Grow bone with MagnetOs™ and deliver fusion with confidence

Powered by **NeedleGrip**™ surface technology to harness the immune system and stimulate bone growth

MAGNETOS
for predictable fusions

Kuros Biosciences

Why MagnetOs?
A proven fusion solution

MagnetOs is a bone graft more than a decade in the making, through fine-tuned innovation and discovery. Backed by Level I human clinical data published in *Spine*, MagnetOs demonstrated nearly double the fusion rate of autograft (79% vs. 47%) with at least 50% taken from the iliac crest.[1]

What value can MagnetOs deliver to you and your patients?

Growing bone with MagnetOs gives surgeons confidence where it matters most – **delivering predictable fusion outcomes**.[1]

In a Level I human clinical study published in *Spine*, MagnetOs achieved nearly twice the fusion rate of autograft (79% vs. 47%) in posterolateral fusions (PLFs).[1]

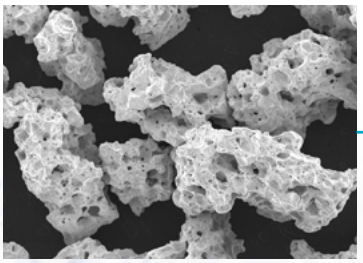
Among active smokers – who made up 1 in 5 patients – the fusion difference between MagnetOs and autograft was even more dramatic.*†[1,2]

MagnetOs grows bone on its own thanks to NeedleGrip – a proprietary submicron surface technology that harnesses the immune system to stimulate bone growth, without added cells or growth factors.‡§[3-5]

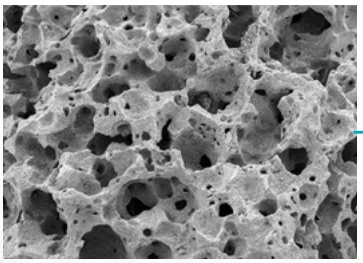
Ready-to-use, easy to mold, and reliably staying put, MagnetOs carries no intrinsic risk of human tissue-related disease transmission and is FDA-cleared for use throughout the spine, including interbody procedures.‖[6-11]

Fusion starts at the surface: Getting a grip on non-unions with NeedleGrip surface technology

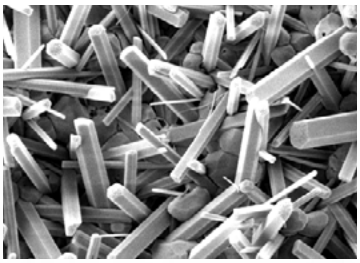
Explore how NeedleGrip makes a difference – watch the magnification video at 25x, 50x, and 20,000x.



1mm; 25x magnification



500µm; 50x magnification



2µm; 20,000x magnification

Grow bone with **MagnetOs**™

Show me the 20,000x magnification

How and why is MagnetOs different from every other bone graft?

One word: **NeedleGrip**

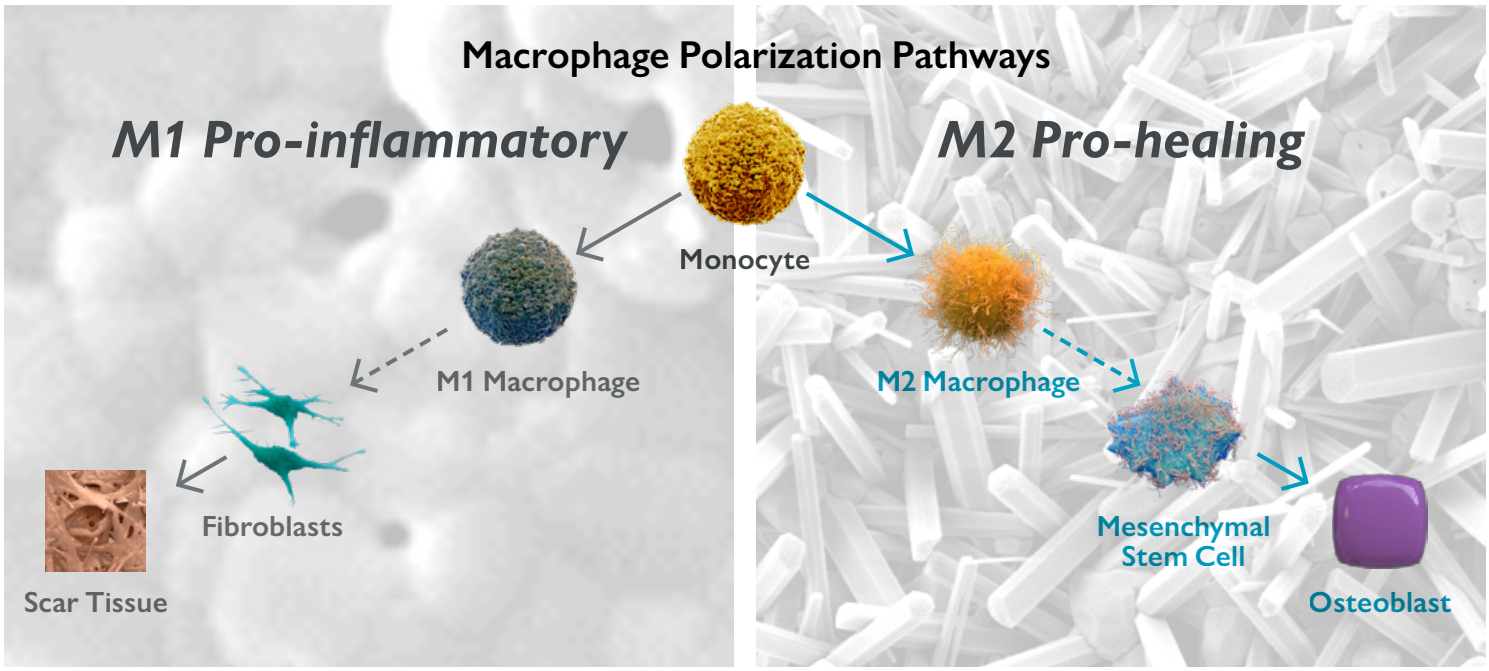
The science behind NeedleGrip is called osteoimmunology – a field dedicated to understanding the relationship between the immune system and the skeletal system.[3]

