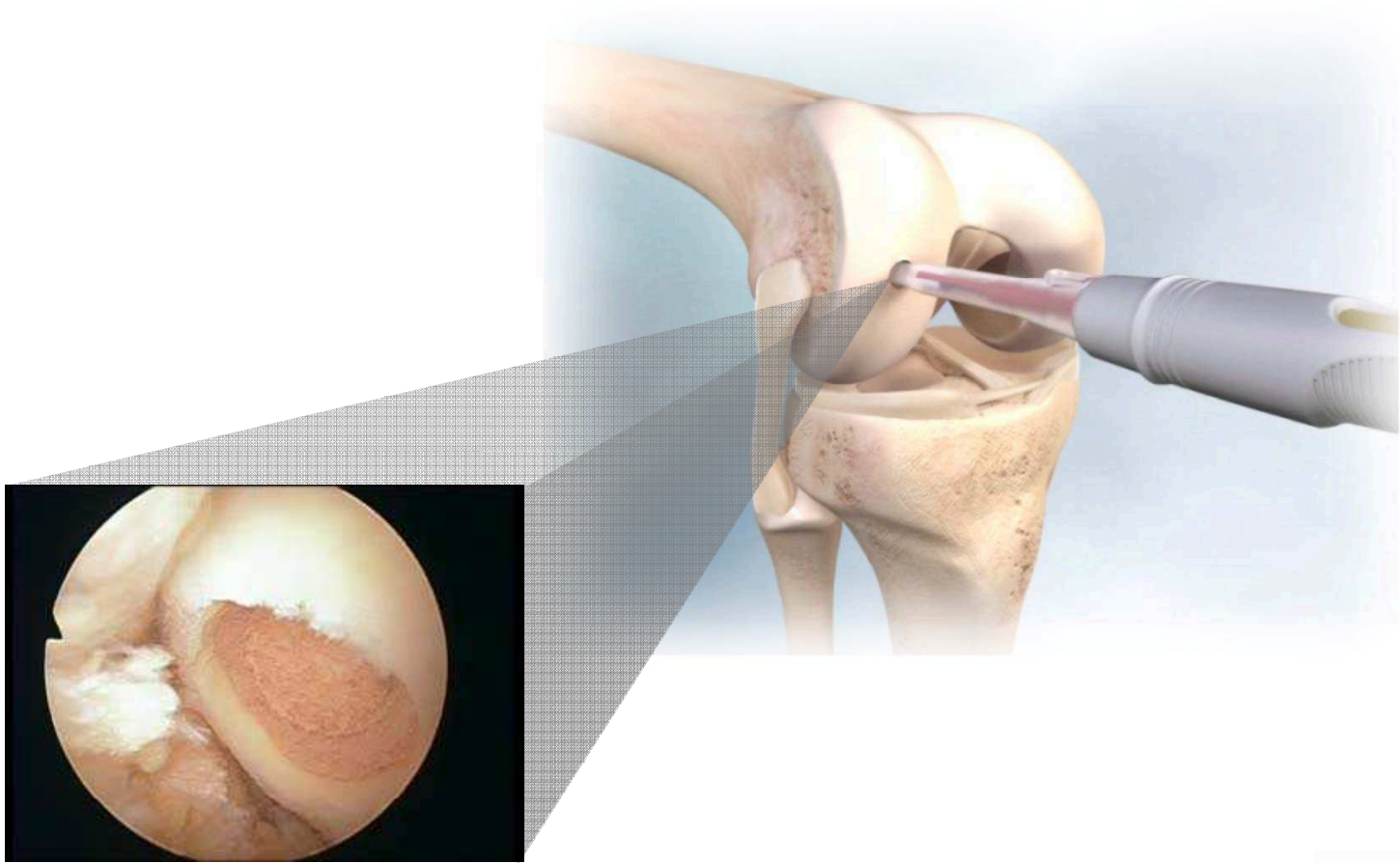
➤ Site preparation tool prepares defect site



➤ Hydration portal enables hydration with any sterile fluid



➤ Thumb-activated delivery ensures simple delivery



A Single-Centre Clinical Study is Underway to Demonstrate Produce Preliminary Safety and Efficacy Data for Chondromimetic

- World renowned cartilage surgeon (Laszlo Hangody)
- 15 patients (10 mosaicplasty backfill, then 5 primary sites)
- Primary endpoint at 6 months including MRI and biopsy data
- 9 Patients Enrolled as of 1st August 2009
- Lead investigator states that 'patients are doing well and 3-month MRI results have shown promising outcomes'



Chondromimetic Has Shown Strong Potential for Use Either Alone or in Combination with Other Treatments

Chondromimetic with marrow stimulation...



