

Bioactive cement scaffold aids bone grafts

17 April 2006

U.S. scientists say they've developed a technology for implants that might improve construction or repair of facial, skull and jaw bones.

The technology was developed by researchers from the American Dental Association Foundation in Chicago and the federal government's National Institute of Standards and Technology laboratories in Boulder, Colo.

The technology provides a method for making scaffolds for bone tissue that is seeded with a patient's own cells and formed with a cement paste made of bone minerals. The paste is shaped or injected into a bone cavity and allowed to harden with the encapsulated cells dispersed throughout the structure.

The natural polymer beads gradually dissolve when exposed to the body's fluids, creating a scaffold that is filled by the now released bone cells.

"Bone cells are very smart," said Hockin Xu, of the ADAF and principal investigator. "They can tell the difference between materials that are bioactive compared to bioinert polymers. Our material is designed to be similar to mineral in bone so that cells readily attach to the scaffold."

The research is described in detail in the April issue of the Journal of Biomedical Materials Research B.

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APA citation: Bioactive cement scaffold aids bone grafts (2006, April 17) retrieved 14 October 2019 from <https://phys.org/news/2006-04-bioactive-cement-scaffold-aids-bone.html>

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