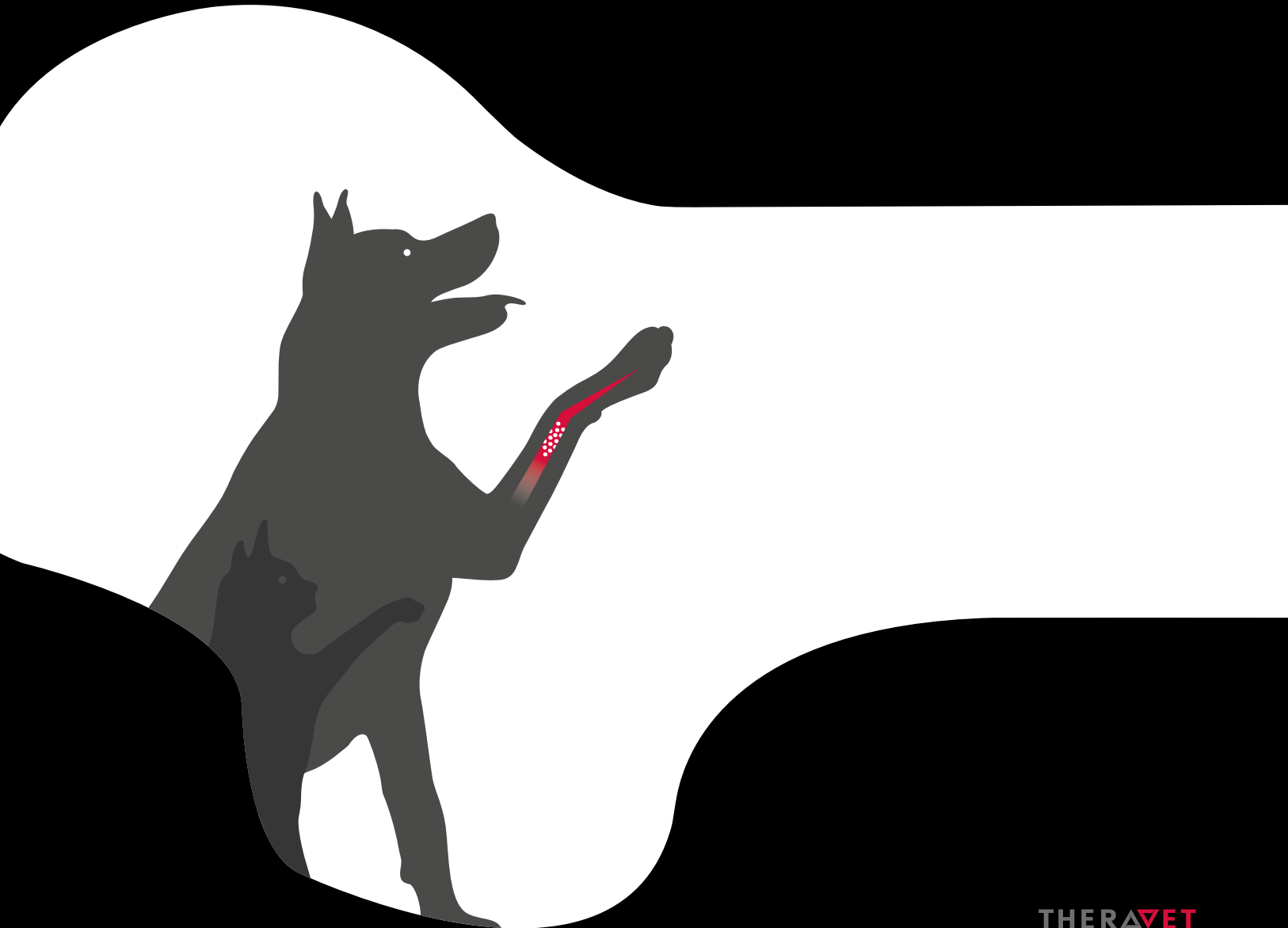


**BIOCERA**  
The next generation bone substitute



# Back to the bone



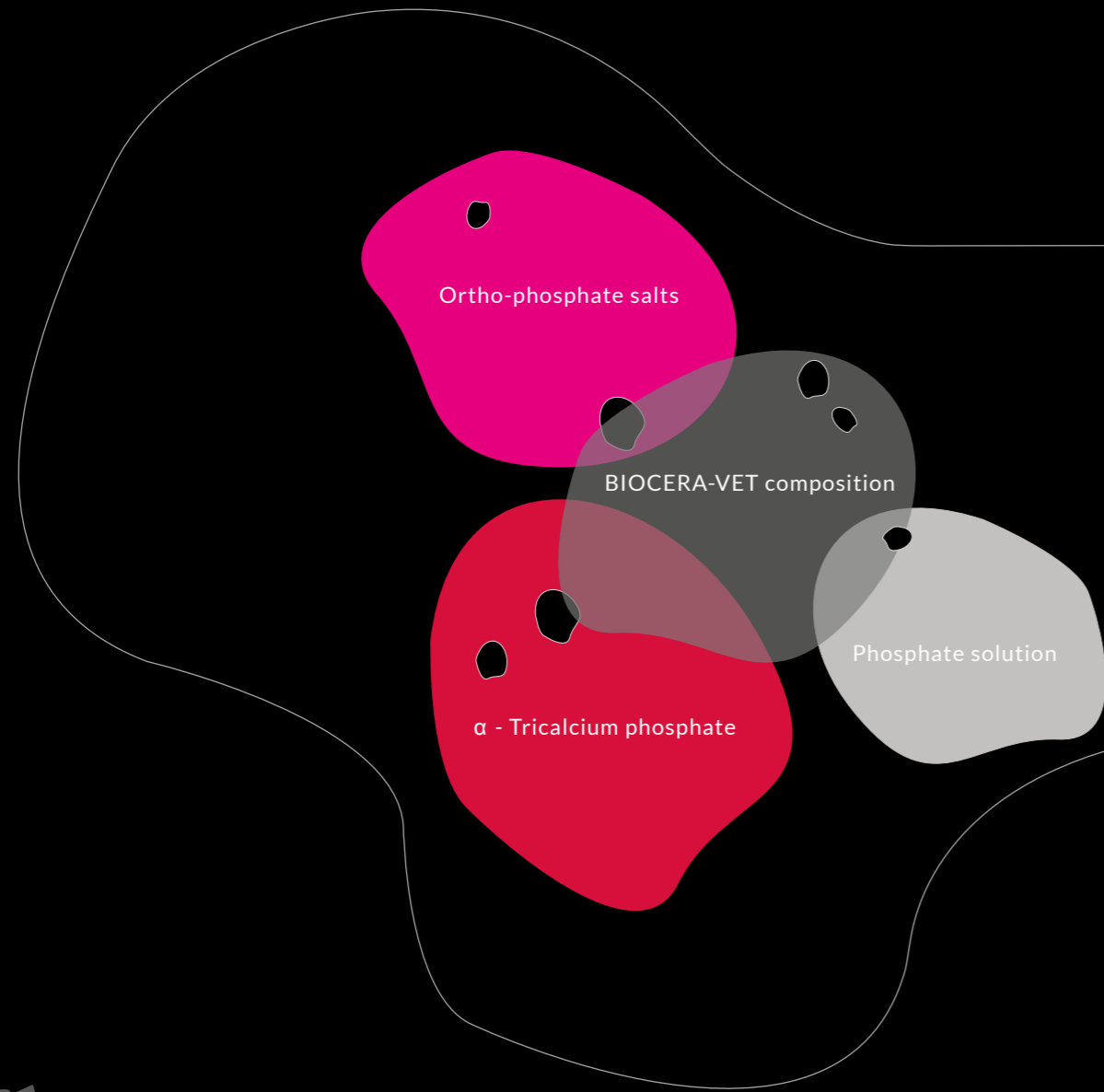
THE **RA** **VET**



BIOCERA-VET

NATURAL COMPOSITION, HIGH POROSITY

BIOCERA-VET is a synthetic injectable self-hardening calcium-phosphate bone substitute.

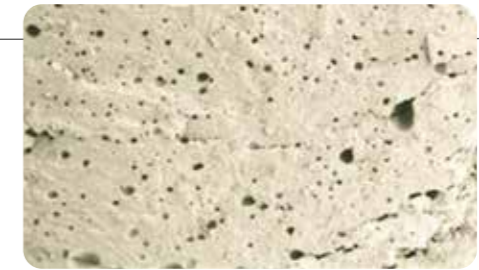


BIOCERA-VET is made from tricalcium phosphate ( $\alpha$ -TCP) and ortho-phosphate salts that after crystallization give rise to calcium deficient apatite. This is chemically close to the components in natural bone. Therefore, BIOCERA-VET becomes well integrated in the bone matrix, resorbed by osteoclasts and progressively replaced by newly formed bone.

BIOCERA-VET has a full range of micro, meso and macrospores that makes it over 50% porous. This promotes osteoconduction, osteoinduction and bone remodelling, which facilitates bone cell colonization and biological fluid penetration.



