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smartbone®

THE NEXT FRONTIER OF BONE REGENERATION

DENTAL

swiss made

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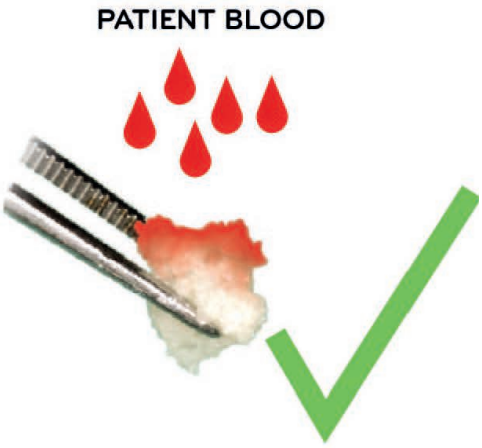
IMPORTANT INFORMATION

DON'T

DON'T USE SALINE SOLUTION

DO



USE ONLY PATIENT BLOOD

DON'T

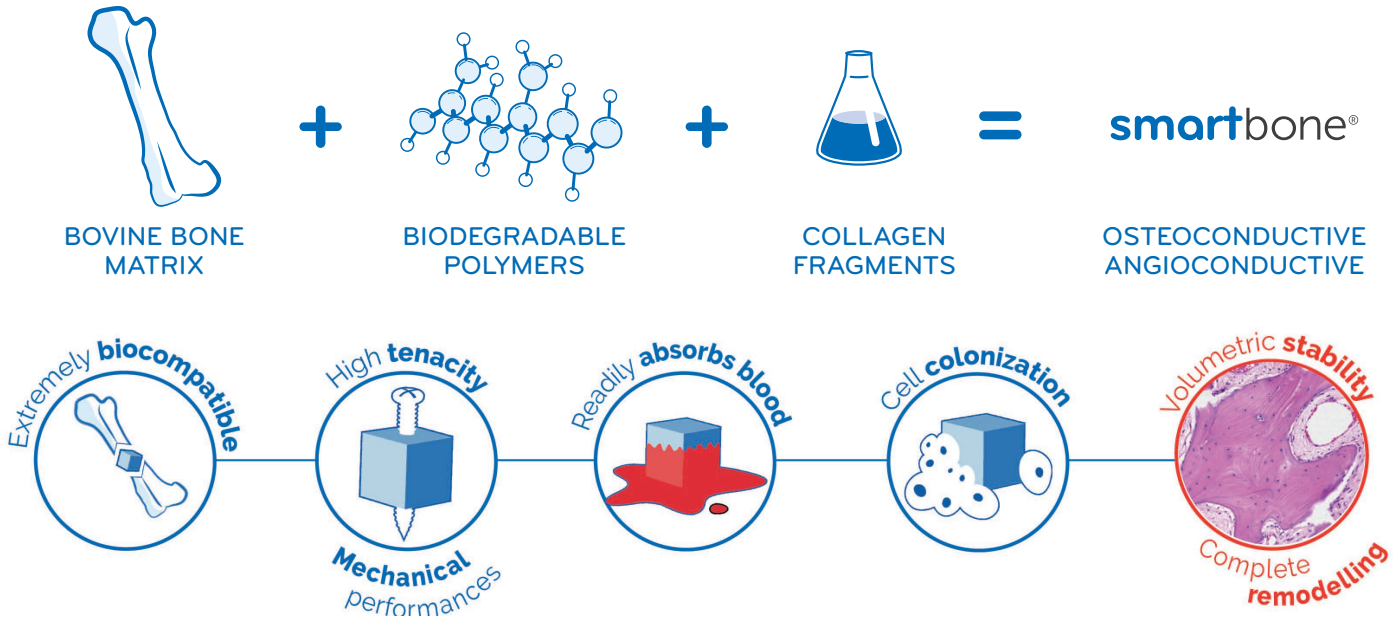
DON'T REUSE

DO

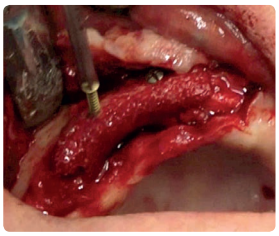
FOR SINGLE USE ONLY

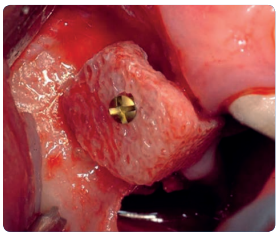
smartbone®

SmartBone® is a new hybrid bioactive bone substitute specifically developed for bone regeneration in reconstructive surgery. SmartBone® is produced by combining a bovine mineral bone matrix with bioactive resorbable polymers and collagen fragments. This new concept of composite biomaterial promotes a quick growth of the patient's cells into SmartBone® while its biopolymers degrade, providing perfect integration and osteogenesis.



BIODEGRADABLE POLYMERS

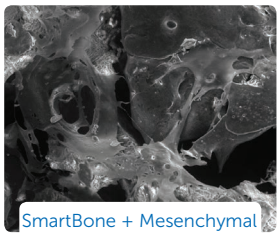




Give SmartBone®:

- high loading resistance
- high volumetric stability (>95%); the polymers protect the bone from early resorption
- high tenacity to screws fixation

COLLAGEN FRAGMENTS