As the immune system's 'first responders', monocytes react to their environment by differentiating into different cell types.[12]

Harnessing the immune system via macrophage polarization

Conventional surface
Vitoss® bone graft surface

NeedleGrip surface technology
MagnetOs bone graft



M1 pro-inflammatory pathway: Macrophages polarize to the M1 phenotype, which are pro-inflammatory and promote fibroblast proliferation, often leading to scar tissue.[12]

M2 pro-healing pathway: Macrophages polarize to the M2 phenotype, which are pro-healing and upregulate stem cells to create bone.[12,13] MagnetOs NeedleGrip surface technology enhances the pathway to M2 macrophages.[‡§3]

MagnetOs grows bone on its own thanks to **NeedleGrip – a proprietary submicron surface technology that *harnesses the immune system*** to stimulate bone growth without added cells or growth factors.[‡§3-5]

Show me the MagnetOs animation

Kuros Biosciences

Let's get clinical:
Evidence & efficacy

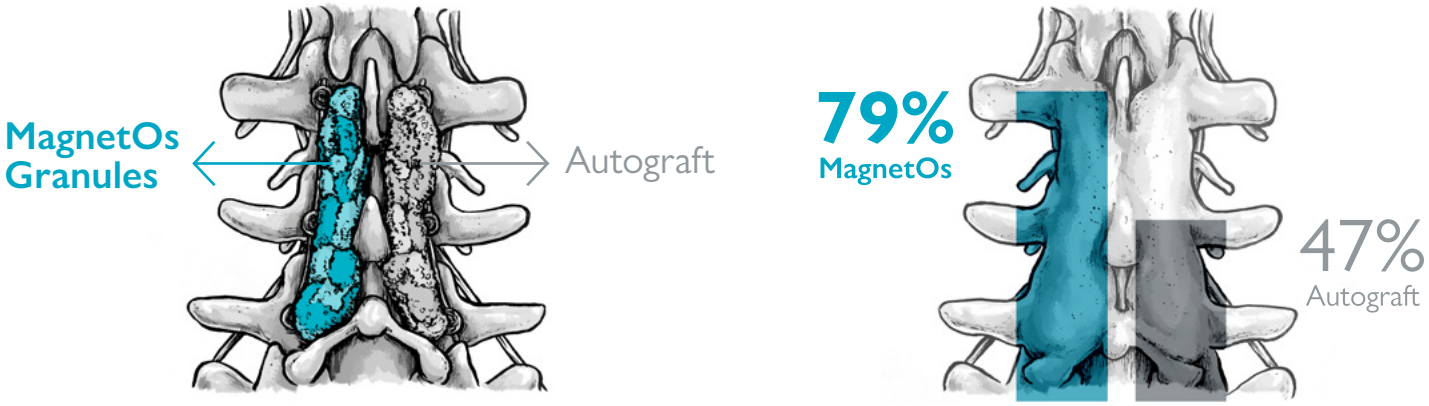
At Kuros Biosciences we go beyond what's required. While the FDA often relies on animal data for 510(k) clearance, we believe surgeons and patients deserve more.[14] That's why we continue to make significant investments in robust human clinical studies to provide the highest level of evidence and confidence in MagnetOs.

To put that into perspective, MagnetOs is currently being studied in numerous Level I human clinical studies. A key study published in *Spine* demonstrated nearly double the fusion rate of autograft (as shown below).[1] To date, we've initiated or completed 20 Level I–IV human clinical studies, which makes our evidence portfolio one of the most extensive in the entire bone graft category.

