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Assessment of *in vivo* bone formation using porous, glass scaffolds seeded with mesenchymal stem cells

The purpose of this investigation was to compare two different porous scaffolds composed of silica based bioactive glass in their ability to facilitate bone growth *in vivo* when seeded with mesenchymal stem cells. Companion scaffolds were also used without seeding as a control. One scaffold was constructed entirely of 45S5, while the other was a 70/30 blend of 45S5 and 13-93. These scaffolds were implanted underneath the skin on the backs of young, healthy rats. After recovery, the scaffolds were fixed and processed for analysis. The samples were infiltrated with methyl methacrylate, which was polymerized. Sections were made, ground, polished, and stained. Light microscopy was used to visualize the samples for the presence of new bone growth. Analysis revealed evidence of soft tissue such as blood vessels and connective tissues as well as new bone formation incorporated into both of the scaffolds and the formation of a reactive layer.

Wesley Glick is a senior in the UMR Biological Sciences Department with a pre-med emphasis. He is the current co-President of UMR's pre-health organization Scrubs, Vice-President of the chemistry honor fraternity Alpha Chi Sigma, and an active member in a number of other campus organizations. He has been involved in research for two years. His future plans are to attend medical school and then return to the area to practice medicine.