

OssDsign Catalyst

A breakthrough in nanosynthetic bone grafting



Patented unsintered
nanoarchitecture

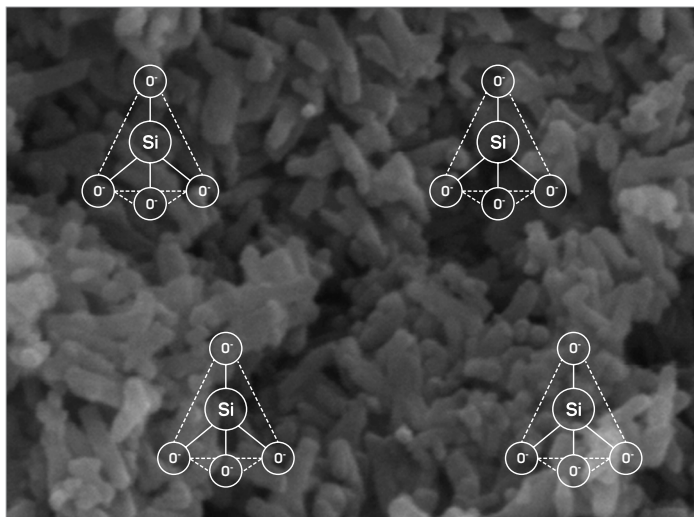


Ultra-high incorporated
silicate ions



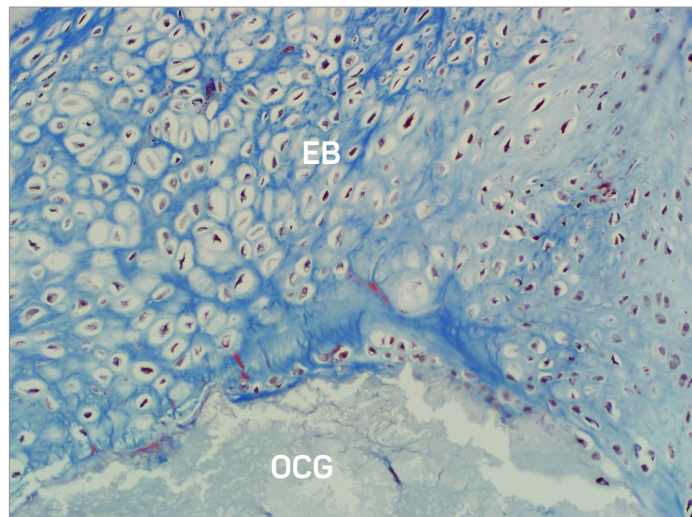
2021-2251 Rev04

Following the principles of developmental engineering, **OssDsign Catalyst** was designed to engage **dual bone formation pathways** (endochondral and intramembranous) resulting in rapid bone formation at early time points^{1,2}. These two pathways are involved in natural bone formation during skeletal development and repair.



A high-magnification electron microscopy image of the surface of OssDsign Catalyst shows a nanocrystalline structure that mimics that of bone mineral crystals. Silicate ions are incorporated into the crystal structure.

The non-ceramic (unsintered), nanocrystalline structure with uniquely high levels of incorporated SiO_4 ions is designed to **catalyse an endogenous biological response**, resulting in rapid, controlled bone formation^{1,2,3}.



OCG = OssDsign Catalyst Granule, EB = Endochondral Bone

Histology showing bone formation by an endochondral pathway adjacent to OssDsign Catalyst (NB); image is from the center of the defect in a rabbit model^{1,2}.

In hypoxic environments OssDsign Catalyst engages the **endochondral ossification pathway**, leading to rapid bone formation at the center of a defect, even in challenging poorly vascularized environments^{1,2}.

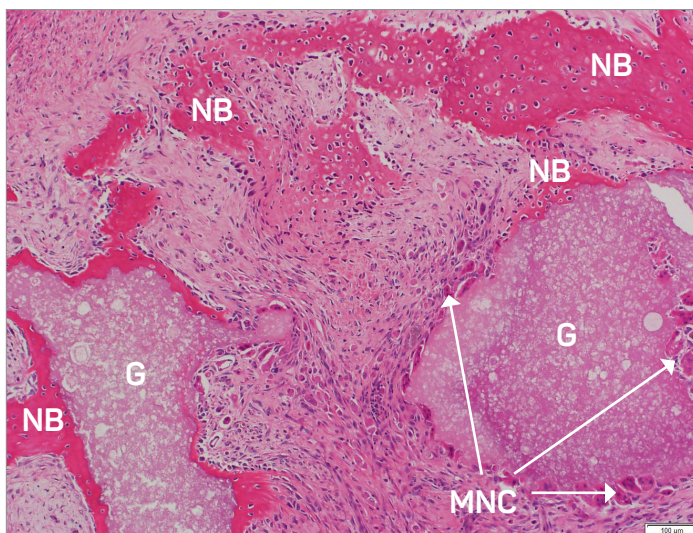
References:

