

'Hulk' protein, Grb10, controls muscle growth

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Scientists have moved closer toward helping people grow big, strong muscles without needing to hit the weight room. Australian researchers have found that by blocking the function of a protein called Grb10 while mice were in the womb, they were considerably stronger and more muscular than their normal counterparts. This discovery appears in the September 2012 issue of *The FASEB Journal*. Outside of aesthetics, this study has important implications for a wide range of conditions that are worsened by, or cause muscle wasting, such as injury, muscular dystrophy, Type 2 diabetes, and problems produced by muscle inflammation.

"By identifying a novel mechanism regulating muscle development, our work has revealed potential new strategies to increase muscle mass," said Lowenna J. Holt, Ph.D., a study author from the Diabetes and Obesity Research Program at the Garvan Institute of Medical Research in Sydney, Australia. "Ultimately, this might improve treatment of muscle wasting conditions, as well as metabolic disorders such as [Type 2 diabetes](#)."

To make this discovery, Holt and colleagues compared two groups of mice. One group had disruption of the Grb10 gene, and were very muscular. The other group, where the Grb10 gene was functional, had normal muscles. Researchers examined the properties of the muscles in both adult and newborn mice and discovered that the alterations caused by loss of Grb10 function had mainly occurred during [prenatal development](#). These results provide insight into how Grb10 works,

suggesting that it may be possible to alter muscle growth and facilitate healing, as the processes involved in [muscle regeneration](#) and repair are similar to those for the initial formation of muscle.

"Don't turn in your gym membership just yet," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "If you want big muscles, the classic prescription still applies: lift heavy things, eat and sleep right, and have your hormones checked. But this study shows that when we understand the basic science of how muscle fibers grow and multiply, we will be able to lift the burden—literally—of muscle disease for many of our patients."

More information: Lowenna J. Holt, Nigel Turner, Nancy Mokbel, Sophie Trefely, Timo Kanzleiter, Warren Kaplan, Christopher J. Ormandy, Roger J. Daly, and Gregory J. Cooney. Grb10 regulates the development of fiber number in skeletal muscle. *FASEB J* September 2012 26:3658-3669; [doi:10.1096/fj.11-199349](https://doi.org/10.1096/fj.11-199349)

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