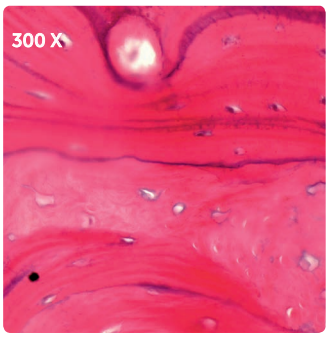
SmartBone + Mesenchymal Stem Cells

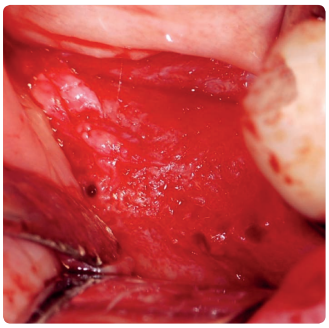
Help SmartBone® to:

- promote blood cell adhesion and colonization
- guarantee a high hydrophilicity thus enhancing the chemical cascade of signals that promotes the osteogenic process

SMARTBONE® PROMOTES OSTEOINTEGRATION AND VASCULARIZATION :

Inizial situation





4 months after surgery

smartbone®

SmartBone® is completely resorbed and replaced by the patient's own bone within 1-2 years: this excellent outcome grants a vital, functional bone-implant integration.
SmartBone® is extremely biocompatible and is fully compliant with ISO 10993-1 requirements.

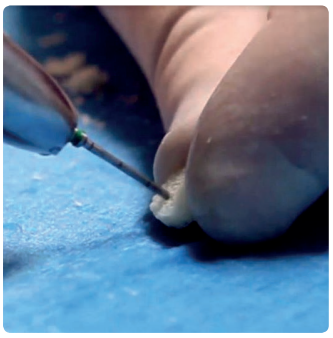
PERFECT FOR:

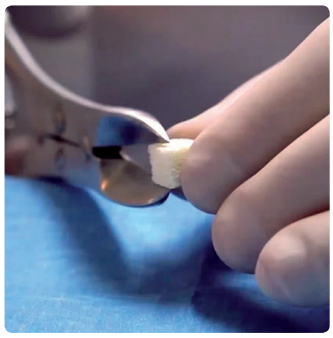
- Regeneration of periodontal bone defects
- Regeneration of extraction alveoli
- Regeneration of cavities between the alveolar wall and immediate implants
- Horizontal alveolar ridge augmentation
- Sinus lift floor elevation
- Alveolar ridge augmentation at implant sites with sufficient residual bone and a good blood supply

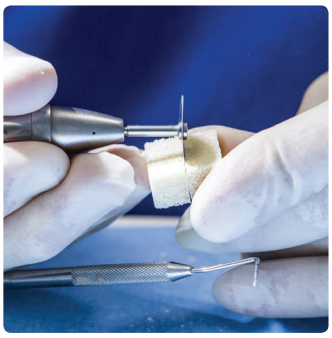
FROM CHIPS TO CUSTOM-MADE GRAFTS

ADVANTAGES OF SMARTBONE®:

- Easy dust free shaping with any type of surgical tool (for example: bone cutter, drill)
- Resistant to extreme loads and to heavy surgical maneuvering
- Far better stability of the augmented bone graft vs the loose granules
- Bigger defects do not need autologous bone, thus reducing patient morbidity
- No resorption: the polymeric coating protects the graft during initial healing/osteointegration period
- Readily absorbs blood







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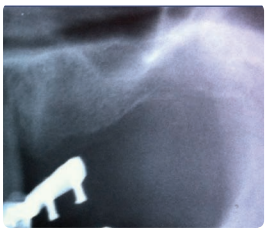
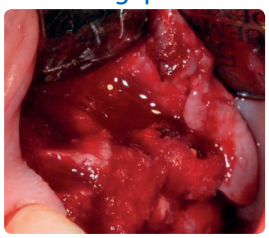
CLINICAL CASES

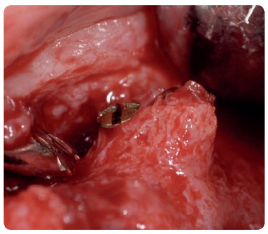
Filling of a bone gap after extraction and vertical increase using SmartBone® Block



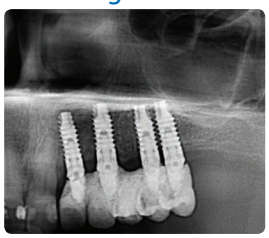
Patient's initial condition.



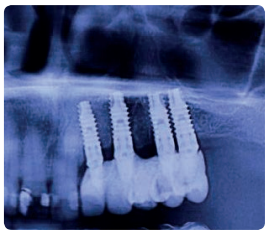
SmartBone® Plate placed by two screws in area 24 and 25. Insertion of a cone shaped SmartBone® in 23 and placement of Microchips (1 - 2 mm) in position 22.



4 months:
the graft has maintained the volume and an excellent bone formation permits the placement of four implants.



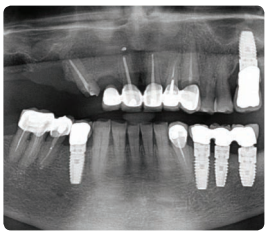
2 years:
a complete bone maturation is achieved.



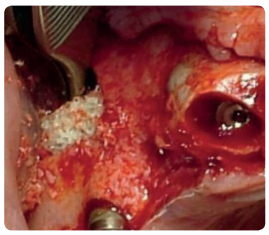
3 years:
the bone surrounding the implants has a very good quality and density.

Courtesy of Dr. G. Carusi

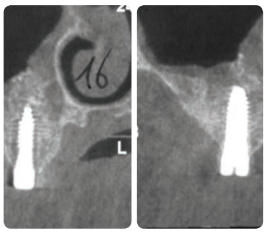
Sinus lift using SmartBone® Block & Microchips (0,25 - 1 mm)



Patient's initial condition.



Implant fixation through the block in the sinus cavity.



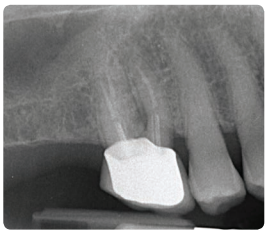
6 months:
the new bone has a very good quality also around the implant and the entire bone volume was maintained.

9 months.

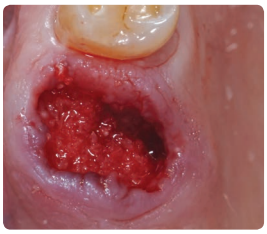
10 months.

Courtesy of Dr. F. Secondo

Horizontal bone augmentation using SmartBone® Microchips (0,25-1 mm)

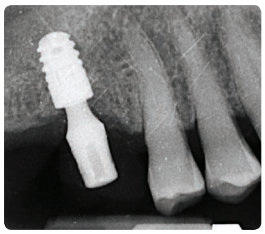


Patient's initial condition.



Socket grafting with SmartBone® Microchips.