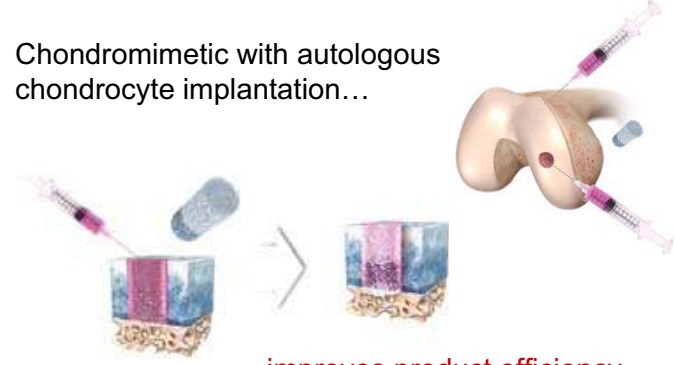
... improves quality of repair

Chondromimetic with osteochondral autograft...

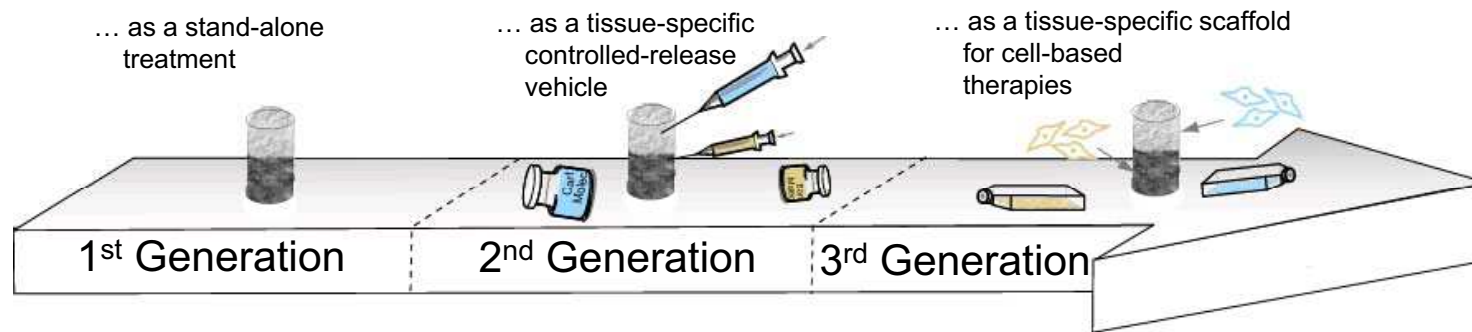


...reduces donor site morbidity

Chondromimetic with autologous chondrocyte implantation...



...improves product efficiency



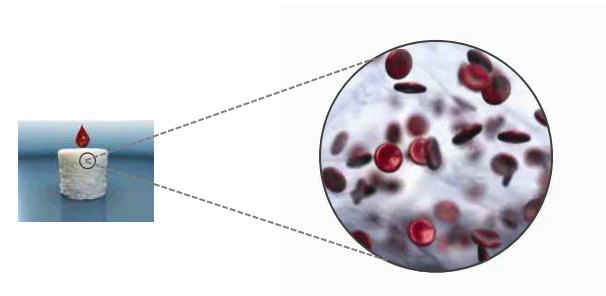
A device that makes a Drug

Point-of-Service Combination of Chondromimetic with Platelet Rich Plasma

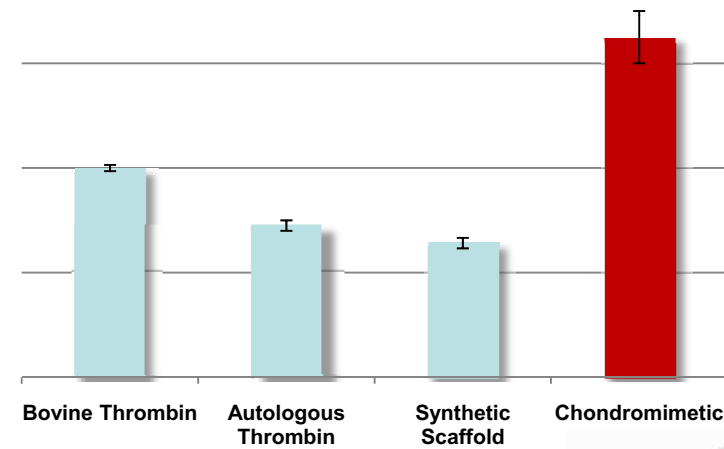
- Strong activation of platelet rich plasma
- No need for bovine or autologous thrombin
- Easy-to-implant, point-of-treatment solution

	Growth Factor Release	Safety	Ease of Delivery to Site
Chondromimetic and PRP	✓	✓	✓
PRP + Bovine Thrombin	✓	✗	✗
PRP + Autologous Thrombin	✓	✓	✗
Synthetic Scaffold + PRP	✗	✓	✓

Interaction of platelets with matrix releases PDGF and TGF- β



PDGF Release at 10 days (pg/mL)



Orthomimetics

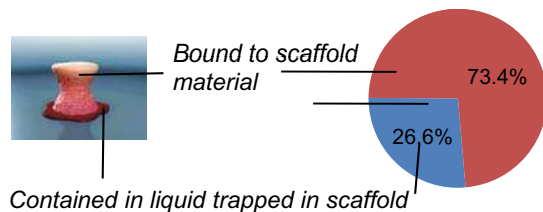
Custom Delivery of Active Molecules

Orthomimetics has developed its implants to provide a highly favorable environment for cells for combination therapy applications with:

- Delivery of a range of active molecules
- Control and accuracy of delivery
- Flexible 'Point-of-Service' application empowering surgeon choice in theatre.

