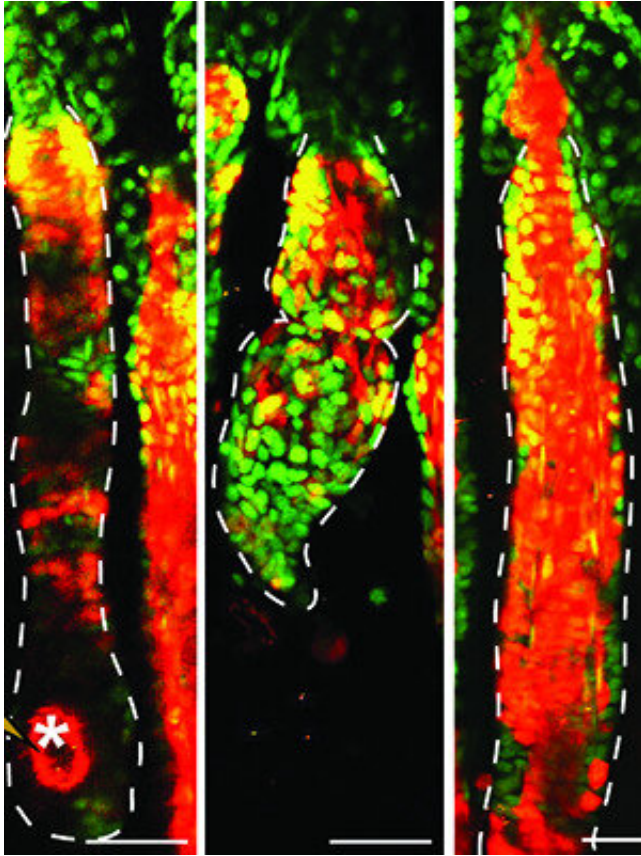


New hair follicles can corral skin cancer

6 September 2019, by Bill Hathaway



Even in the presence of cancer causing mutation HRAS, hair follicles regenerate and suppress mutant cells to restore their normal shape. Credit: Yale University

The same genetic mutations that can trigger cancer in some tissues are relatively harmless in others. A new Yale study has identified an unlikely source of protection against some forms of skin cancer—hair follicle regeneration.

The regeneration of hair follicles protects against [tumor growth](#) even in the presence of the well-known cancer-causing mutation HRAS, which is associated with 30% of all cancers, the authors report Sept. 5 in the *Journal of Cell Biology*.

"Hair follicles have a uniquely enhanced ability to contain mutant cells," said Yale's Cristiana Pineda, lead author of the study and researcher in the lab

of Valentina Greco, professor of genetics and the study's senior author.

The researchers introduced HRAS mutations into the hair follicles of mice and tracked them over time using live-imaging. The hair follicles remained highly resistant to tumor growth even when faced with challenges such as advanced age, injury, or the introduction of secondary mutations.

The mutant cells still proliferated and were actively signaling, but also triggered enhanced regeneration of the hair follicles, which in turn contained the mutant cells. Normally, age, excessive sun exposure, or immune system deficits are [risk factors](#) that can lead to skin cancers such as squamous cell carcinoma, Pineda explained. Enhanced regeneration, however, is one mechanism the follicle can employ to suppress aberrant growth in the face of these additional challenges.

Understanding the protective effects of hair follicles might also aid in developing new strategies in combating cancer in other tissues with high regenerative capacities, said the scientists.

"The [hair follicle](#) emerges as a paradigm for principles that could be applied to other organs that do not rely on the immune system for the tolerance of [mutant cells](#)," the authors explained.

More information: Cristiana M. Pineda et al. Hair follicle regeneration suppresses Ras-driven oncogenic growth, *The Journal of Cell Biology* (2019). [DOI: 10.1083/jcb.201907178](https://doi.org/10.1083/jcb.201907178)

Provided by Yale University

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