Periapical radiograph performed after tooth extraction and socket preservation.

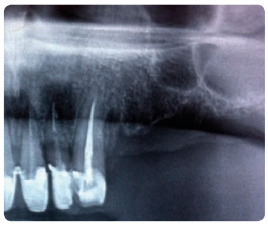


6 months:
periapical radiograph showing graft with a standard abutment tightened at 25 N/cm.

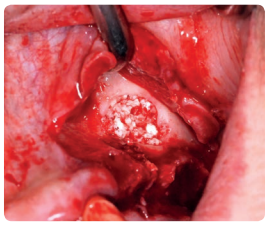
3 years:
lateral side-view of the defined implant prosthetic rehabilitation.

Courtesy of Dr. F. Mandelli

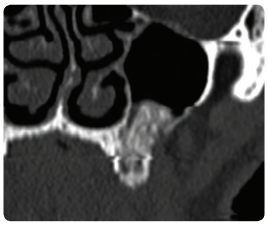
Sinus lift and vertical bone augmentation using SmartBone® Microchips (1-2 mm)



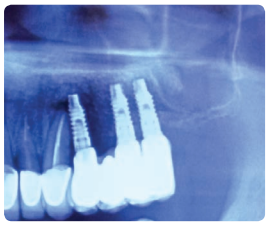
Patient's initial condition.



SmartBone® Microchips application both for sinus lift and vertical bone augmentation.



5 months:
average bone density 500 HU, adequate for the placement of three implants.



2 years:
complete osteointegration and maturation of soft and hard-tissues.

3 years:
a very good bone quality around the implants ensures a perfect stability.

Courtesy of Prof. Dr. D. Epistatus and Dr. G. Carusi

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CUSTOM MADE GRAFTS FOR RECONSTRUCTIVE SURGERY ARE ONLY FOUR STEPS AWAY

1 Diagnosis prescription

The doctor sends the patient's CT Scan with a brief clinical description

2 Digital planning

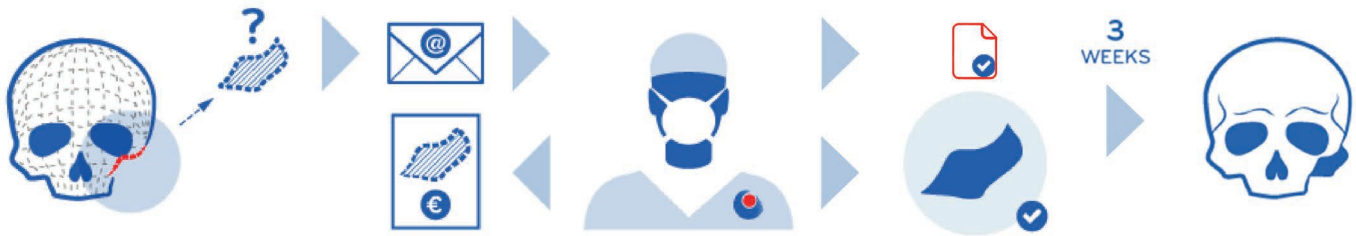
IBI designs the graft in accordance with the doctor's prescriptions

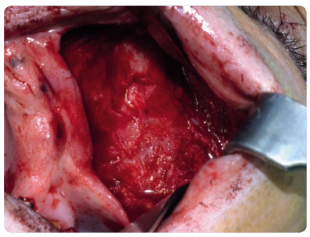
3 Custom made bone graft

IBI produces the custom made graft based on the stl file

4 Surgery

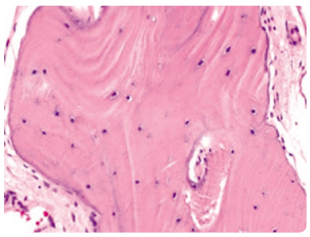
The doctor receives the graft and is ready for surgery





