

Scientists gain clearer picture of how genes affect lean body mass

24 July 2017



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Scientists from the Institute for Aging Research (IFAR) at Hebrew SeniorLife (HSL), along with several other research institutions are making great strides in understanding the genetics behind lean body mass, which is largely made up of muscle mass. A new study, published in the journal *Nature Communications*, outlines their findings in what is the largest, most comprehensive genetic study of lean mass to date.

The study confirmed that lean [mass](#) is highly heritable. By understanding the genetic contributions to lean mass - an indicator of [muscle mass](#) - future treatments may be developed to prevent the loss of lean mass with aging.

With age, some people develop a condition called "sarcopenia" where they lose critical amounts of [muscle](#) mass, to the point that they develop functional impairments and disabilities. With this study, scientists hoped to pinpoint the genes associated with lean mass that may one day lead to therapies that will curtail loss of lean mass and prevent the onset of such disabilities.

This project involved more than 50 individual

studies and a total of about 100,000 study participants from around the world that all contributed data to discover the genetic determinants of lean mass. The scientists also used information from many large pre-existing sources of genetic data to understand their findings, including information from individuals who had undergone [muscle biopsies](#). Ultimately the goal is to understand the biologic processes that lead to a loss of muscle mass, reduced physical strength, and frailty as people get older.

Douglas Kiel, one of the lead investigators of the study and Director of IFAR's Musculoskeletal Research Center said, "The loss of lean mass with aging represents primarily an indicator of the loss of muscle mass. Muscle mass is important for mobility and physical function as we age, and muscle mass has important contributions to the body's metabolism. By understanding the genetic basis for lean mass, we hope to identify novel potential targets that could be used to develop therapies to preserve lean mass." Dr. Kiel was joined by other scientists from IFAR, including Dr. David Karasik and Dr. Yi-Hsiang Hsu, who played major roles in integrating all of the scientific data together with Dr. Kiel.

Provided by Hebrew SeniorLife Institute for Aging Research

APA citation: Scientists gain clearer picture of how genes affect lean body mass (2017, July 24) retrieved 5 May 2021 from <https://medicalxpress.com/news/2017-07-scientists-gain-clearer-picture-genes.html>

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