Calcium-deficient apatite crystals, chemically very close to the components in bone.



50% porosity promotes bone cell colonization and biological fluid penetration.



Back to the bone



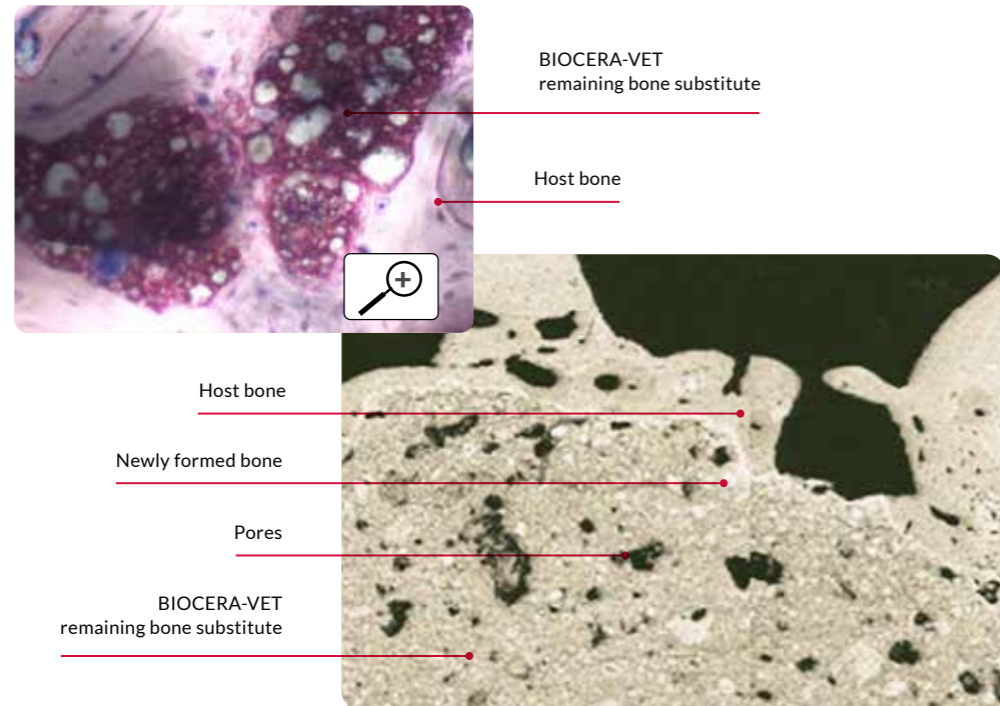
## UNIQUE OSTEOINTEGRATION AND BONE FORMATION

The unique composition of the calcium phosphates of BIOCERA-VET<sup>(1)</sup> demonstrated an excellent osteointegration; whereas it enables the formation of bridges between the bone and the bone substitute.

Six months after implantation in a sheep model, BIOCERA-VET showed

- close contact and bridges with host bone traducing an excellent osteointegration
- newly formed bone at the periphery and inside the bone substitute thanks to osteo-conduction and osteo-induction<sup>(3)</sup>

Photomicrograph (20x) sheep model (cylindrical defect) analysis 6 months post implementation<sup>(3)</sup>.

