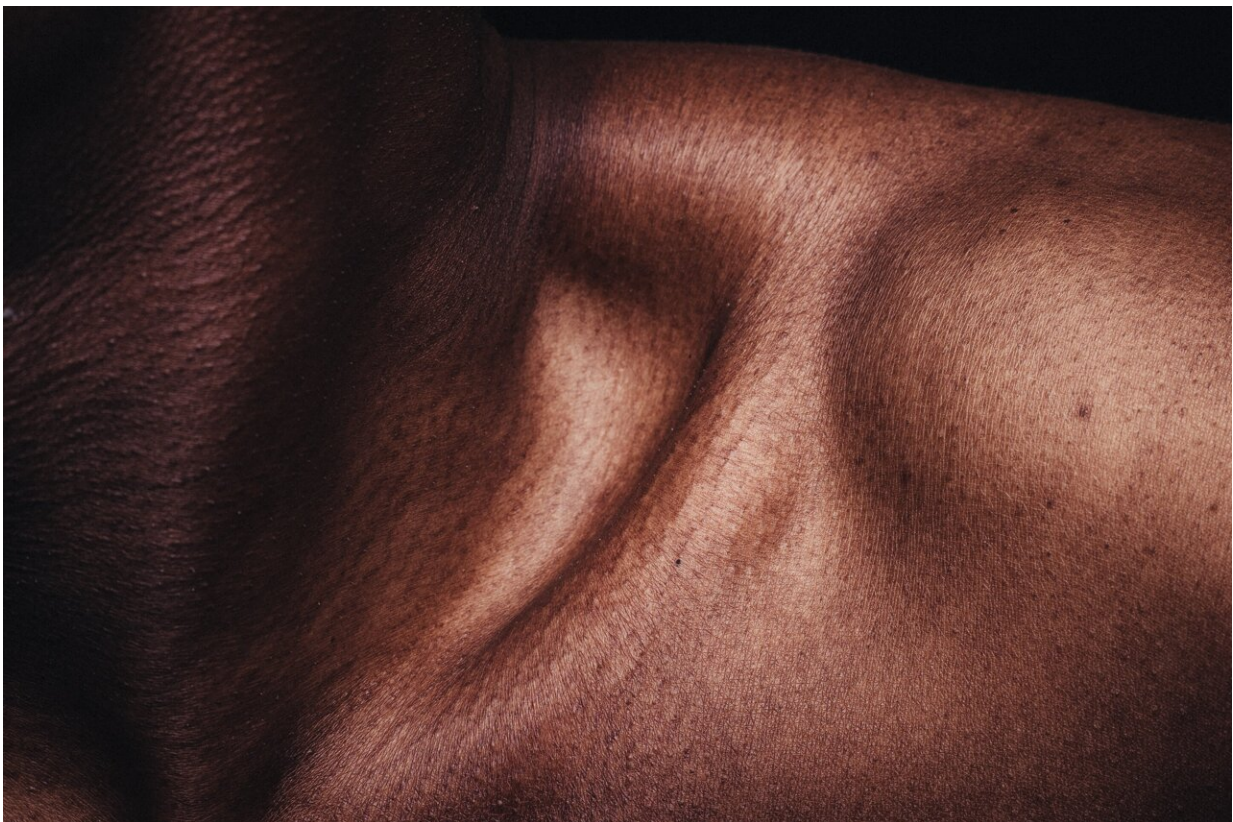


Hallmarks of precancer: Researchers investigate the principles governing the biology of early, precancerous lesions

May 9 2024, by Lorena Infante Lara



Credit: Unsplash/CC0 Public Domain

Every oncologist and cancer researcher is familiar with the hallmarks of cancer, a series of functional capabilities that human cells acquire as

they transition from a normal state to a neoplastic state (a state of excessive and abnormal growth). These hallmarks have been used (and updated) during the last quarter of a century as a "conceptual scaffold" to help "rationalize the complex phenotypes of diverse human tumor types and variants in terms of a common set of underlying cellular parameters."

Now, Ken Lau, professor of cell and [developmental biology](#), and Neelendu Dey, assistant professor of medicine at the University of Washington, and colleagues have laid out the principles governing the biology of early, [precancerous lesions](#), which are different from the principles that govern cancers. Their authoritative perspective was [published](#) in *Cancer Discovery* in April 2024.

A large body of research details how [lifestyle factors](#) can predispose a person to cancer initiation and development, but how those macroenvironmental risk factors are manifested in cells and molecules is poorly understood. Lau, Dey, and colleagues shed light on these points.

"Precancers are defined as 'at-risk tissues and lesions' that develop into cancer," Lau said. "Given the effectiveness of early interventions against cancers, we hope to establish some principles that the research community can follow when looking at precancers."

These principles include age-related genetic alterations, epigenetic changes, metabolic alterations, the hijacking of regenerative cell state transitions, the disruption of immune surveillance and "inflammaging," and remodeling of the tissue microenvironment mediated by senescence or biological aging. Inflammaging refers to the state of chronic, sterile, and low-grade inflammation that naturally occurs with advanced age.

"By understanding the hallmarks of precancer, we hope that we can further develop early detection, stratification, and intervention strategies

at the precancer stage," Lau said.

Just as the hallmarks of [cancer](#) are updated as we develop new knowledge, Lau and colleagues hope to update the hallmarks of precancer as we learn more about them.

More information: Mary M. Stangis et al, The Hallmarks of Precancer, *Cancer Discovery* (2024). [DOI: 10.1158/2159-8290.CD-23-1550](#)

Provided by Vanderbilt University

Citation: Hallmarks of precancer: Researchers investigate the principles governing the biology of early, precancerous lesions (2024, May 9) retrieved 21 June 2024 from <https://medicalxpress.com/news/2024-05-hallmarks-precancer-principles-biology-early.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>
--