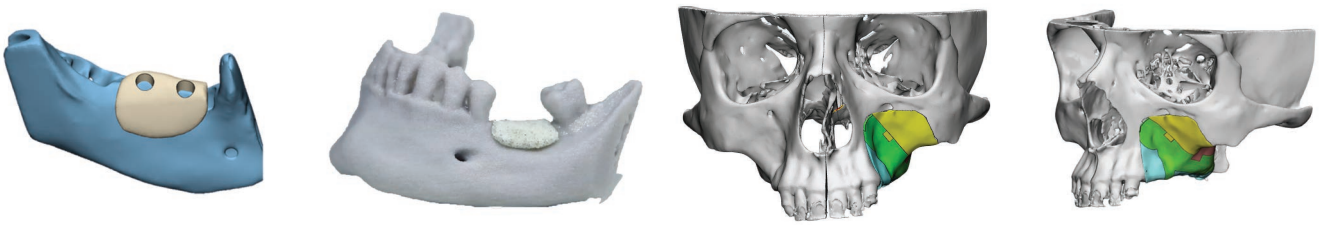
2.5 YEARS AFTER SURGERY

the graft has been completely replaced and a mature lamellar bone has formed



SMARTBONE® ON DEMAND™

- is custom-made to the specific needs of each of your patients
- ensures a perfect contact between the graft and the recipient site for improved integration
- ensures a precise creation of the desired shape
- helps you to resolve complex situations
- reduces surgery time
- reduces patient's risks
- helps you to reduce surgical costs
- guarantees your success

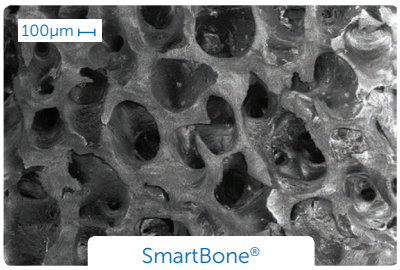


smartbone®

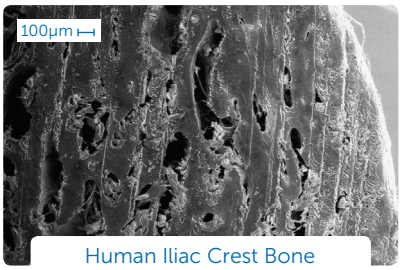
KEY FEATURES

OPEN AND INTERCONNECTED POROSITY

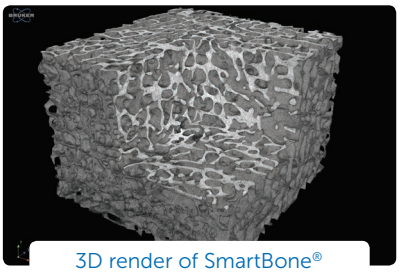
The microstructure of SmartBone®'s composite matrix strongly resembles the human bone in terms of open and mid-sized porosity.



SmartBone®

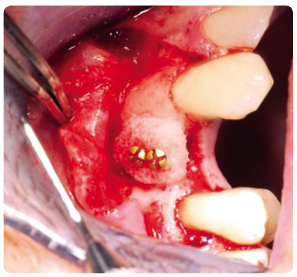


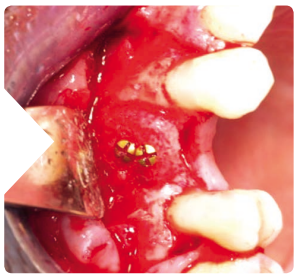
Human Iliac Crest Bone


3D render of SmartBone®

HIGH MECHANICAL PERFORMANCES

SmartBone® is characterized by a rigid pseudoelastic behaviour. It bears 3 times the competitor's maximum load and is 4 times more rigid.





HIGH HYDROPHILICITY

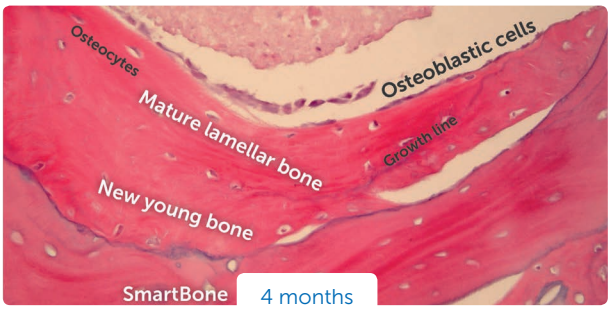
Thanks to its microcomposition, SmartBone® quickly reaches an average 38% w/w blood swelling, thereby allowing a robust osteointegration.


