

Study Finds Treatment With Anabolic Hormone May Enhance Local Bone Regeneration

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(PhysOrg.com) -- In research that could open new avenues of investigation in the prevention and treatment of fractures, in bone regeneration and tissue engineering, scientists from Yale School of Medicine have found that a combination of bone marrow aspiration followed by treatment with anabolic parathyroid hormone (PTH) greatly boosted bone regeneration in localized areas in rats. The study appears online in the Journal of Bone and Mineral Research.

The Yale team removed marrow from the femurs of [rats](#) and treated the animals with PTH for three months. Earlier studies had shown that such treatment for three weeks produced robust but short-lived [bone growth](#)

at the site of marrow removal. Over a three-month period, however, the researchers saw a 30 percent increase in [bone formation](#).

According to lead author Agnès Vignery, D.D.S, Ph.D., Associate Professor of Orthopaedics and Rehabilitation and Molecular and Cellular Biology at Yale, “This approach is simple and fast, and can lead to the formation of an amount of bone sufficient to prevent fractures in specific skeletal sites.”

The team further determined that filling the bone cavity with a bio-compatible calcium phosphate cement in rats treated with PTH over the same three month period also resulted in increased cortical thickness of the bone.

This aspect of the Yale research could have implications in the field of [tissue engineering](#) as calcium phosphate cements may provide a strong scaffold for new bone growth. “The marrow cavity offers a special niche to make new bone, which had not been explored to date,” Vignery said. “The use of bio-compatible calcium phosphate cement is an exciting and promising route to target the formation of new bone in lieu of bone marrow in skeletal sites that are at risk for fracture.”

Provided by Yale University

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