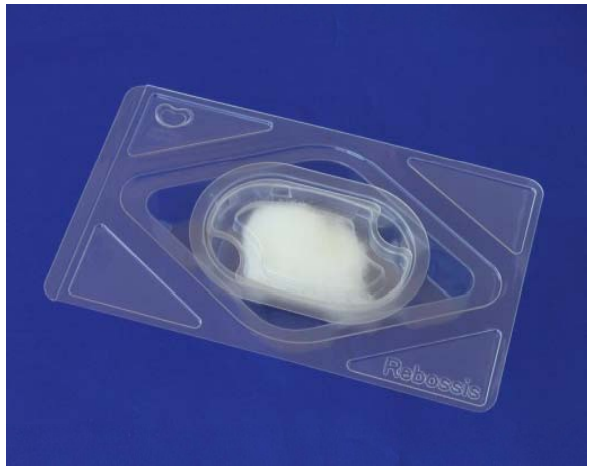
ReBOSSIS®



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ORTHO ReBIRTH

ReBOSSIS®

Cotton-like Bioresorbable Bone Void Filler

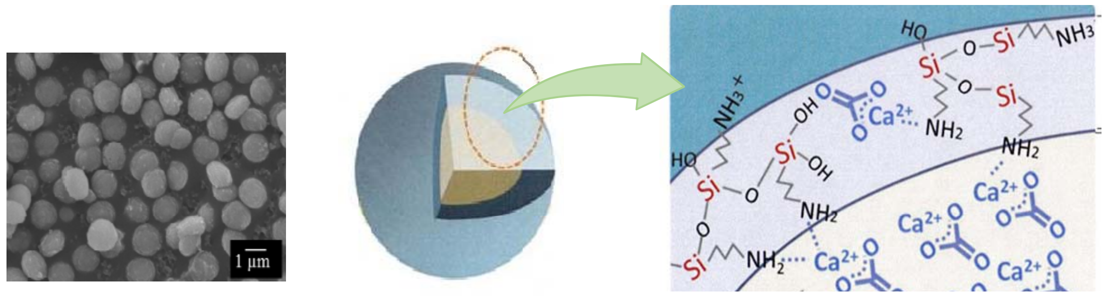
ORTHO ReBIRTH

http://www.orthorebirth.com

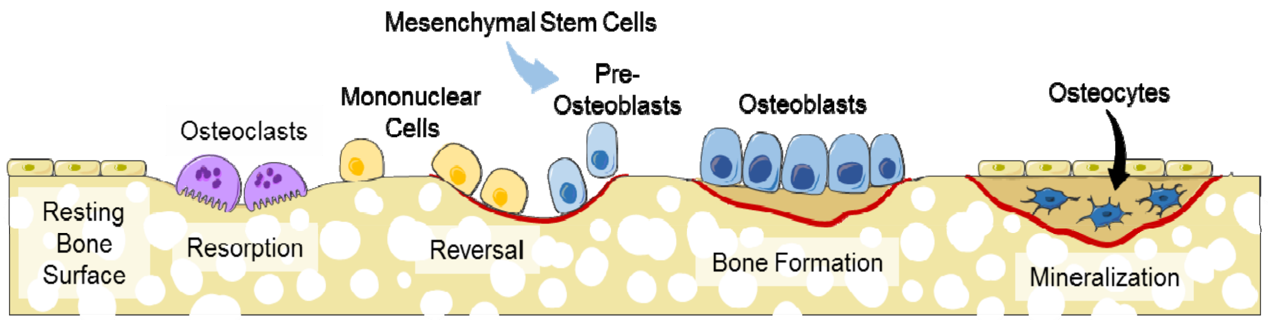
Composition of ReBOSSIS

- β -tricalcium phosphate (β -TCP)
- Poly(L-lactide) (PLLa)
- Siloxane-containing calcium carbonate (SiV)

SiV is siloxane-containing calcium carbonate (vaterite phase)[1]. The SiV particles have diameters of approximately 1 μm and contents approximately 3% Si by weight (1 weight % of ReBOSSIS).



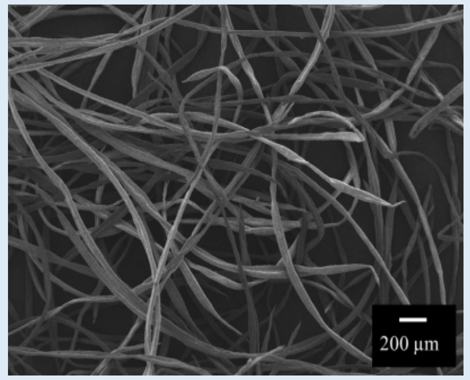
Some scientists reported that a trace amount of silicon species enhances the proliferation and mineralization of osteogenic cells and mesenchymal stem cells [2, 3, 4].