Level I human clinical study
100 patients undergoing PLF

Fusion was assessed in 91 patients

Intra-patient control design → ***One-year fusion results***



Intra-patient design means that each patient serves as their own control. In the study, MagnetOs Granules was placed on one side of the spine and autograft on the other side during the same procedure. This allowed for a direct, side-by-side comparison of fusion performance in the same biological and surgical environment, thereby removing variability between patients and providing reliable data.

Independent study: the study was investigator-initiated and funded by an unrestricted research grant from Kuros Biosciences. Kuros was not involved in the study design, implementation, or the authorship of the results.

Show me the study in Spine

Where there's smoke…
there's fusion

Among active smokers, MagnetOs achieved more than twice the fusion rate of autograft in a Level I human clinical study published in *Spine*.*†[1,2]

Nearly 1 in 5 patients were active smokers – an important detail given the challenge of fusing this high-risk patient population.[15] In this group, the difference in outcomes was even more dramatic than in the full study population: **74% vs. 30%** fusion of MagnetOs vs. autograft in active smokers, compared to **79% vs. 47%** overall.*†[1,2]

High fusion rates in a challenging patient population[15]

1 in 5 active smokers
(19% of patients)

1 in 3 former smokers
(34% of patients)

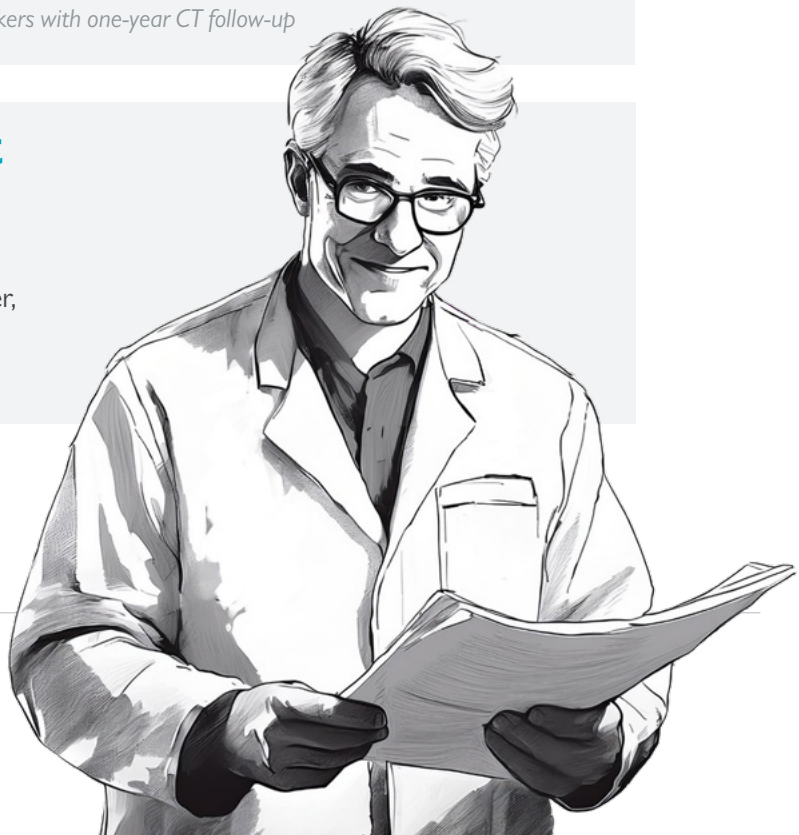
One-year PLF fusion results in active smokers†[1,2]

	MagnetOs (levels fused)	**Autograft** (levels fused)
Smokers	**74%** (20/27)	**30%** (8/27)

Based on 27 fused segments from 19 active smokers with one-year CT follow-up

What did the **independent investigators say?**

This investigator-initiated study set out to demonstrate non-inferiority to autograft. However, the authors' findings *"**indicated superiority** of MagnetOs"* over autograft in PLF at one year.¶[1]