¹ Conway JC, Oliver R, Wang T, Wills D, Herbert J, Buckland T, Walsh WR, Gibson IR. (submitted to The Spine Journal, 2021)

² Walsh W, Oliver R, Wang T, Wills D, Conway J, Buckland T, Gibson IR. (2020) Spine J. 2020;20:S116

³ Data on file; SIR2019-10; (March 2020)

⁴ Data on file; SIR2019-7 (Sept 2019) and SIR2019-8 (April 2020)



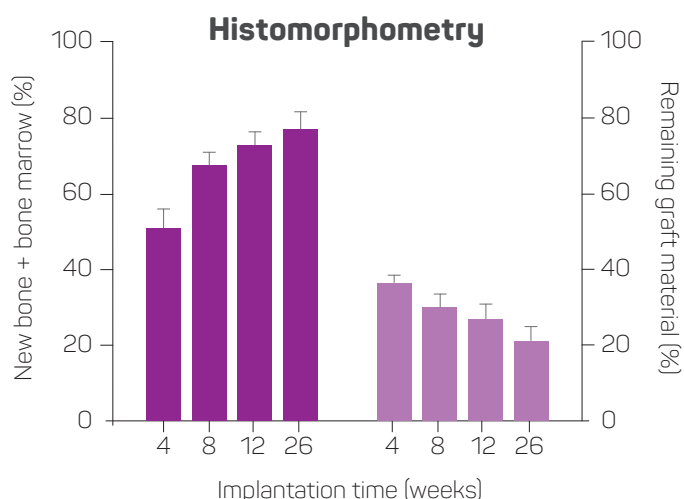
G = granule; NB = new bone; MNC = multinucleated cells, graft resorption

In vascular environments OssDsign Catalyst also engages the **intramembranous ossification pathway** via the recruitment of endogenous mesenchymal stem cells³.

The engagement of these dual bone formation pathways results in **rapid and reliable bone formation** throughout the defect².

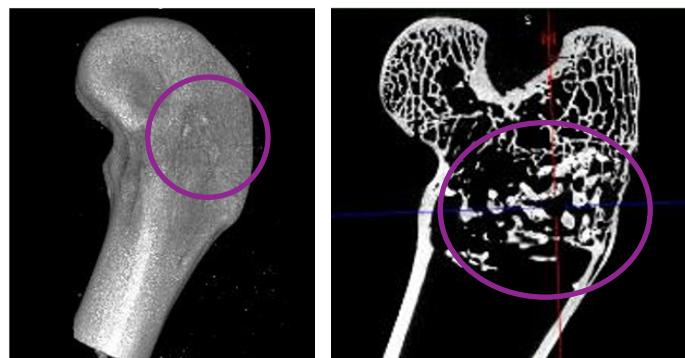
Histology showing intramembranous bone formation (NB) on and between granules of OssDsign Catalyst (G), coupled with remodelling of the granules by endogenous multinucleated cells (MNC)³.

OssDsign Catalyst in a standalone trauma defect (rabbits)⁴



Quantification of the amount of total bone formed (dark purple) and remaining graft material (light purple) in a defect filled with OssDsign Catalyst by histomorphometry. Data are the mean $\pm$ SEM (n=5)

µCT



Reconstructed µCT images of defects filled with OssDsign Catalyst showing excellent graft incorporation (left) and remodelling (right).

OssDsign Catalyst

Article number	Description	Size
104010	OssDsign Catalyst Nanosynthetic Bone Graft putty	1 cc
104025	OssDsign Catalyst Nanosynthetic Bone Graft putty	2.5 cc
104050	OssDsign Catalyst Nanosynthetic Bone Graft putty	5 cc
104100	OssDsign Catalyst Nanosynthetic Bone Graft putty	10 cc

About OssDsign

Headquartered in Sweden, OssDsign's vision is to provide regenerative solutions to all patients with bone defects, so they can be restored and healed as naturally as possible. Driven by a commitment to give patients back the lives they deserve, OssDsign collaborates with surgeons to engineer better healing by integrating biomaterials with clinical design.

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