[**Fibronectin Immobilization on Nanobioactive Scaffolds Improves Bone Regeneration**](http://blog.akronbiotech.com/2015/07/19/fibronectin-immobilization-on-nanobioactive-scaffolds-improves-bone-regeneration/)

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Fibronectin-scaffold composites have emerged as promising three-dimensional substrates for tissue regenerative applications. These structures have shown potential in the regeneration of a variety of tissues. Among those, bone tissue has been of particular interest. The integration of nanotechnology with scaffold fabrication approaches has given rise to new families of structures that allow more thorough integration of biological components that promote tissue repair.

Now, a new paper, titled [“Fibronectin immobilization on to robotic-dispensed nanobioactive glass/polycaprolactone scaffolds for bone tissue engineering”](http://link.springer.com/article/10.1007/s10529-014-1745-5#page-1), describes the use of robotics, nanotechnology and biomedical engineering to create composite scaffolds for bone regeneration. Moreover, they use the ligand-like properties of fibronectin to improve the attachment of mesenchymal stem cells seeded on the scaffolds.

The authors, led by Dr. Hae-Won Kim at Dankook University in South Korea, described the use of robotics assembly of sol-gel-based glass-PCL scaffolds with immobilized fibronectin which were then used for bone cell proliferation as precursors for osteogenesis. The scaffolds were manufactured by a robotic platform called EZROBO3, in addition to a number of chemical lab complexation steps.

The authors showed that the FN-nBG/PCL scaffolds significantly improved cell responses, including attachment and subsequent cell proliferation of the mesenchymal stem cells seeded on the scaffolds. These effects are dependent on the cell-binding characteristics of fibronectin and are unique to the molecule.

Fibronectin/scaffold composites were previously described in the literature and are emerging as a new paradigm for next-generation three-dimensional tissue regeneration platforms, which are going to require ECM components to generate the kind of in vivo-mimicking responses that have the most medical potential.

Fibronectin is also one of Akron’s leading ECM proteins, which we are now offering in research grade and GMP grade as well with custom MSC-based bioassays. Contact us for information.