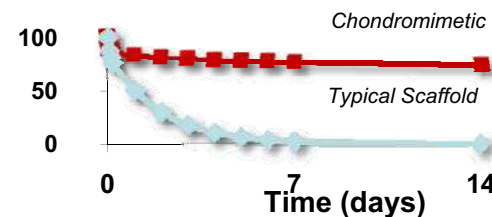
Superior Features of OM Scaffolds

High Loading Efficiency

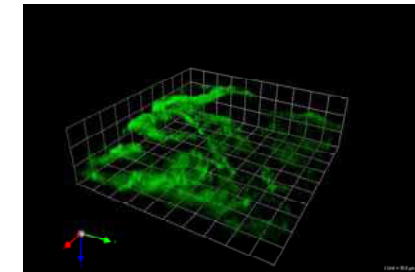


Scaffolds bind active molecules directly to their structure at up to 73.4% efficiency. This means active molecules do not escape from the scaffold with their liquid carrier

Superior Retention



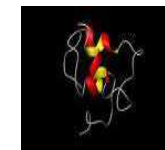
Scaffolds release active molecules in a highly sustained manner, with 74.3% of certain commercial molecules remaining in the scaffold after two weeks.



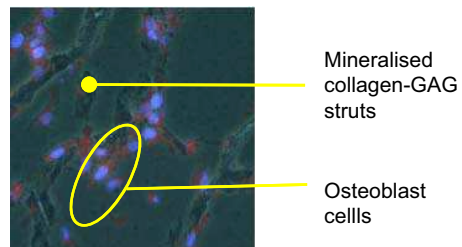
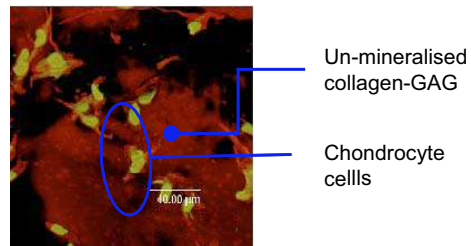
Confocal microscopy image showing binding throughout 3D implant structure

Preserved Activity

A range of growth factors delivered on the scaffolds exhibit no alteration upon release. This means molecules retain their activity upon release.

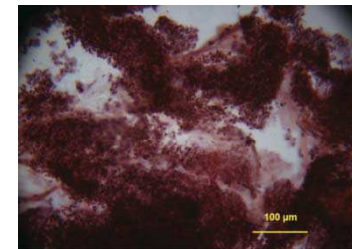


Cell Based Therapy



- Scaffold pore structure allows cell migration into core.
- The material composition favours cell initiated repair mechanism .
- Mineralised and un-mineralised scaffolds can selectively attract different cell types i.e. Osteoblasts or Chondrocytes.
- Cell phenotype and viability remain intact providing sustainable healing efficacy
- High growth levels with no differentiation or cell death

Chondromimetic Scaffolds: A highly favorable environment for cells for combination therapy applications



The competitive environment and competitive advantages

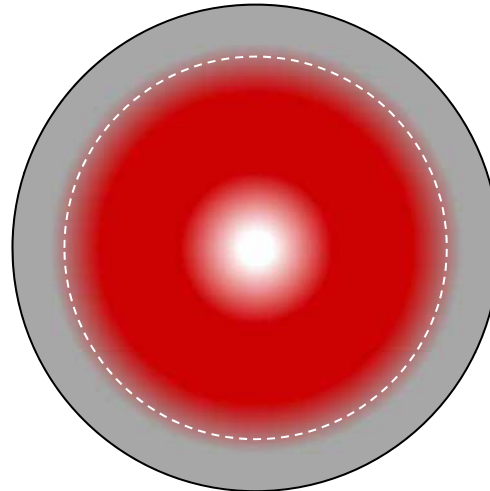
There are Two Distinct Segments to the Articular Cartilage Repair Market

■ **Small-Lesion Segment**

- Cost-effective treatments
- Single intervention
- Easy to implant

■ **Large-Lesion Segment**

- Dominated by ACI and other cell-based treatments
- All products in this segment are priced >\$6,000

