

No workout? No worries: Scientists prevent muscle loss in mice, despite disease and inactivity

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If you want big muscles without working out, there's hope. In the March 2012 print issue of the [FASEB Journal](#), scientists from the University of Florida report that a family of protein transcription factors, called "Forkhead (FoxO)" plays a significant role in the regulation of skeletal muscle mass. Specifically, they found that interfering with the activity of these transcription factors prevents muscle wasting associated with cancer and sepsis, and even promotes muscle growth. This discovery is likely to be relevant to any disease, condition or lifestyle that leads to muscle wasting, including voluntary inactivity.

"The loss of muscle mass is a major contributor to disease-related deaths," said Andrew R. Judge, Ph.D., a researcher involved in the work from the Department of Physical Therapy at the University of Florida in Gainesville. "FoxO proteins may provide a target for therapies aimed at reducing muscle wasting and thus improving the quality of life and [survival rates](#) for patients with many different diseases."

To make this discovery, Judge and colleagues genetically inhibited the activity of "Forkhead boxO" proteins, or "FoxO," in the skeletal muscle of healthy control mice, septic mice, and mice with cancer. The loss of muscle mass in those with cancer and sepsis was significantly decreased by inhibition of FoxO activity. In healthy control animals inhibiting FoxO activity caused an increase in muscle cell size which occurred as a result of [protein synthesis](#).

"No one can deny that the human body was meant to move, and to move often," said Gerald Weissmann, M.D., Editor-in-Chief of the [FASEB Journal](#), "but the reality is that many of us don't move enough, whether because of disease, injury, or simply a busy schedule. This discovery is

another important step towards the treatment of muscle wasting in cancer, severe infection or aging - or to maintain our muscle mass to help face the slings and arrows of outrageous fortune."

More information: Sarah A. Reed, Pooja B. Sandesara, Sarah M. Senf, and Andrew R. Judge. Inhibition of FoxO transcriptional activity prevents muscle fiber atrophy during cachexia and induces hypertrophy. *FASEB J* March 2012 26:987-1000; [doi:10.1096/fj.11-189977](https://doi.org/10.1096/fj.11-189977)

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