Kuros Biosciences

Propagation in action: MagnetOs turns implant volume into quality bone

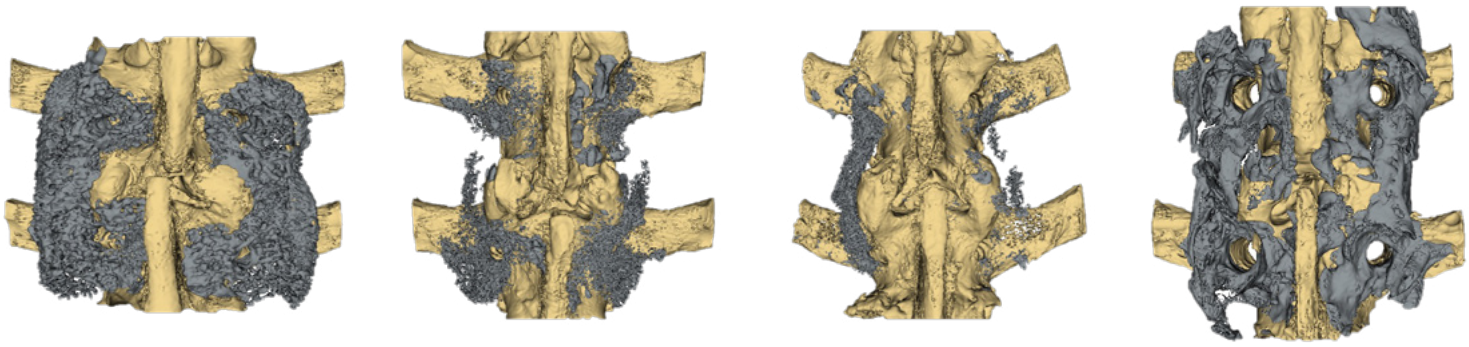
MagnetOs-treated spine fusions are volumetrically stable, in contrast to other products (Vitoss® BA2X, Novabone Putty®, and autograft).‡[16]

Surgeons don't have the ability to routinely obtain bone biopsies from patients, making it difficult to confirm whether what they are seeing is truly bone.

One concern with synthetic grafts is that they either resorb too quickly (like tricalcium phosphate) or don't resorb quickly enough (like hydroxyapatite).

This can lead to misinterpretation of residual graft as fused bone, compromising patient clinical outcomes. That's why understanding how grafts behave volumetrically and structurally really matters.

3D reconstructions after 12 weeks

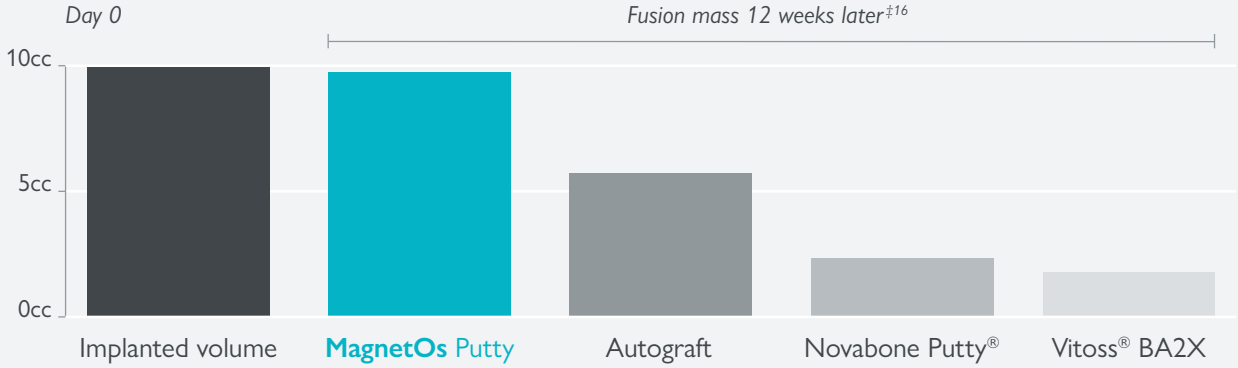


MagnetOs Putty | Vitoss® BA2X | Novabone Putty® | Autograft

Volume in = Volume out

MagnetOs is volumetrically stable compared to various well-known grafts on the market – **including autograft**.

Quite simply, this means that when you implant 10ccs of MagnetOs you can be confident that it will create 10ccs of fusion mass.‡[16]



Ovine study

Grow bone with **MagnetOs**™

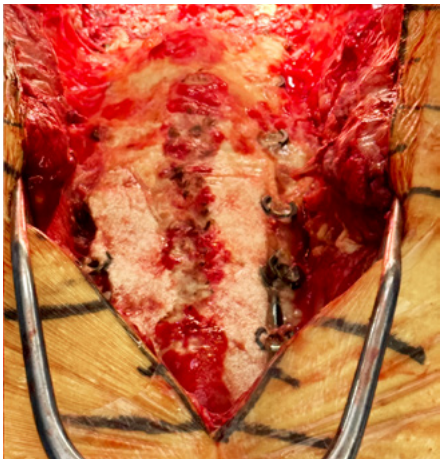
Watch MagnetOs in real-world surgery

Speed-to-fusion and solid bone formation

Audible and visual confirmation of solid 8-week fusion in a high-risk patient with multiple comorbidites during planned staged revision with MagnetOs Flex Matrix.[17]

This case study is the surgical technique of Dr. Enguidanos and has been provided for informational purposes only. Dr. Enguidanos is a paid consultant for Kuros. MagnetOs Flex Matrix was hydrated with BMA and implanted as an extender to autograft. Please refer to the Instructions for Use (IFU) MagnetOs Flex Matrix (US) for a full list of indications, contraindications, precautions and warnings.

