

Top Stories in Research

By Dr. Jan Dutz

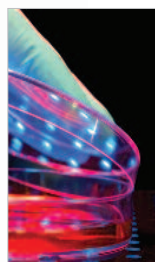
Hot off the skin press: here's a summary of some of the most recent research that may lead to improvements in the prevention and treatment of skin disease.

A new genetic cause of hair loss

The most common type of baldness is male and female pattern hair loss, where thick scalp hairs are replaced by miniaturized hairs ("peach fuzz" hair). This affects more than 50 per cent of Caucasian men and women. The condition tends to run in families and is thought to be caused by multiple genes.

Dr. Angela Christiano and colleagues at Columbia University have just published a fascinating study of families with hereditary hypotrichosis simplex (where hair miniaturization is the main finding). They discovered that a specific protein controls a pathway that is important for mature hair growth.

Although the gene for this protein may not be responsible for common baldness, genes in the same location have been associated with both common baldness and alopecia areata (where patches of hair become miniaturized). The findings suggest that manipulating this pathway may have an effect on hair follicle growth and lead to new therapies for hair loss.



In a recent paper, Dr. Elizabeth Costello and colleagues from the University of Boulder, Colorado, examined the bacterial populations at different places on adult bodies. Interestingly, healthy skin harboured more complex and diverse bacterial communities than the gut or mouth. Bacterial populations differed significantly from one skin site to another (at the forehead compared with the arm, for example).

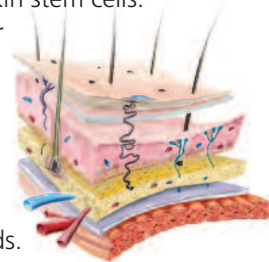
To determine if these differences were due to the local skin environment or to exposure to different organisms, the sites were disinfected and colonized with bacteria from the tongue. The bacteria that grew on these sites again resembled the original bacterial community. This suggests that site-specific factors, such as facial skin oils, control the growth of bacteria. As skin diseases are often specific to certain areas of the body, an understanding of the local bacteria may help us to understand which microbial factors influence disease.

How the skin regenerates and repairs

The outer layer of our skin contains oil glands, sweat glands and hairs, each of which sheds dead cells in constant renewal. The cells that allow this renewal are called *stem cells*. Stem cells for hair follicles are thought to

reside in a bulge along the hair shaft. After skin wounding, some of these bulge cells migrate toward the wounded skin between hair follicles and encourage healing. Stem cells for oil glands are thought to reside above the hair bulge.

In a recent paper, Dr. Hugo Snippert and colleagues sought to identify the "mother of all skin stem cells." They found a marker that identifies undifferentiated cells within the hair follicle and can give rise to normal skin, hair follicles and oil glands.



The identification of cells that have the potential to regenerate the various structures of the skin is exciting because it may lead to the production of better wound-healing grafts. An understanding of what controls the differentiation of these cells may also lead to new insights into the control and development of skin oil glands, oils and hair growth. **CS**

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