

Cells culled from adults may grow human bone

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Preparations are underway for the first known human trial to use embryonic-like stem cells collected from adult cells to grow bone.

The cells technology, called VSEL stem cells, or very small embryonic-like stem cells, are derived from adults—not fetuses. This eliminates ethical arguments and potential side effects associated with using actual embryonic stem cells derived from a fetus, say researchers at the University of Michigan School of Dentistry and New York-based NeoStem Inc.

The research partners hypothesize that the VSEL stem cells, which mimic properties of [embryonic stem cells](#), can provide a minimally invasive way to speed painful [bone regeneration](#) for [dental patients](#) and others with bone trauma.

U-M's role in the study involves design, patient care and data analysis, while NeoStem provides the cells and [patented technology](#) to purify the special stem cells. Study leaders include Russell Taichman, U-M professor of dentistry; Laurie McCauley, professor and newly named dean of the U-M Dental School; and Denis Rodgers, director of grants and academic liaisons for NeoStem. U-M's work will take place at the Michigan Center for Oral Health Research and the U-M Health System.

"Within a year, researchers hope to begin recruiting roughly 50 patients who need a tooth extraction and a [dental implant](#)," Taichman said.

Before extracting the tooth, U-M researchers harvest the patient's cells, and then NeoStem's VSEL technology is used to purify and isolate those VSEL stem cells from the patient's other cells.

This allows U-M researchers to implant pure populations of the VSEL stem cells back into test patients. Control patients receive their own cells, not the VSELs. After the new bone grows, researchers remove a small portion of it to analyze, and replace it with an implant.

"We're taking advantage of the time between extraction and implant to see if these cells will expedite [healing time](#) and produce better quality bone," Taichman said. "They are natural cells that are already in your body, but NeoStem's technology concentrates them so that we can place a higher quantity of them onto the wound site."

U-M has applied for initial patent protection to use the VSEL stem cells to grow bone. Robin Smith, chairman and CEO of NeoStem, emphasized the importance of this study for the development of embryonic-like stem cells from the patient's own body to treat a wide range of diseases.

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