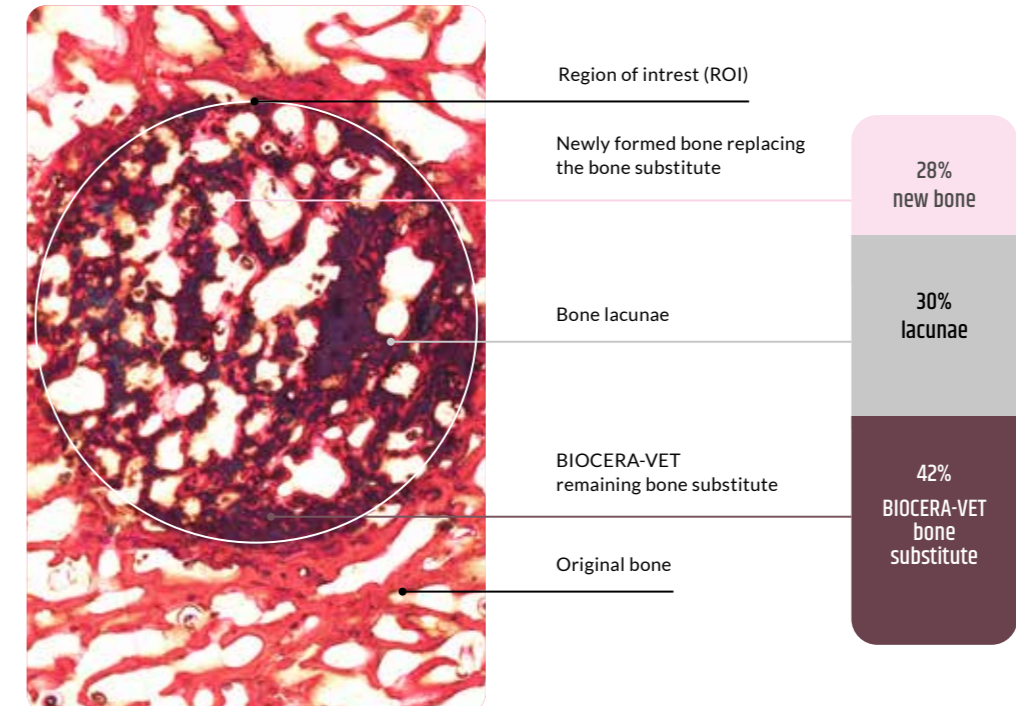


Scanning Electron Microscope - sheep model (cylindrical defect) analysis 6 months post implementation<sup>(5)</sup>.

When examined histologically, bone defects filled with BIOCERA-VET showed

- significant remodelling of BIOCERA-VET (less remaining bone substitute)
- significant bone lacunae filled with normal adipocitic bone marrow
- significant newly formed bone replacing BIOCERA-VET

Compared to other synthetic bone substitutes, BIOCERA-VET demonstrates its outstanding bone-remodelling qualities<sup>(3)</sup>.



Histomorphological analysis (photomicrograph 2x) - sheep model (cylindrical defect) analysis 6 months post implementation.

Analysis of the region of interest (ROI) occupied by soft tissue, BIOCERA-VET bone substitute, lacunae and new bone in terms of surface area - sheep model (cylindrical defect) analysis 6 months post implementation<sup>(3)</sup>.

Significant lower bone substitute and higher lacunae area values are measured vs other synthetic injectable bone substitute.





BIOCERA-VET



Back to the bone

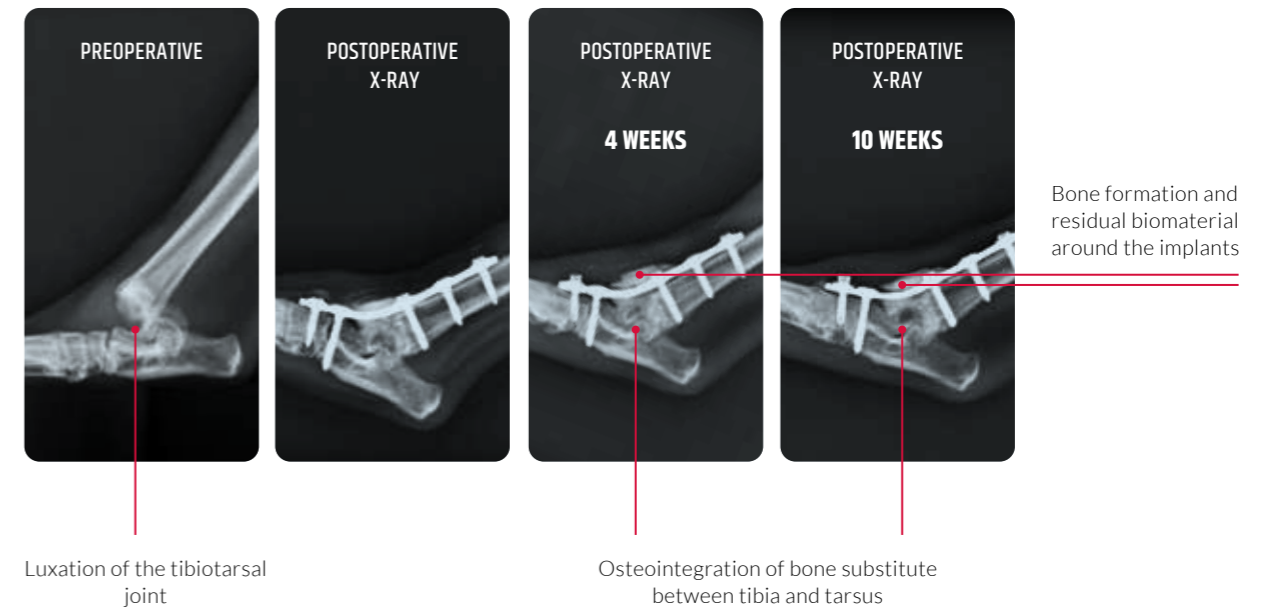
# FASTER



DVM B. Flasse,  
Centre Vétérinaire Beumont, Belgium



Among the 70 gathered clinical cases<sup>(4)</sup> (in dogs & cats), a faster bone repair is reported as the most common difference with existing bone substitutes.



