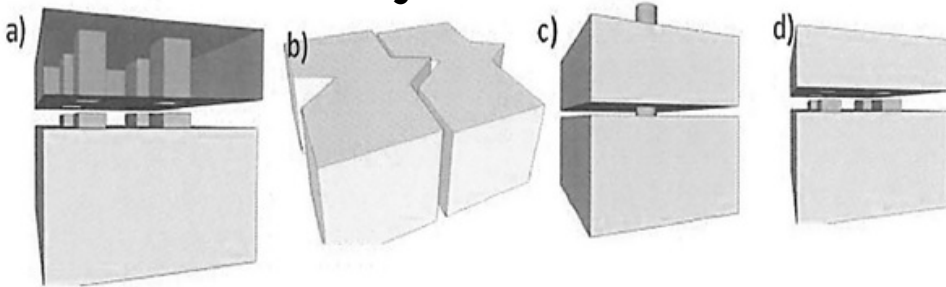


Block-Scaffolds for Bone Regeneration Using Nanoclay-Polycaprolactone Scaffolds with Supplements (RFT-533)

Invention Summary



Scientists at NDSU have developed a flexible, modular, bone scaffold for filling large bone gaps and accelerating bone growth with various additives, such as nutrients, cytokines, therapeutics and minerals incorporated into the scaffold. The scaffold is made of a clay and a polymer.

Large bone defect scenarios exist that currently do not have satisfactory solution. These range from nonunion of fractures, excessive fractures with associated bone loss, revision total joint arthroplasty and others. This invention addresses all of these situations by enabling a customized block based nanoclay bone-mimetic scaffold. A defect site of an injured bone can be filled with a scaffold comprising one or more blocks that may be interconnected. The blocks can be designed in a variety of shapes and sizes and can be prefabricated. The large bone defect space can be treated with bone morphogenetic protein (BMP-2) for example that is incorporated into the scaffold matrix.

Benefits

- Variety of shapes and sizes allows flexibility and customization for any bone gap
- The scaffold is resorbed into the bone or eliminated from the site during bone formation
- Cytokines and other ingredients in the scaffold matrix promote bone formation
- Scaffold can be seeded with autologous bone cells

Patents

This technology is patent pending with fully preserved PCT patent rights and is available for licensing/partnering opportunities.

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