Show me the video



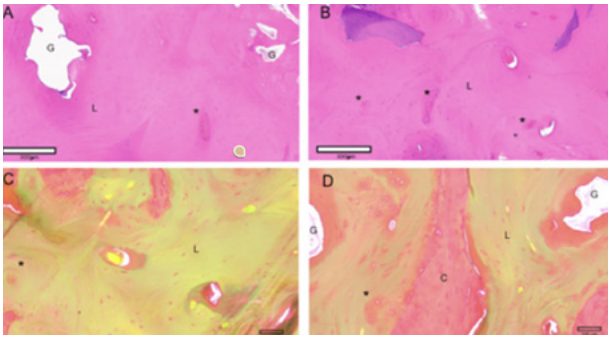
Stage 2 revision at 8-weeks post-implantation

Histologic and radiographic evidence demonstrate solid fusion at the bone graft site.[18]

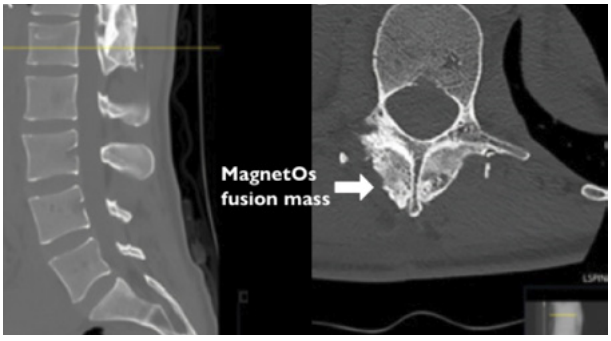
Radiographic imaging remains the standard outcome assessment in spinal fusion procedures, but cannot fully confirm bone maturity without histologic analysis.

In this case study, Dr. R. Todd Allen revisits a T3–L1 fusion at 22 months postoperative during hardware removal, obtaining both imaging and biopsies of the fusion mass.[18]

The histologic findings are corroborated by radiographic observations of a bridged, mature fusion mass, marking the **first report** to radiographically and histologically show robust bone formation with an advanced synthetic bone graft.



Remnant patient tissue posterior to the rod lumbar region
***G** = Residual MagnetOs Granule*
***L** = Mature lamellar bone*
***C** = Immature bone matrix*
• = Osteocyte



Sagittal (right/MagnetOs side) (A) and axial (B) CTs

The results presented are specific to this case and are not supported by statistical analysis. This case example is the surgical technique of Dr. Allen and provided for informational purposes only. Dr. Allen is a paid consultant for Kuros.

Show me the study

Kuros Biosciences

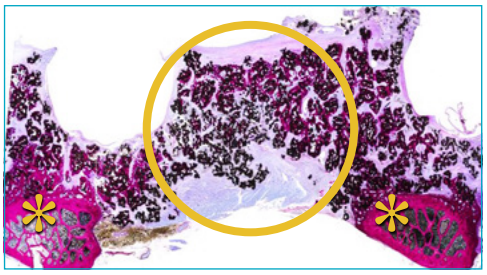
A window into bone healing: **Preclinical histology reveals early bone formation**

Preclinical case: MagnetOs vs. autograft in an ovine PLF model

A question always arises, "how can we be sure that we're seeing bone versus bone graft on postoperative imaging?" We turn to preclinical models to answer this question. These models allow us to visualize tissue composition through a single level with histology.

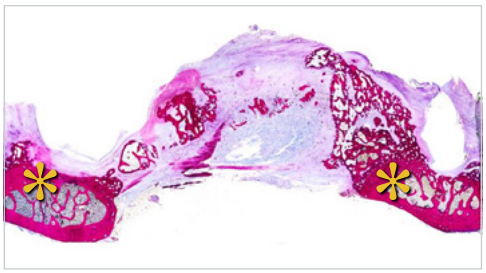
The results of these studies demonstrate that MagnetOs grows bone (fuchsia staining), and it does so throughout the intertransverse space (from the core of the space), not just through creeping edge repair (from the asterisks inward).‡#[19]

MagnetOs
Sagittal view

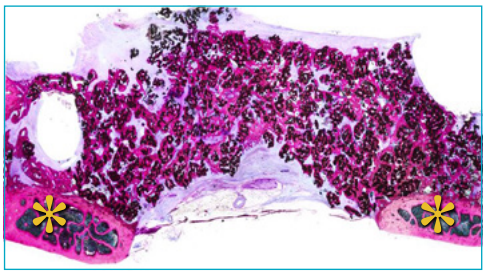


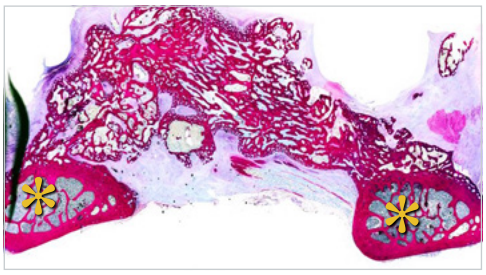
Fuchsia: *bone growth* ***Purple:*** *fibrous tissue*
Black: *MagnetOs* ✻**:** *transverse process*

