

Scientists discover new protein that gets to the roots of obesity and osteoporosis

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Here's good news for anyone trying to lose weight or has osteoporosis: Scientists from Maine are on the trail of a weight loss drug that may revolutionize how we treat these two conditions. In a new research report published in the September 2010 print issue of *The FASEB Journal*, the researchers describe a newly discovered protein, called "Sprouty," responsible for regulating body fat and bone mass.

Then they manipulated how much of this [protein](#) was expressed in different groups of mice specially bred to have some human genes. They found that the more of this protein that the transgenic mice expressed, the leaner and stronger they became. Furthermore, the scientists found that when mice with low levels of the Sprouty protein were made to express more of it, they lost weight and increased [bone density](#).

"When the U.S. military has to turn to fitness gurus like Tony Horton to help its soldiers slim down, you know obesity is a serious problem," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*, "and all you have to do is visit to a nursing home to see the devastating effects of osteoporosis. "Sprouty" -well named- gets to the roots of extra fat and shrinking bone."

To make this discovery, the researchers studied two groups of transgenic mice, one group with a genetic deletion of the Sprouty gene in cells that develop into fat and bone, and the second group with high levels of expressed Sprouty proteins in the same cell types. Results showed that the mice with the deleted Sprouty gene had increased body fat and loss

of bone mass similar to [osteoporosis](#) as compared to normal mice. [Bone loss](#) was then reversed by adding more Sprouty protein. The group with excess Sprouty expression produced lean mice with increased bone mass.

"Our study provides insight into the regulation of bone mass and [body fat](#)," said Lucy Liaw, Ph.D., co-author of the study from the Maine Medical Center Research Institute in Scarborough, ME. "Therefore, future application of this knowledge may help treat common conditions such as bone loss and obesity."

More information: Sumithra Urs, Deepak Venkatesh, Yuefeng Tang, Terry Henderson, Xuehui Yang, Robert E. Friesel, Clifford J. Rosen, and Lucy Liaw. Sprouty is a critical regulatory switch of mesenchymal stem cell lineage allocation. *FASEB J.* 2010 24: 3264-3273. [doi: 10.1096/fj.10-155127](#)

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