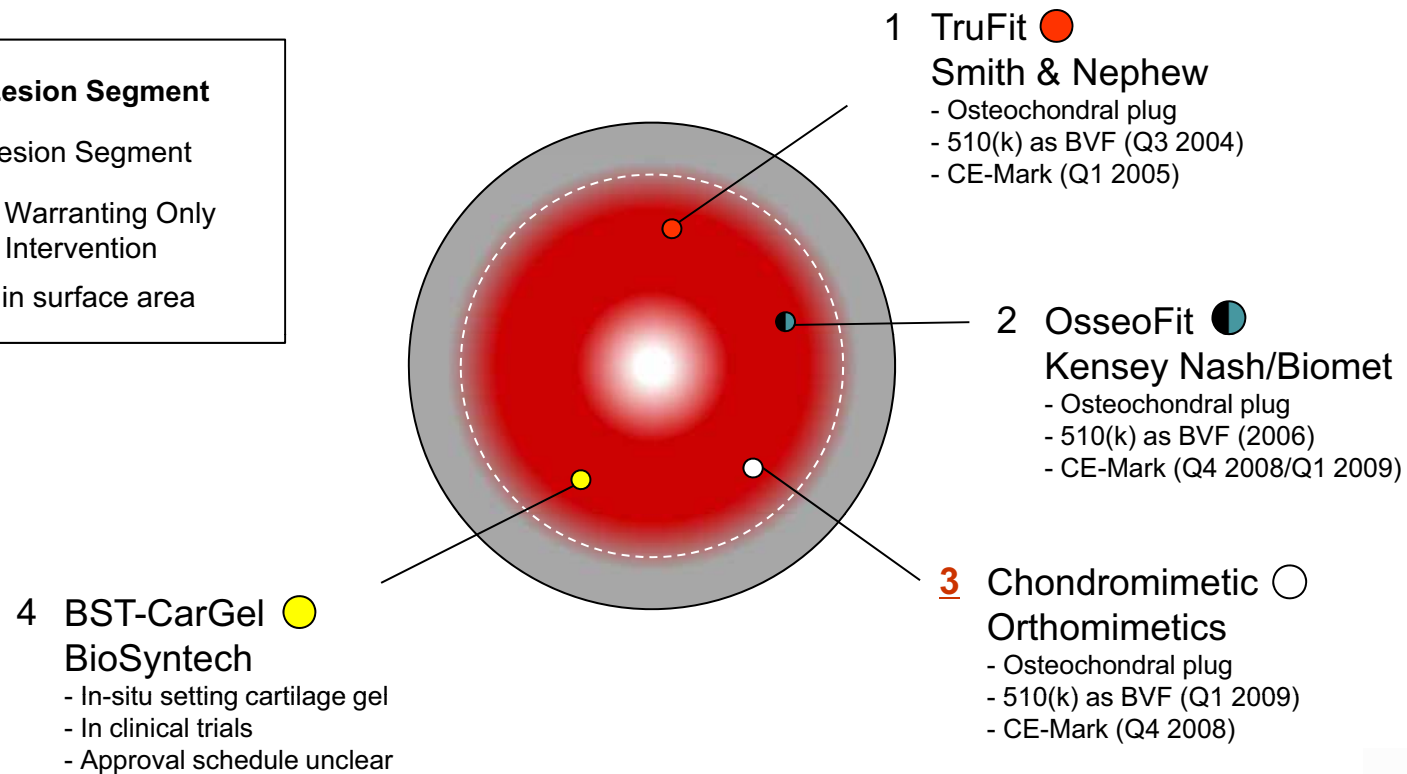
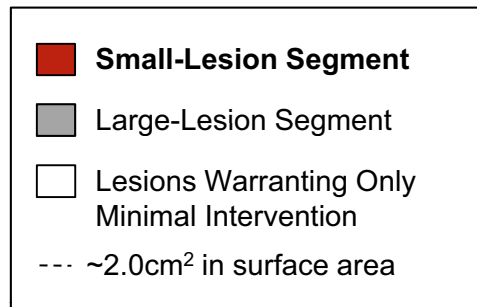


□ Lesions Warranting Only Minimal Intervention

- Currently treated with simple shaving, lavage and debridement

----- - border between small and large lesions generally accepted to be between 2.0cm² and 3.0cm² depending on patient and depth of lesion

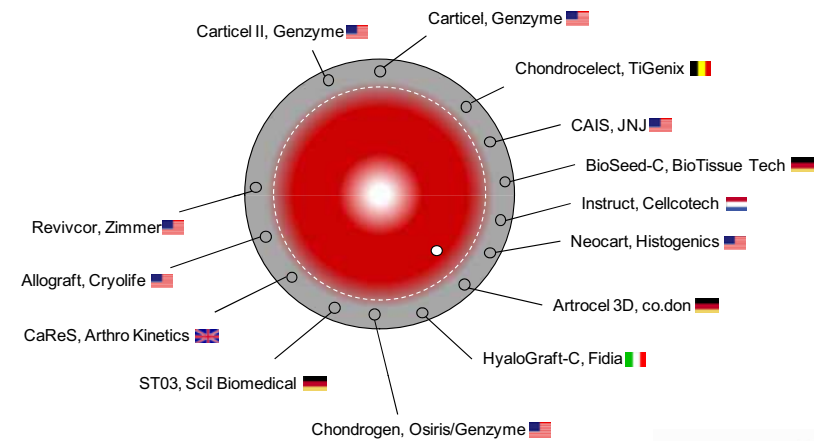
Chondromimetic Follows Two Other Products in the Market For Small Lesions