BIOCERA-VET fastens arthrodesis. Complete fusion between tibia and tarsus observed as soon as 4 weeks after fracture reduction associated to its administration. Additionally, no adverse reaction was observed at the site of implantation.

Tibio-tarsal fracture treated by arthrodesis associated with BIOCERA-VET in cat - Peper 2 years old 2019 DVM B. Flasse Centre Vétérinaire Beumont, Belgium.



BIOCERA-VET

# STRONGER

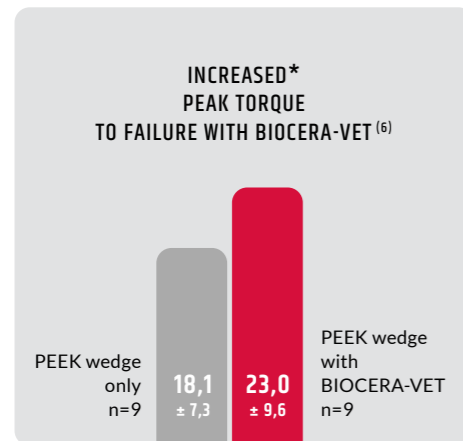
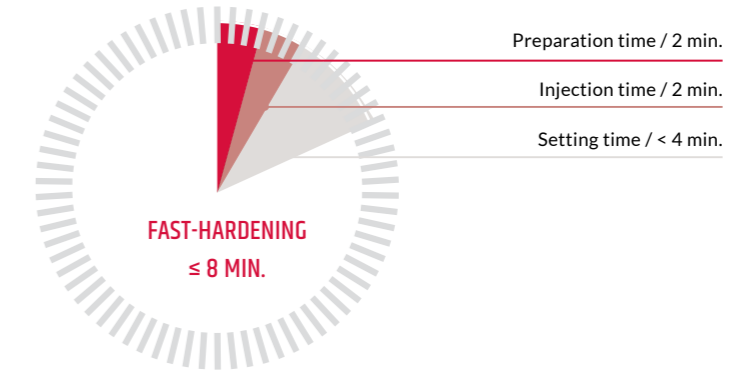
# EASIER

A critical factor for a successful bone grafting and defect repair is mechanical stability.

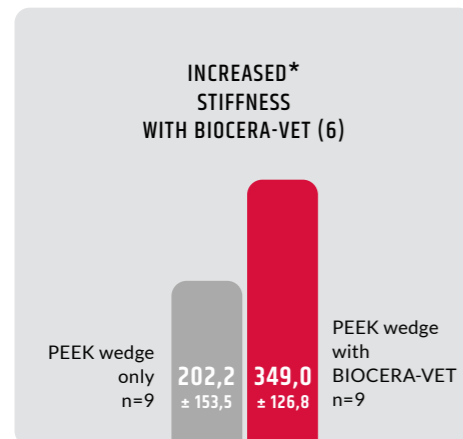
Studies <sup>(6)</sup> performed with BIOCERA-VET on human cadaver bone specimens in an opening wedge high tibial osteotomy (owHTO) showed a significant improvement in the mechanical properties with an increased torsional peak to failure and stiffness (compared to the cadaver bone without substitute <sup>(6)</sup>).

BIOCERA-VET is fast-hardening, reaching its complete and isothermal hardening after 24 hours, thus contributing to the structural stability and improving biomechanics, while keeping its porosity and bone remodelling facilitating properties.

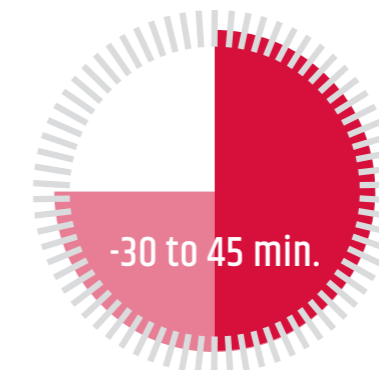
BIOCERA-VET is easy to prepare, according to the needs of modern orthopaedic surgery: simple, intuitive and fast-hardening (< 8 min.).



Peak torque to failure (Nm +/- SD); \*significant



Stiffness (Nm/° +/- SD); \*significant



**REDUCE SURGERY TIME TO 30 TO 45 MINUTES**

Surgeries become easier and faster when harvesting of autogenous bone grafts is not needed, and better results are obtained when the bone defect to treat is well and completely filled <sup>(7,8)</sup>.



