

# Top Stories in Research

By Dr. Jan Dutz and Dr. Mark Kirchhof

*What's new on the research front? The articles from which these summaries of the latest in skin research are taken are so hot off the press the ink has barely dried.*

## Vitamin D as an anti-inflammatory agent

Vitamin D is activated in the skin following sun exposure. Vitamin D has long been known to be important for maintaining bone health, with its deficiency causing rickets, a condition in which the bones soften.

Now, scientists have recently published work showing that a specific subset of dendritic cells found in the deeper layers (dermis) of human skin produce chemicals that limit immune responses (*Journal of Experimental Medicine*, May 2012). These cells can be generated in a Petri dish from blood-circulating precursor cells under the influence of vitamin D. Thus, vitamin D may promote the presence of these immune-dampening cells within the skin.

Vitamin D has multiple beneficial effects, but the cancer-inducing effects of excessive sunlight, dietary and health guidelines now reflect the potential beneficial effects of oral vitamin D supplements.

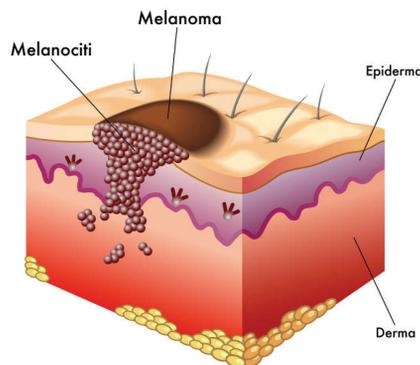
## Cells surrounding melanoma can hinder treatment

Melanoma is the deadliest cancer. In the past, there were very few effective treatments available to fight melanoma once it had spread beyond the skin. Recent advances in genetics have allowed scientists to target the specific pathways that are mutated in most melanomas. While these new, targeted medications (such as BRAF inhibitors, e.g., vemurafenib) slow the progression of melanoma and extend patients' lives, they are not a cure.

Researchers have therefore been asking why these designer drugs don't cure melanoma. Why does melanoma recur in as little as six months?

While scientists have previously investigated the development of resistance to these drugs by looking for resistance mechanisms within cancer cells themselves, a group from Massachusetts recently came upon an alternative mechanism. They discovered that the cells that surround the tumour cells, known as scaffold or stromal cells, play an important role in the development of resistance to these targeted medications. These scaffold cells release growth factors (e.g., hepatocyte growth factor) that enable the tumour cells to bypass the targeted medications and ultimately allow melanoma to grow and spread. In patients that express such growth factors within their melanoma, the response to treatment is poorer and the overall prognosis is worse.

The researchers went on to investigate the effects of inhibiting the growth factor. By doing this, they were able to reverse the resistance to the targeted anti-melanoma medication. This discovery provides hope for better melanoma treatments in the future.



## Visible light contributes to premature skin aging

Light is composed of visible light and invisible rays such as UV radiation. We know that UV radiation from the sun and tanning booths causes premature aging of the skin and can lead to an increased risk of certain types of skin cancer. This is why dermatologists advocate avoiding tanning booths and using sunscreens to shield the skin from sunlight.

A recent article published in the *Journal of Investigative Dermatology* has examined the ability of visible light to damage the skin. Scientists used human skin models to show that when you expose the skin to visible light, there is increased production of chemicals and proteins that damage the skin and play a role in photoaging (aging brought about by sunlight).

The results suggest that sunlight avoidance may be just as important as UV protection in preventing skin damage and maintaining a youthful appearance. 

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