6 months after surgery

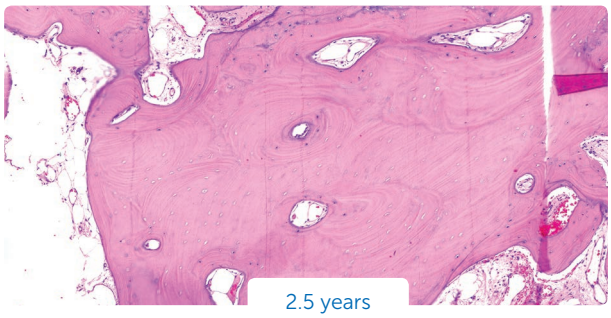
HIGH TISSUE INTEGRATION

SmartBone®'s microstructure and composition favour cell colonization.

Histological analysis evidenced the presence of wide and well-structured cell formations inside SmartBone®.



4 months


2.5 years

SmartBone® is progressively replaced by new young bone: osteoblasts are visible both in the active and in the quiescent state, when, after having formed mature lamellar bone, they become osteocytes, as evidenced inside the lacunae. After 2.5 years the graft has been completely replaced and the osteogenesis has formed a lamellar bone with cement lines; there is evidence of a great amount of osteocytes inside the lacunae and of a good angiogenesis.
SmartBone®,combined with the native bone, forms an osteoinductive system.

smartbone®

CATALOGUE

smartbone® Microchips

ITEM	SIZE	QUANTITY
SMG251025	0.25 - 1 mm	0.25 g
SMG251005	0.25 - 1 mm	0.5 g
SMG251010	0.25 - 1 mm	1 g
SMG251020	0.25 - 1 mm	2 g
SMG102005	1 - 2 mm	0.5 g
SMG102010	1 - 2 mm	1 g
SMG102020	1 - 2 mm	2 g

smartbone® Granules

ITEM	SIZE	QUANTITY
SMG204020	2 - 4 mm	2 g

smartbone® Block

ITEM	SIZE	QUANTITY
SMB011005	7 x 7 x 7 mm	1
SMB011010	10 x 10 x 10 mm	1
SMB011020	10 x 10 x 20 mm	1
SMB011030	10 x 20 x 20 mm	1
SMB011110	14 x 12 x 6 mm	1
SMB011130	14 x 12 x 8 mm	1
SMB011160	14 x 12 x 12 mm	1
SMB011310	16 x 14 x 6 mm	1
SMB011330	16 x 14 x 8 mm	1

smartbone® Plate

ITEM	SIZE	QUANTITY
SMP013010	3 x 25 x 15 mm	1
SMP013040	4 x 10 x 10 mm	1

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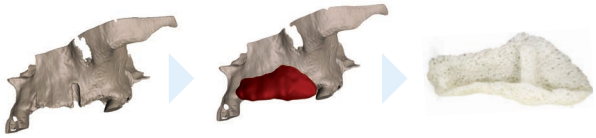
smartbone®



smartbone® on demand™

THE NEXT FRONTIER OF BONE REGENERATION

IBI is an innovative hi-tech Swiss biomedical company focused on research, development and production of medical devices for tissue engineering and regenerative medicine: substitutes, grafts, 3D matrixes and 2D scaffolds. IBI believes that regenerative medicine and tissue engineering represent the future in healthcare. IBI has advanced competencies and core skills in processing materials for biomedical applications, which are used to develop proprietary technologies to build new and innovative products. IBI commits to safety and quality management: IBI Quality System is ISO 13485 compliant.

bsi. UKAS MANAGEMENT SYSTEMS 0003

CE 0086

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CAUTION: The law restricts the sales of these devices made by, or on the order of, a dentist or surgeon.
Warning: Possible complications which may occur with any surgery include swelling at the surgical site, flap necrosis, bleeding, local inflammation, bone loss, infection or pain. Since SmartBone contains collagen, cases of allergic reactions may occur in very rare circumstances.

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