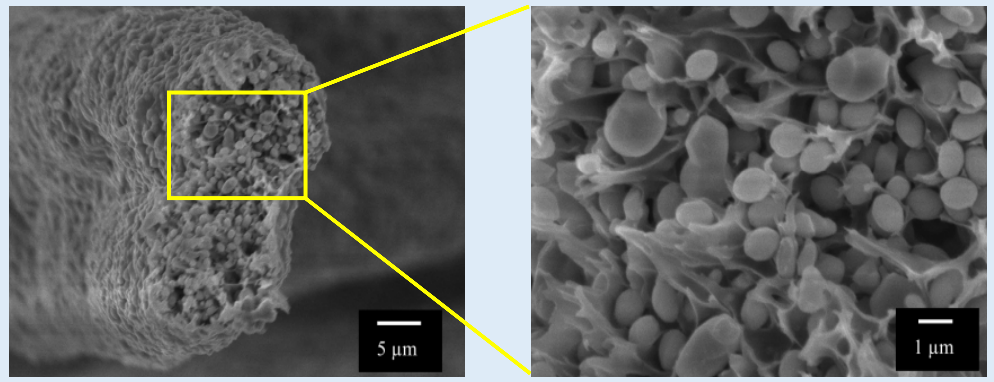
Bone is continuously remodelled at discrete sites in the skeleton in order to maintain the integrity of the tissue. during this process, old bone is resorbed by osteoclasts and replaced with new bone secreted by osteoblasts. Silicon species stimulate the cells to proliferate and differentiate through gene activation.

1) A. Obata, T. Hotta, T. Wakita, Y. Ota, T. Kasuga, Acta Biomaterialia, **6**, 1248-1257 (2010).
2) I. D. Xynos, A. J. Edgar, L. D. K. Buttery, L. L. Hench, J. M. Polak, Biochemical and Biophysical Research Communications, **276**, 461–465 (2000).
3) D.M. Reffitt, N. Ogston, R. Jugdaohsingh, H.F.J. Cheung, B.A.J. Evans, R.P.H. Thompson, J.J. Powell, G.N. Hampson, Bone, **32**, 127–135 (2003).
4) E. S. Thian, J. Huang, S. M. Best, Z. H. Barber, R. A. Brooks, N. Rushton, W. Bonfield, Biomaterials, **27**, 2692–2698 (2006).

Porous Structure of ReBOSSIS

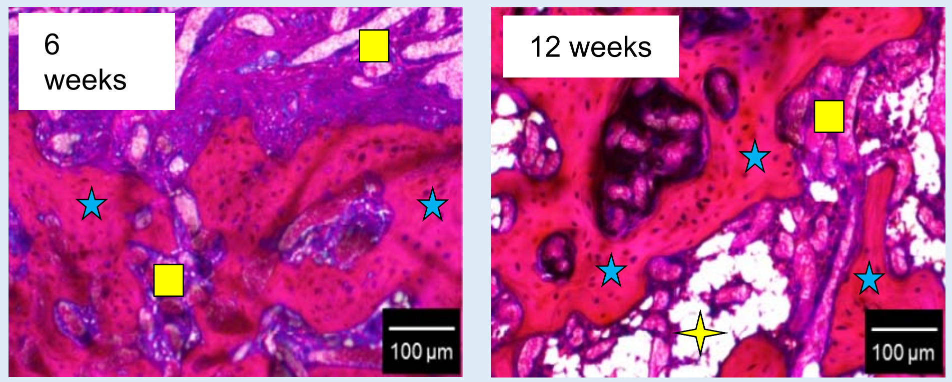


The porosity of ReBOSSIS is more than 90%. The interconnected porous structure due to tangles of fiber allows for formation of new bone and the growth of capillary blood vessels throughout the network of interconnecting pores.



Cross-sectional view of fiber shows that SiV and β-TCP particles embedded in the polymer matrix. The constituents of SiV and β-TCP are released into surrounding environment. Release of calcium and silicon species from an electrospun fiber promotes bone formation.

ReBOSSIS Histology



★ New Bone
■ Materials
✦ Bone marrow

ReBOSSIS in rabbit distal femoral condyle model at 6 and 12 weeks. Histology confirmed new bone formation in Rebossis at 6 and 12 weeks and healing of the defect.
ReBOSSIS has good osteogenic ability and biocompatibility. It is expected to be a new shape bone regeneration material.