Autograft
Sagittal view

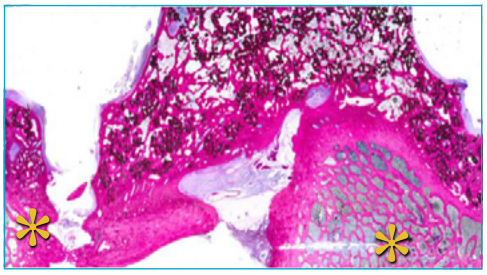


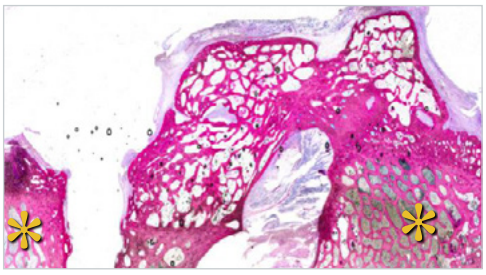
6 weeks
Islands of bone form in the center of the fusion bridge for MagnetOs





12 weeks
Complete bridging of bone between the transverse processes





26 weeks
Resorption and remodeling of the graft

Result: ***Complete bridging bone that is equivalent to autograft.***[19]

Histology images of an ovine instrumented PLF after 6, 12, and 26 weeks. Bilateral ovine fusion rates at 12-weeks: MagnetOs, 5/6 levels fused; autograft, 4/6 levels fused.

Safety that goes further: building confidence in cancer care

At Kuros we understand that patients' lives are in your hands. MagnetOs contains no human cells or growth factors which alleviates concerns of disease transmission – making it a safe, proven alternative to autograft, even for oncology patients.[1,6-10]

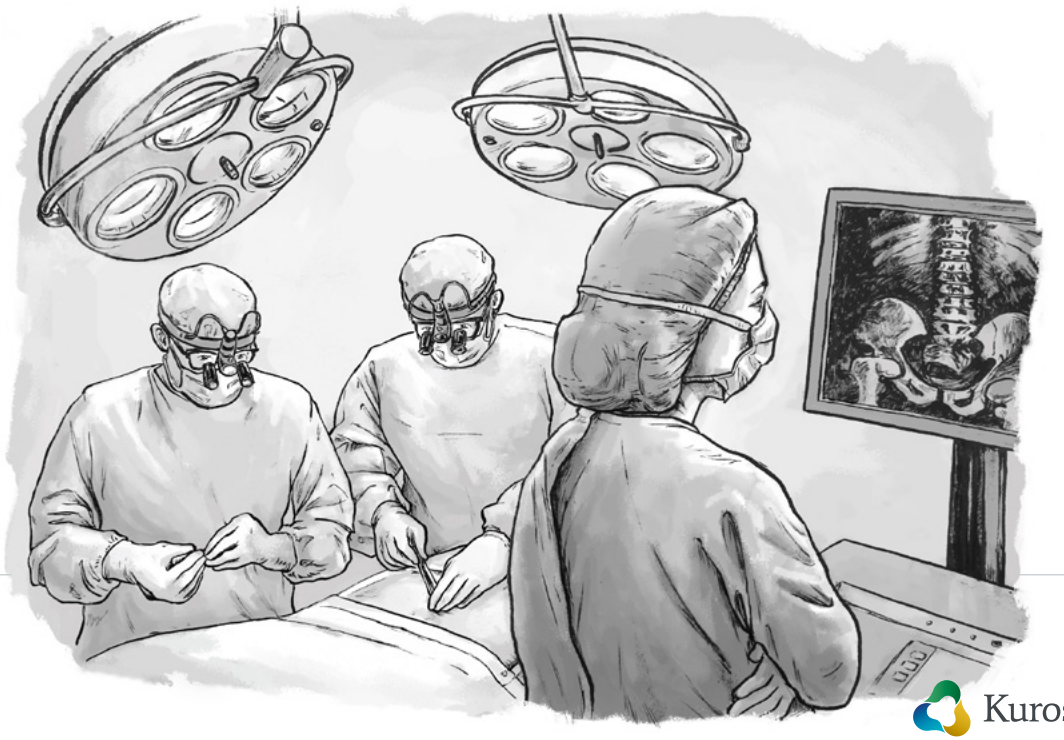
Four reasons to **believe in the safety of MagnetOs:**

1. **Free of human tissue:** Avoids concerns during surgical consent[6-10]
2. **Carries no intrinsic risk of human tissue-related disease transmission:** Thanks to the cell-free formulation[6-10,20]
3. **No growth factors:** Eliminates the potential for adverse events associated with BMPs[21-23]
4. **Proven composition:** Calcium phosphate based, trusted for decades[20]

Why MagnetOs is a safer choice in oncology

Oncology patients face high surgical risk and often can't tolerate the unknowns tied to cell-based or growth factor-based grafts. Bone grafts with growth factors or live osteoprogenitor cells may promote malignant cell growth.[21-23]

Calcium phosphate bone grafts offer a human cell-free, growth factor-free alternative.[20] That's why surgeons are increasingly turning to MagnetOs for fusion in oncology cases – *where predictability and peace of mind are essential.*



Kuros Biosciences

How effective is MagnetOs in treating cancer patients?