Back to the bone





### TESTED ON HUMANS, APPROVED FOR PETS

Orthopaedic surgeons in human medicine have been confidently using the human equivalent of BIOCERA-VET <sup>(1)</sup> over the past ten years with more than 60.000 patients, hence leaning on a proven safety track-record <sup>(9,10)</sup>.

Current usage of BIOCERA-VET in more than 70 clinical cases in dogs and cats shows an excellent safety profile with no adverse effect reported <sup>(4)</sup> by European veterinarian orthopaedic specialists around the world.



### THE HUMAN TREATMENT

In human orthopaedic surgery, autografts are used <sup>(12)</sup> in only 40-50% of the reconstruction procedures while in veterinarian bone surgery autografts remain the default procedure for bone substitution <sup>(11,12)</sup>.

With BIOCERA-VET™ you have now the last generation of bone substitute at your disposal, preventing unnecessary co-morbidities, without compromising on efficacy and making your surgery shorter and more enjoyable. Also in veterinary orthopaedics, the patient deserves the highest standard of care!

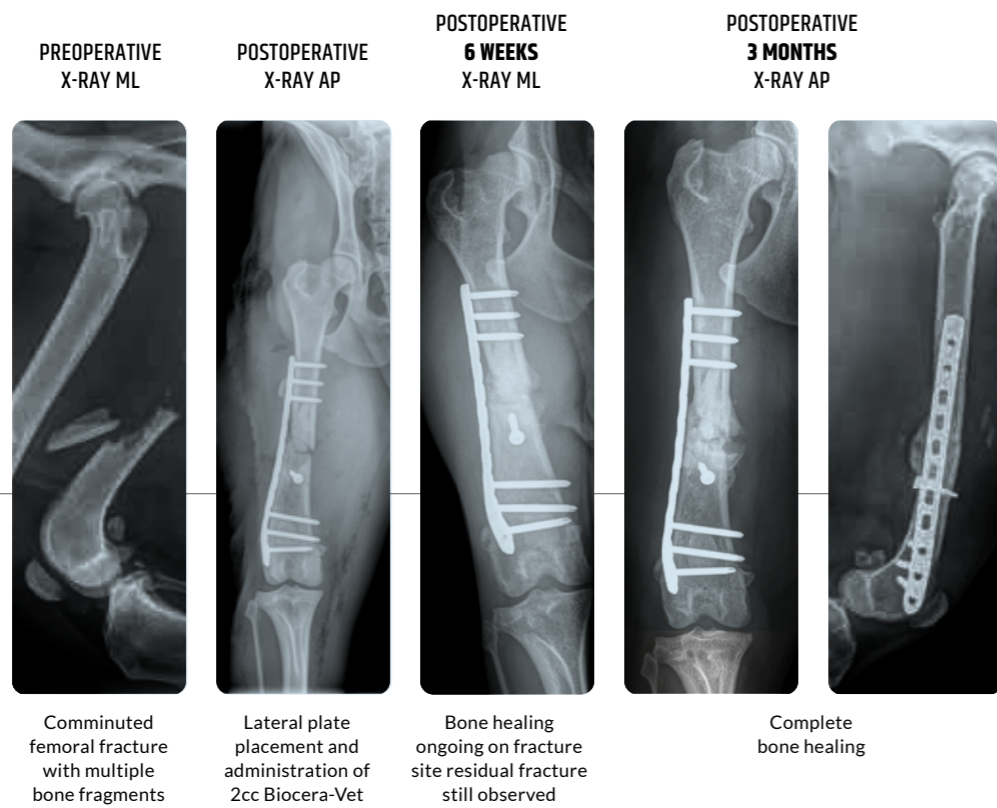




**BIOCERA-VET**

## TESTED IN PRACTICE & APPROVED BY VETERINARIAN ORTHOPAEDIC SURGEONS

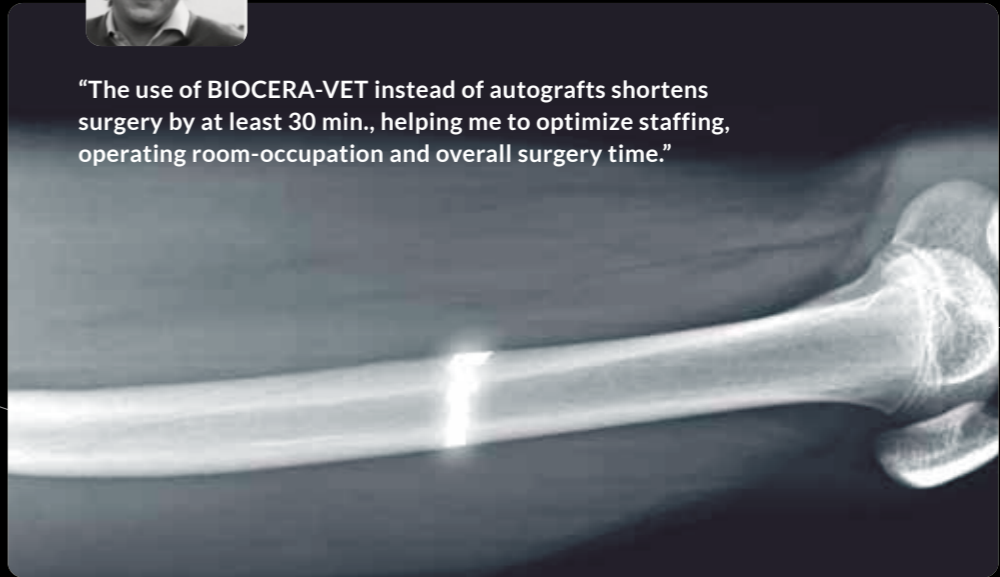