Q: What is Chondromimetic's Main Competitive Advantage Over ACI and Other Large-Lesion Products

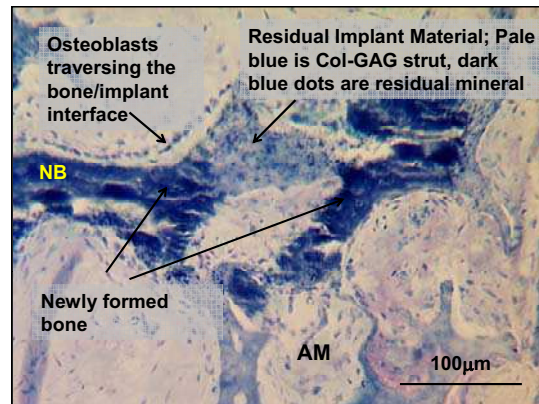
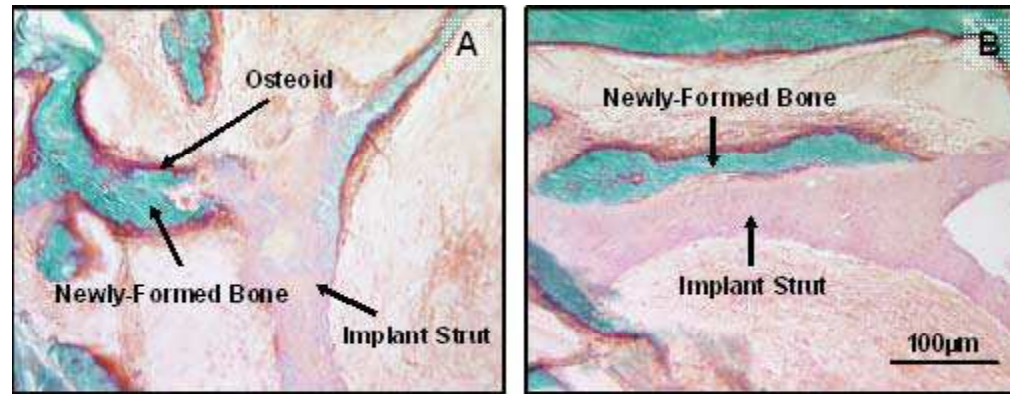
A: Cost Effectiveness.

- Single intervention
- Efficient delivery system
- COGS < £100 (~83% instrumentation)



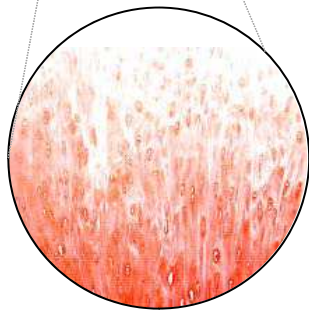
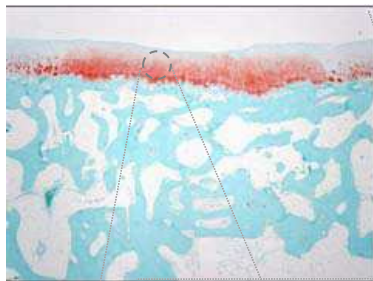
All-Natural Composition Yields a Substitution Mechanism of Resorption that Matches the Rate of New Tissue Formation

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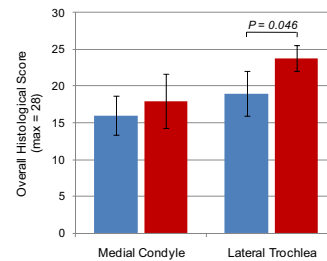
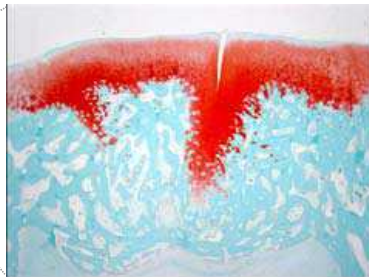
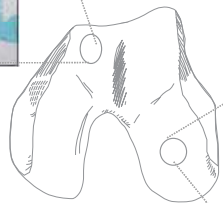


Good Results from Leading Synthetic, Better Results from Chondromimetic

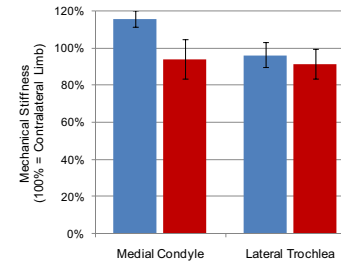
six-month data
skeletally mature goat model



