Scientists identify two hormones that burn fat faster, prevent and reverse diabetes in mice

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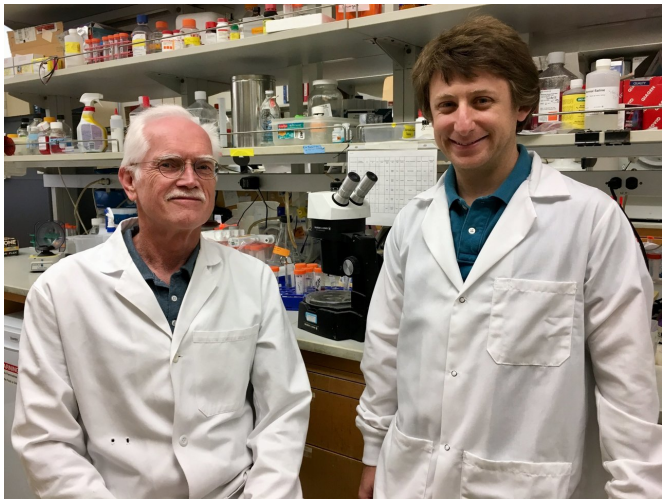

Jake Lusis (left), professor of human genetics; and Marcus Seldin, postdoctoral researcher; at the David Geffen School of Medicine at UCLA. Credit: Elaine Schmidt/UCLA Health

UCLA geneticists have created a new technique to hunt for hormones that influence how organs and tissues communicate with each other. The method enabled them to find naturally occurring molecules that play major roles in Type 2 diabetes, obesity and cardiovascular disease.

In particular, they discovered:

- Two hormones called "notum" and "lipocalin-5" that speed up the body's ability to burn fat.
- Lipocalin-5 protected mice from developing diabetes—or cured the disease after they developed it.
- Lipocalin-5 also enhanced muscle tissue's ability to metabolize and absorb dietary nutrients, reducing the risk of obesity and diabetes.

The findings could deepen scientists' understanding of the mechanisms behind obesity and common risk factors for heart disease and diabetes.

Diseases such as obesity and diabetes disrupt how individual tissues and organs communicate with one another. The technique developed by the UCLA researchers reverses this disruption by pursuing alternate routes of tissue-to-tissue communication.

The researchers developed a data-driven approach to unravel the wide array of functions for hormones that circulate in the bloodstream. They initially identified and studied the hormonal networks in mice. Next they tested whether the functions they assigned to the hormones remained consistent in humans. The team discovered a strong overlap between these hormones' functions in mice and humans. By studying how hormonal functions change in people with diabetes and cardiovascular disease, the scientists were able to identify new ways that tissues signal each other and restore normal communication.

Future studies will address how the newly identified hormones in humans communicate between unrelated types of tissue. The investigators will also apply the new method to evaluate tissue-to-tissue communication across different ethnicities and diseases. The hope is to use these hormones as the basis for drug development—specifically to halt development of obesity and Type 2 diabetes.

Cell Metabolism published the findings on May 1.

More information: Marcus M. Seldin et al. A Strategy for Discovery of Endocrine Interactions with Application to Whole-Body Metabolism, *Cell*

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