

# Move the needle on fusion rates

MagnetOs™ is a bone graft like no other because it grows bone even in soft tissue thanks to our unique NeedleGrip™ surface technology. To help you understand how and why we can help you eliminate non-unions, we created this at-a-glance overview.

## Your challenge



**the current % rate** of non-unions.<sup>1,2</sup>



**the current % rate** of revision surgeries needed.<sup>3</sup>



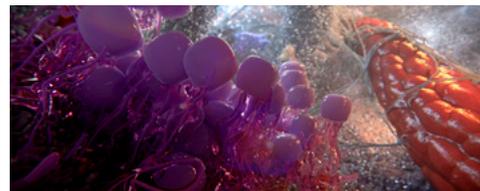
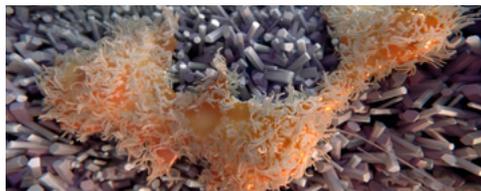
**the % fusion rate** that can be improved by choosing the most effective bone graft.<sup>2,4,5</sup>

## So, what is the most effective bone graft?

MagnetOs grows bone even in soft tissue thanks to our unique NeedleGrip surface technology which provides traction for our body's vitally important 'pro-healing' immune cells (M2 macrophages).<sup>\*†6</sup>

This in turn, unlocks previously untapped potential to stimulate stem cells - and form new bone throughout the graft. As a result, **MagnetOs is proven to be equivalent to the gold standard of autograft for spinal fusions.**<sup>\*7-9</sup>

# Eliminating non-unions with NeedleGrip



## Polarize

Circulating immune cells (monocytes) differentiate into macrophages that become polarized by the submicron needle-shaped features of MagnetOs' NeedleGrip surface into the pro-healing, anti-inflammatory M2 macrophage phenotype.<sup>\*10,11</sup>

## Regenerate

M2 macrophages crosstalk with local stem- and osteogenic-cells via secretion of regenerative signaling factors, including osteoactivin and BMP-2. This induces mesenchymal stem cells to migrate, proliferate and differentiate into osteoblasts that lay down osteoid. Endothelial cells are stimulated to form capillaries that deliver nutrients and yet more osteogenic cells to the site of repair.<sup>\*11-16</sup>

## Propagate

The interaction between NeedleGrip and circulating osteogenic cells triggers bone formation. Bone propagates in the core and throughout the graft, rather than only from the outside-in via creeping edge repair.<sup>†6,7</sup>

## MagnetOs: by the numbers

Project Fusion is our global research program that brings together an unprecedented blend of scientific, preclinical & clinical studies. Every day, our team works across three continents to unlock the

hidden secrets of bone healing to deliver the ideal bone graft - with the highest quality & quantity of scientific evidence behind it. As a result, MagnetOs will be supported by:

**>150** years of combined, relevant research experience.

**>10** post-market clinical studies.

**>5** randomized controlled trials.

## MagnetOs Product Overview

MagnetOs Granules		
Granule size (mm)	Product code	Volume size (cc)
1-2	703-021-US	10
1-2	703-045-US	20
2-4	703-026-US	20

MagnetOs Putty		
Granule size (mm)	Product code	Volume size (cc)
1-2	703-029-US	1
1-2	703-043-US	2.5
1-2	703-035-US	5
1-2	703-038-US	10

## So, are you ready to move the needle?

The growing body of science behind our NeedleGrip surface technology is called *osteimmunology*.<sup>7,8,17</sup> But for surgeons and their patients it means one thing: a more efficient and predictable fusion.\*

If you want to know more about MagnetOs, contact us today at:  
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**References:** 1. Medtech 360 report "Orthopedic Biomaterials Market Analysis 2017". 2. Hsu, et al. *GSJ*. 2012;2:239-248. 3. Mabud, et al. *Clin Spine Surg*. 2017;30:E1376-E1381. 4. Chun, et al. *Neurosurgical Focus*. 2015;39(4):E10. 5. Morris, et al. *ESJ*. 2018;27:1856-1867. 6. Duan, et al. *eCM*. 2019;37:60-73. 7. Van Dijk, et al. *JOR Spine*. 2018;28:1(4):E1039. 8. Van Dijk, et al. *J Biomed Mater Res. Part B: Appl Biomater*. 2019;107(6):2080-2090. 9. Van Dijk, et al. *Clin Spine Surg*. 2019;33(6):E276-E287. 10. Van Dijk, et al. *eCM*. 2021;41:756-73. 11. Van Dijk et al. "Calcium phosphate with submicron topography upregulates M2 phenotype in primary human macrophages, enhancing downstream angiogenesis and osteogenesis in vitro" (manuscript in submission). 12. Yu, et al. *J Cell Biochem*. 2016;117(7):1511-1521. 13. Liguori, et al. *Cell Mol Immunol*. 2021;18(3):711-722. 14. Zhang, et al. *Cell Tissue Res*. 2017. 15. Arosarena, et al. *J Cell Physiol*. 2011;226(11):2943-2952. 16. Hu, et al. *J Cell Biochem*. 2013;114(12):2729-2737. 17. Data on File.

\*MagnetOs has been proven to generate more predictable fusions than two commercially available alternatives in an ovine model of posterolateral fusion. Results from in vivo laboratory testing may not be predictive of clinical experience in humans. For important safety and intended use information please visit kurosbio.com. †MagnetOs is not cleared by FDA as an osteoinductive bone graft.

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