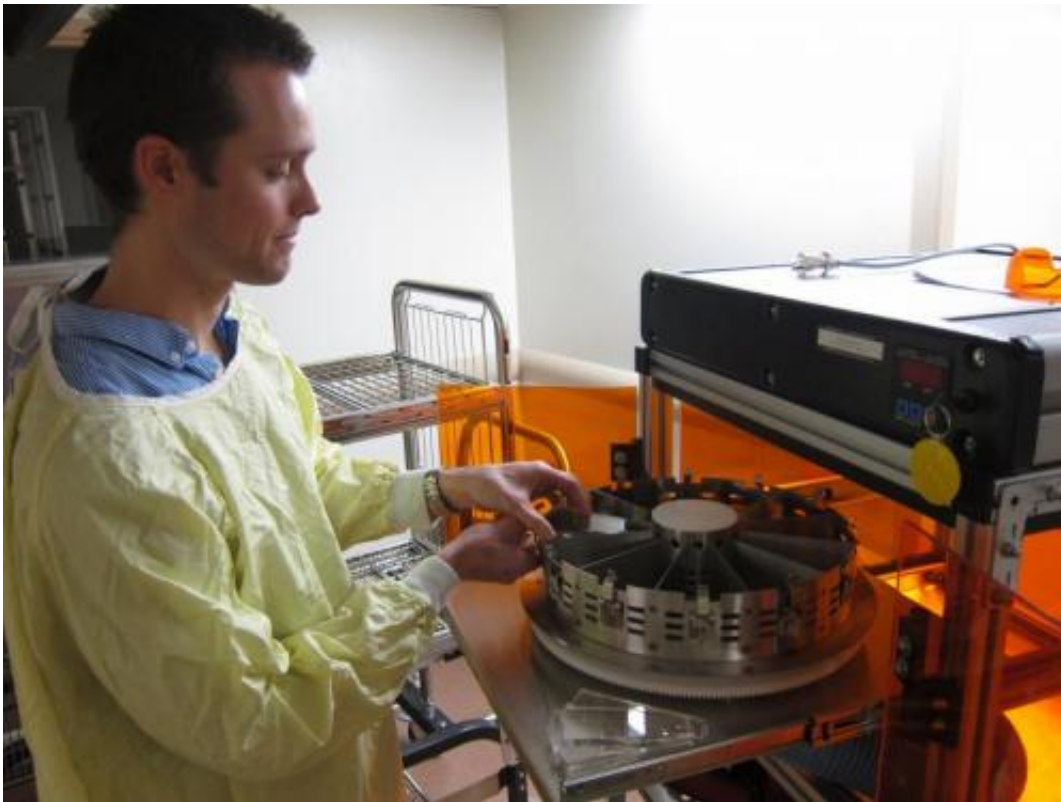


Scientists find genetic wrinkle to block sun-induced skin aging

December 16 2014



Leigh Parkinson shows the device used to expose mice to ultraviolet light.
Credit: Brian Kladko, UBC Faculty of Medicine

A scientific team at UBC and Providence Health Care have genetically engineered mice with less wrinkled skin, despite repeated exposure to wrinkle-inducing ultraviolet (UV) light.

The youthful-looking [mice](#) were bred without the gene that produces Granzyme B, an enzyme that immune cells use to destroy harmful pathogens. The UBC-Providence team, led by Professor David Granville and postdoctoral fellow Leigh Parkinson, found that Granzyme B also does harm: When produced and released by [skin](#) cells in response to UV light, it triggers the breakdown of collagen, a structural protein that makes skin firm.

The findings, published last week in *Aging Cell*, raises hope for a drug that would block the activity of Granzyme B in certain places, and thus prevent the aging and deterioration of tissues that depend on collagen - not just skin, but blood vessels and lung passages.

Granville, a professor in the UBC Department of Pathology and Laboratory Medicine and a principal investigator in the Centre for Heart Lung Innovation of UBC and St. Paul's Hospital, was investigating the role of Granzyme B in atherosclerosis and heart attacks. He and his team wanted to see if the blood vessels of mice lacking Granzyme B were more resistant to hardening and narrowing, which is a major cause of heart attacks in human. In the process, they discovered that such mice retained youthful-looking skin compared to the aged skin on normal mice.

Granville's team constructed an experimental "tanning bed" to simulate [sun exposure](#) on mice. Each mouse was put in a carousel that slowly turned under UV lamps, exposing them for three to four minutes, three times a week - enough to cause redness, but not to burn. After 20 weeks of repetitive exposure, it became clear that the skin of mice lacking Granzyme B had aged much less - and their collagen was more intact - compared to the control groups.

viDA Therapeutics, a company co-founded by Granville, is currently developing a Granzyme-B inhibitor based on technology licensed from

UBC. The company plans to test a topically applied drug within two years on people with discoid lupus erythematosus, an autoimmune disease worsened by sunlight that can lead to disfiguring facial scarring. (The musician Seal has such a condition.)

If the drug proves effective in preventing lupus-related skin lesions, there is potential for a cosmetic product to prevent the normal, gradual aging of the skin, which is mostly caused by sun exposure. But the drug might also be used for life-threatening conditions, such as aneurysms and chronic obstructive pulmonary disease, caused by the breakdown of collagen and other proteins that provide structure to [blood vessels](#) and lung passages.

More information: Granzyme B mediates both direct and indirect cleavage of extracellular matrix in skin after chronic low-dose ultraviolet light irradiation, [onlinelibrary.wiley.com/doi/10.../ajl.12298/abstract](https://onlinelibrary.wiley.com/doi/10.1002/ajl.12298/abstract)

Provided by University of British Columbia

Citation: Scientists find genetic wrinkle to block sun-induced skin aging (2014, December 16) retrieved 23 April 2024 from

<https://medicalxpress.com/news/2014-12-scientists-genetic-wrinkle-block-sun-induced.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