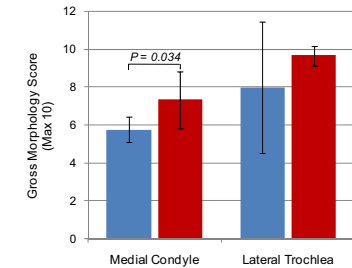
Histology from
Chondromimetic at six months



Higher histology scores



Mechanical properties statistically
equal to natural tissue



Higher gross morphology scores

■ Synthetic
■ Chondromimetic

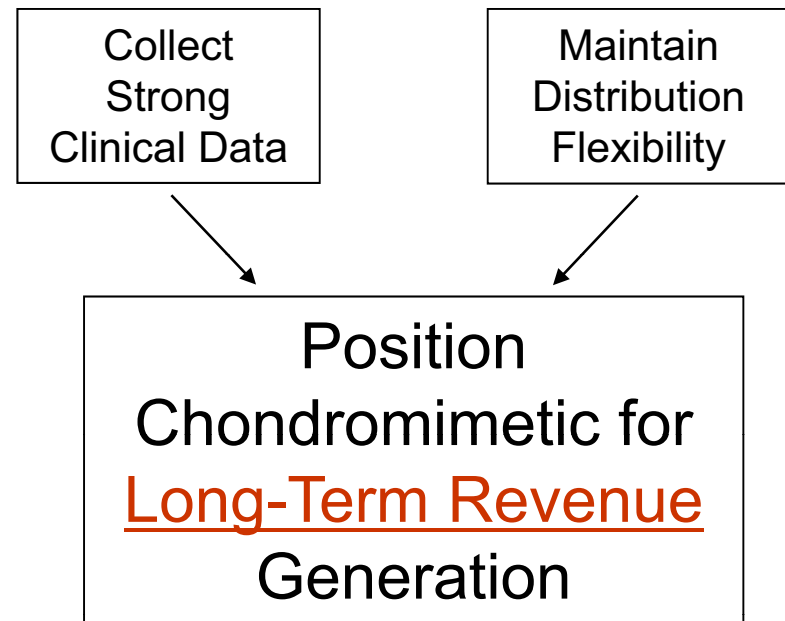
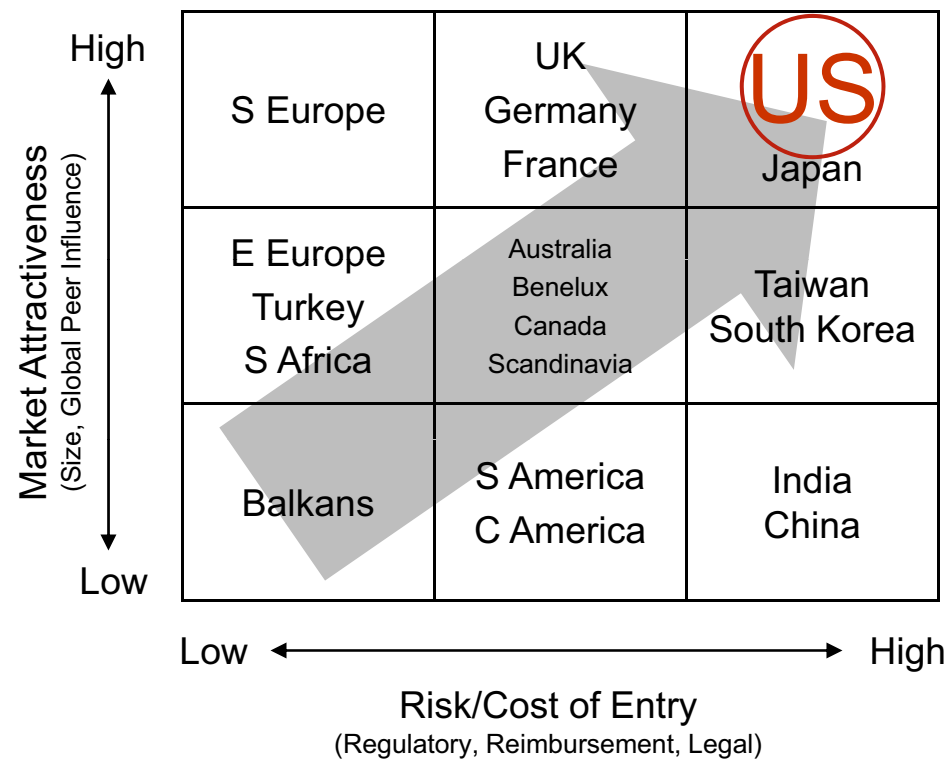
Vastly lower incidence of adverse tissue responses

	Synthetic		Chondromimetic	
	Trochlea	Condyle	Trochlea	Condyle
Bone Cysts	33%	100%	33%	0%
Widening of Defect	100%	100%	0%	0%

