

# Study identifies a hormone that may help hibernating bears avoid bone loss

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A hormone that plays a role in regulating body weight may be a key to understanding how hibernating bears can remain inactive for so long and not experience bone loss, according to a research team led by a University of Maine alumna and researcher.

Dr. Rita Seger, a researcher in the University of Maine Department of Animal and [Veterinary Sciences](#), and a team of researchers conducted the [bone](#) metabolism study. They compared active and hibernating bears using a suite of 12 serum markers of [bone metabolism](#) and X-rays of the bears' paws. The researchers found greater amounts of leptin in hibernating than in active bears. In addition, leptin levels in hibernating bears correlated with serum markers of bone turnover, leading them to hypothesize that the hormone's effect on the sympathetic nervous system

may help to prevent bone loss.

In essence, the skeleton appeared to perceive that it was “loaded” or supporting an active body, when it was actually “unloaded” during hibernation, the researchers wrote in the journal *Bone*.

In animals, activity or mechanical strain is an essential stimulus for bone growth. Inactivity for seven to 26 weeks has been found to result in cortical bone loss of 10 percent to 40 percent in humans, beagles and turkeys.

Little brown bats and golden hamsters can lose up to 45 percent of their cortical bone during hibernation. Hibernating bears are the only animals that do not experience unloading-induced [bone loss](#).

Researchers hope that greater understanding of the role of leptin in bone biology can contribute to our understanding of — and better treatments of — skeleton-related diseases, such as osteoporosis.

Provided by University of Maine

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