BIOCERA-VET accelerates fracture healing. Complete consolidation was observed 3 months after fracture reduction and implantation of BIOCERA-VET. Additionally, no adverse reaction was observed at the site of implantation.



*Fracture healing and consolidation after comminutive fracture reduction associated with BIOCERA-VET in dog, Noelia 4-year old. 2019 DVM O. Stiévenart (Belgium). ML mediolateral AP antero-posterior.*



DVM O. Stiévenart,  
Surgivet, Belgium



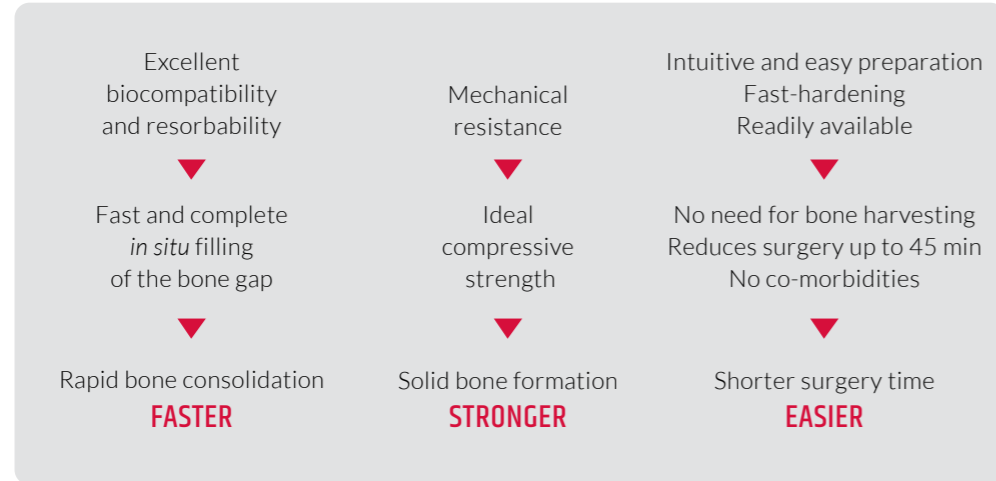
Back to the bone



# BIOCERA-VET

## BIOCERA-VET

Meeting the criteria of the ideal bone graft



While autograft has the advantage of being osteogenic, BIOCERA-VET excels in osteointegration and bone remodelling. This offsets the advantage of osteogenicity and helps to make BIOCERA-VET a valuable alternative for autografts. Additionally, BIOCERA-VET is faster, stronger and easier to use compared to the currently available veterinary techniques.



**BONE SURGERY**  
3cc

### INDICATIONS

- Arthrodesis
- Fractures
- Corrective osteotomy
- TTA (Tibial Tuberosity Advancement)
- All indications for which bone grafts are required