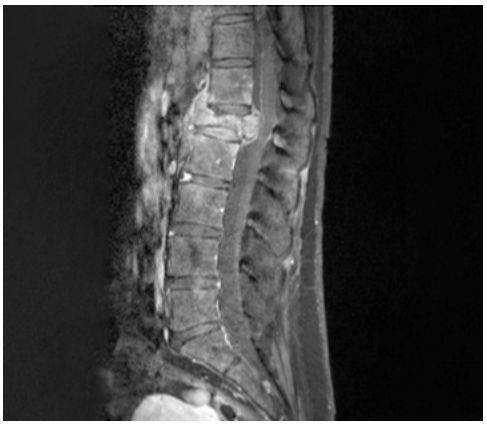
Clinical oncology case: **MagnetOs Putty in a 4-level posterior thoracolumbar fusion**[24]

Surgeon: Dr. Sri Divi, Northwestern Memorial Hospital, Chicago, Illinois, U.S.

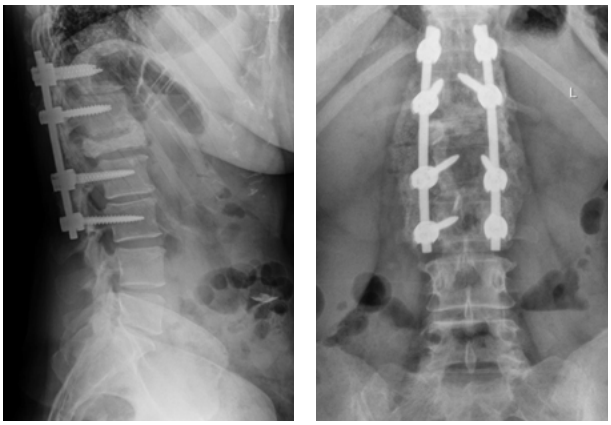
Patient: 53-year-old female with metastatic lung cancer and spinal cord compression with myelopathy

Procedure: T11-L3 posterior thoracolumbar fusion with MagnetOs Putty and autograft

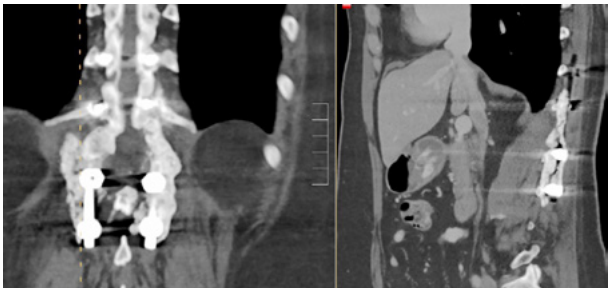
Preoperative MRI



Six-month postoperative X-rays



15-month postoperative CTs



Extensive bone formation was evident throughout the posterolateral spine at 15 months postoperative, despite ongoing radiation and chemotherapy.

Following spinal fusion surgery, the patient immediately began a three-year course of a targeted cancer therapy.

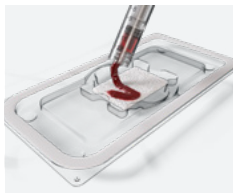
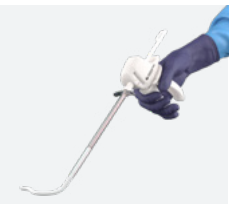
In this case study, MagnetOs was implanted as an extender to autograft in PLF. This case study is the surgical technique of Dr. Divi and has been provided for informational purposes only. Dr. Divi is a paid consultant for Kuros. Please refer to the Instructions for Use (IFU) MagnetOs Putty (US) for a full list of indications, contraindications, precautions and warnings.

Introducing the MagnetOs portfolio
Choose your form, trust the fusion

From MagnetOs Putty to MagnetOs MIS, every formulation is designed to handle differently. No matter the form, they all deliver the same trusted performance thanks to our unique NeedleGrip surface technology.

