

Top Stories in Research

By Dr. Jan Dutz

What's new on the research front? The articles summarized here are so hot off the press the ink has barely dried.

Sun-induced inflammation may promote melanoma

Malignant melanoma is a potentially fatal form of skin cancer that is increasing in incidence (see page 5 for more on melanoma). Studies have pointed to UV solar radiation as a significant environmental risk factor for melanoma. The highest risk is associated with intermittent exposure to burning doses of sunlight, especially during childhood.

Now, investigators at the National Cancer Institute in the U.S. have found that the abnormal behaviour of melanocytes (pigment cells) in young mice following exposure to UV radiation is related to the presence of a specific inflammatory protein, interferon gamma. When this protein was blocked, the pigment cells became normal.



We commonly think of inflammation as helping to get rid of cancers, but this is an example of inflammation induced by the sun actually promoting cancer. The finding suggests that interferon gamma may be a target for the development of new treatments for some melanoma patients.

Male pattern baldness—down but not out

Skin stem cells provide a source of cells for hair renewal and the repair of damaged skin. These stem cells are thought to reside in a specific area of the hair follicle termed “the bulge.” In male pattern baldness, hair follicles become smaller over time, leading not to a total loss of hair but to miniaturized (thinner, “peach fuzz”) hair. We know that testosterone is required for this miniaturization process and that blocking the formation of the active form of testosterone can delay male pattern baldness.



A new study reported in the *Journal of Clinical Investigation* by investigators in Philadelphia has focused on the number and type of stem cells present in the balding and non-balding scalp skin of subjects with male pattern baldness. They found that one type of stem cells—referred to as “primordial stem cells” and characterized by a small size and slow division rate—were maintained in bald scalp. However, so-called “progenitor cells”—larger, more active cells that promote hair and skin growth—were present in much lower numbers in the affected skin. These progenitor cells are thought to develop from the more primitive, small stem cells.


Understanding how to promote the transition of the more primitive cells to the larger progenitor cells

may unlock the door to the development of new treatments for this common baldness.

Non-steroidal anti-inflammatories and non-melanoma skin cancer—a potential new method of risk reduction

A paper published in the *Journal of the National Cancer Institute* demonstrates that the activation of an inflammation-producing enzyme (cyclooxygenase-2, or COX-2) is linked to the formation of non-melanoma skin cancers such as basal cell and squamous cell cancers.

Investigators looked at the ability of a commercially available COX-2 inhibitor (celecoxib) to reduce the incidence of pre-cancers and non-melanoma skin cancers in high-risk individuals. The results of their research demonstrate that celecoxib may be of use in preventing the development of skin cancers in individuals at high risk.

This drug is not without side effects, and its use has been linked to an increase in cardiovascular events such as heart attacks. Larger and longer-term studies will be needed to establish if the potential benefits of this drug outweigh the known risks. 



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