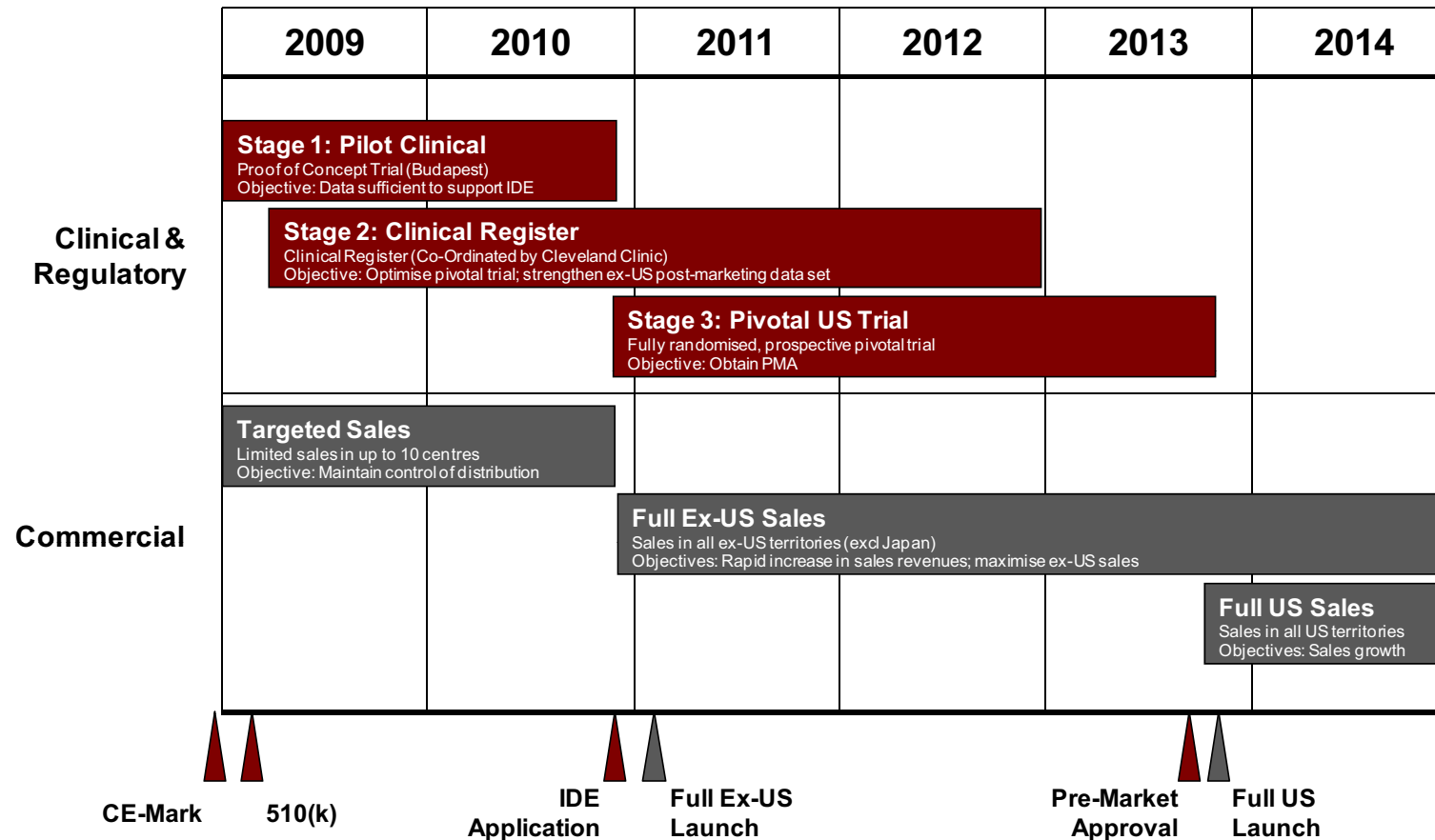
The future



All of Orthomimetics' Regulatory and Commercial Activities Will Focus on Maximising Long-Term Value in the US Market



Orthomimetics' Clinical, Regulatory and Commercial Timelines



Orthomimetics Continues to Harness Surgeon Expertise Through its World-Class Medical Advisory Board