Back to the bone

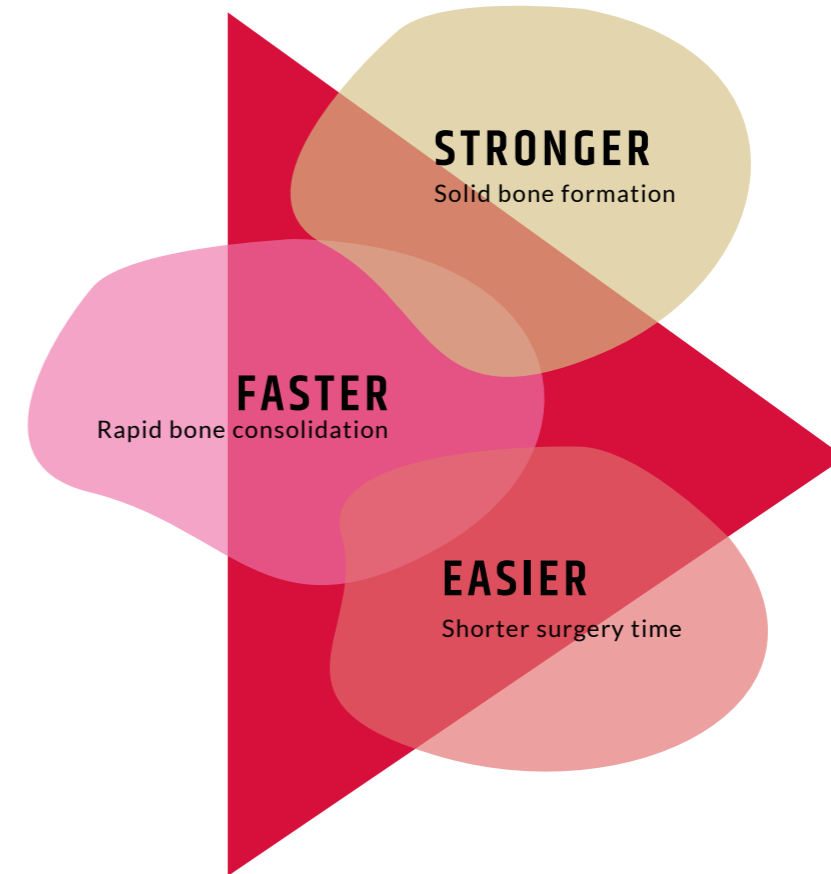


## BIOCERA-VET

The next generation bone substitute, unique in veterinary orthopaedics



- Outstanding bone remodelling properties result in effective new bone formation
- A valuable alternative for autografts
- Safe: tested on humans, approved for pets
- FASTER, STRONGER and EASIER compared to currently available veterinary techniques



### Refs

- (1) Distributed under the name Quickset Graftys®
- (2) Mellier et al. Acta Biomaterialia 2017
- (3) GLP report NAMSA. Data on file, 2012. Local tissue effects and performance of Graftys® Quickset versus Graftys® HBS following intraosseous implantation in sheep for 24 weeks
- (4) Data on file Belgium/France 2019-2021, >70 cases of use of BIOCERA-VET in cats & dogs gathered from prospective multicentric non-controlled clinical trials and compassionate use.
- (5) GLP study efficacy Quickset Graftys® in sheep model (cylindrical defect) 2009
- (6) Scardino et al. 2015 Calcium phosphate cement enhances the torsional strength and stiffness of high tibial osteotomies. Knee Surg Sports Traumatol Arthrosc. European Society of Sports Traumatology, Knee Surgery, Arthroscopy (ESSKA)
- (7) St John TA, Vaccaro AR, Sah AP, Schaefer M, Berta SC, Albert TA, Hillbrand A. Physical and monetary costs associated with autogenous bone graft harvesting. Am J Orthop. Jan 32(1):18-23, 2003
- (8) DeVries WJ, Runyon CL, Martinez SA, Ireland WR. Effect of volume variations on osteogenic capabilities of autogenous cancellous bone graft in dogs. Am J Vet Res. Oct 57(10):1501-1505, 1996
- (9) > 58,000 patients treated with Quickset Graftys®. Data on file. Graftys and its partner las Brasil cross the milestone of 10,000 Graftys® HBS units sold in Brazil®
- (10) Matthieu et al International Orthopaedics 2015 (SICOT) DOI 10.1007/s00264-015-3047-5
- (11) Medistrat Market Research Orthopaedic surgeons n=20 BE
- (12) <https://www.fortunebusinessinsights.com/bone-graft-substitutes-market-103106> & Bone Grafts and Substitutes 2011-2020 Global Data



# TheraVET

TheraVet is a vet company headquartered in Belgium. Its mission is to develop innovative, safe and effective treatments to improve the well-being and quality of life of companion animals suffering from osteoarticular diseases.

By developing unique solutions, our commitment is to improve the level of care allowing companion animals to live healthier. In order to fully meet the veterinarian needs, TheraVet's goal is to provide local – safe & effective treatments with superior ergonomics.



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