MagnetOs is a Biphasic Calcium Phosphate (BCP) composed of 65–75% Tricalcium Phosphate (TCP) and 25–35% Hydroxyapatite (HA).[6-10]

The concentration of these two components has been designed specifically to create an optimal resorption rate.[‡5]

Indication	MagnetOs Easypack Putty[8]	MagnetOs Flex Matrix[9]	MagnetOs Putty[7]	MagnetOs Granules[6]	MagnetOs MIS[10]
Posterolateral spine & interbody[‖]	✓	✓	✓	✓	✓
Standalone (not mixed with autograft)	✓	Mixed with BMA or autograft	✓	✓ ¶	✓
Product characteristics	• Prefilled syringe • Ready-to-use • Easy-to-mold[10]	• Strips with collagen • Flexible • High wickability	• Ready-to-use • Easy-to-mold[10]	• Strong, proven foundation	• Always ready when you are • 3x faster than traditional, funnel-based bone graft delivery methods[25] • Engineered for optimal handling[11]
					
	Learn more	Learn more	Learn more	Learn more	Learn more

Watch MagnetOs in real-world surgery

Kuros Biosciences

Growing bone with MagnetOs helps you achieve a predictable fusion

Our **purpose**

Evidence isn't optional for Kuros. Through our Project Fusion global research, development, and technology program we are committed to generating high-quality evidence, enabling our team to discover, develop, and deliver innovative biologic technologies with one goal in mind: To give surgeons the confidence to make evidence-based decisions for their patients.

Kuros by numbers

20
Level I – IV human clinical trials initiated or completed

>20
Commercial markets serving, spine, extremities, trauma, and oncology

>25
Orthobiologics-related patents secured

Why wait to **grow your fusion rate?**

Whether you're a surgeon, a distributor partner, or a hospital stakeholder, MagnetOs gives you the confidence to grow bone – and your success. **At Kuros we make the unpredictable… predictable.**

Meet with a MagnetOs Expert

Learn more about Project Fusion

* 19 of initial 100 patients were active smokers.
† Radiographic fusion data of the smoker subgroup were not statistically analyzed as a subgroup and were not included in the peer-reviewed publication of the study.[1]
‡ Results from in vitro or 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 the FDA as an osteoinductive bone graft.
|| MagnetOs must also be used with an intervertebral body fusion device cleared by FDA for use with a bone void filler. MagnetOs Flex Matrix must be hydrated with BMA & mixed with autograft in posterolateral spine & intervertebral disc space. MagnetOs Granules must be hydrated with blood in the intervertebral disc space.
¶ MagnetOs Granules is cleared for standalone use in the posterolateral spine. Please refer to the Instructions for Use for a full list of indications, contraindications, precautions, and warnings. For important safety and intended use of information please visit kurosbio.com.
# MagnetOs has been proven to generate more predictable fusions than two commercially available alternatives in an ovine model.

References: 1. Stempels, et al. *Spine.* 2024;49(19):1323-1331. **2.** Van Dijk, LA. 24th SGS Annual Meeting (SwissSociety of Spinal Surgery). Basel, Switzerland. Aug 2024. **3.** Van Dijk, et al. *eCM.* 2021;41:756-73. **4.** Van Dijk, et al. *J Immunol Regen Med.* 2023;19:100070. **5.** Duan, et al. *eCM.* 2019;37:60-73. **6.** Instructions for Use (IFU) MagnetOs Granules (US). **7.** Instructions for Use (IFU) MagnetOs Putty (US). **8.** Instructions for Use (IFU) MagnetOs Easypack Putty (US). **9.** Instructions for Use (IFU) MagnetOs Flex Matrix (US). **10.** Instructions for Use (IFU) MagnetOs MIS. **11.** Data on file. MagnetOs Putty and MagnetOs Easypack Putty. **12.** Italiani, et al. *Front Immunol.* 2014;5:514. **13.** Loi, et al. *Stem Cell Res Ther.* 2016;7:15. **14.** U.S. Food and Drug Administration. (n.d.). Content of a 510(k). Retrieved May 7, 2025, from https://www.fda.gov/medical-devices/premarketnotification-510k/content-510k. **15.** Berman, et al. *Int J Spine Surg.* 2017;11(4):29. **16.** Van Dijk, et al. *Clin Spine Surg.* 2020;33(6):E276–E287. **17.** Data on file. Dr. Enguidanos case study. **18.** Hatfield C, et al. *JOJ Case Studies.* 2025;15(2):555910. **19.** Van Dijk, et al. *JOR Spine.* 2018;e1039. **20.** Morris. *Eur Spine J.* 2018;27:1856–1867. **21.** Wang, et al. *Clin Transl Oncol.* 2020;22(8):1263-1271. **22.** Kim, et al. *Tumour Biol.* 2015;36(12):9475-86. **23.** Fukuda, et al. *Int J Mol Sci.* 2021;23;22(15):7882. **24.** Data on file. Dr. Sri Divi case study. **25.** Data on file. MagnetOs MIS.

Manufactured by **Kuros Biosciences BV**
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MAT-0114 Sept '25

MAGNETOS for predictable fusions

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