Medical Advisory Board

International

Anthony Miniaci, The Cleveland Clinic, USA

Laszlo Hangody, Uzoki Hospital, Budapest

Neil Rushton, Addenbrooke's Hospital, Cambridge, UK

William Long, Insall Scott Kelly Clinic, New York, USA

Local

Mark Bowditch, Ipswich, UK

Fred Robinson, Addenbrooke's, Cambridge, UK

Graham Tytherleigh-Strong, Addenbrooke's, Cambridge, UK

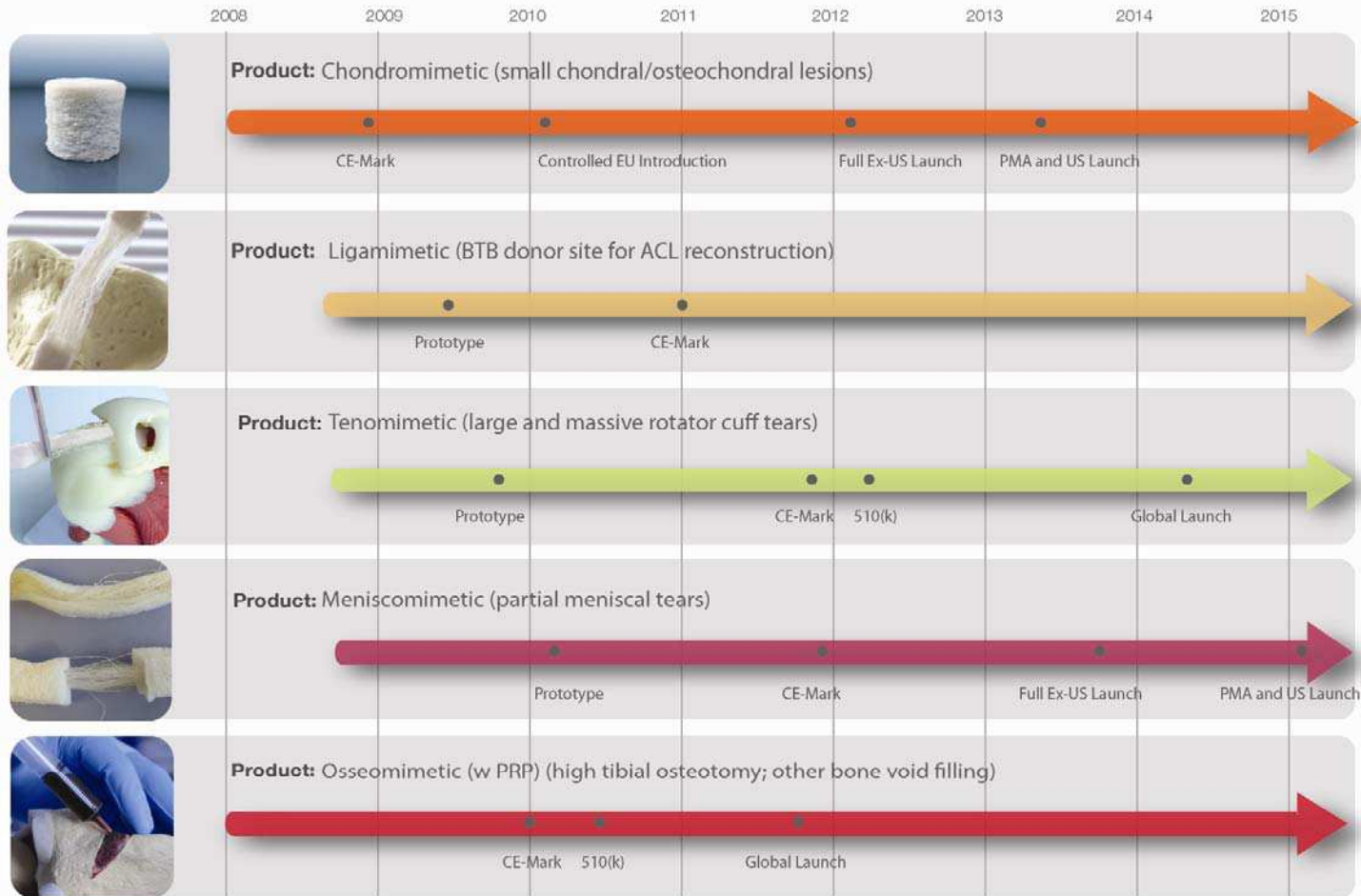
Tony Bhullar, Edith Cavell Hospital, Peterborough, UK

Dennis Edwards, Addenbrooke's Hospital, Cambridge, UK

Source: Orthomimetics



Orthomimetics has a Strong Pipeline of Scaffolds for the Regeneration of a Variety of Musculoskeletal Tissues



OM's Corporate Partnering Approach Seeks to Accelerate and Reduce Cost of OM's Clinical, Regulatory and Commercial Strategy

Small Geographically Focused Distribution Partners with Strong Track Record with Clinical Trials

Small Third-Parties; Independent Local Distributors

smith&nephew

TIGENIX

TORNIER

COVIDIEN

MERCK
SERONO

CONMED
LINVATEC

genzyme

stryker

DePuy Mitek
a Johnson & Johnson company

Global Partners with Extensive Sales Networks and Capable of Funding US Pivotal Trial

Mid to Large Orthopaedics and Sports Medicine Companies

Targeted Sales, Register

Control Distribution
Gather High-Quality Data
Target Key Opinion Leaders

Full Launch, Pivotal Trial

Maximise Sales Volume
Expand Geographical Coverage
Access All Surgeons

Orthomimetics



Orthomimetics

Regenerative medicine for a mobile, active life

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