

Immune defect is key to skin aging

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Scientists funded by the Biotechnology and Biological Sciences Research Council (BBSRC) have discovered why older people may be so vulnerable to cancer and infections in the skin. The team from UCL has shown in human volunteers that defective immunity in the skin is caused by an inability to mobilise essential defences that would otherwise recognise threats and clear them before irreparable damage is done. This discovery could be important for preventing, managing or treating many age-related skin health problems. The study will be published in 31 August edition of the *Journal of Experimental Medicine*.

"Older people are very prone to having infections generally and our studies in the skin of such subjects identifies one reason for this." said Professor Arne Akbar from UCL, who led the study.

He continued: "It's actually incredibly difficult to get to the root of exactly which mechanisms cause the diseases that show up as a factor of old age. We wanted to uncover the workings of skin health in order to see why older people don't deal well with skin infections and are prone to skin cancers also."

It has been known for some time that older people have compromised immunity and therefore defend themselves less well against infection and disease than younger people. In the past, the reduction in skin health was put down to potential defects in the [white blood cells](#) called [T-cells](#) that would usually help to identify and clear infection. However, when experiments were carried out with healthy young individuals under the age of 40 years and older individuals over the age of 70 years in this

study, it was shown that in fact there is nothing wrong with the T-cells in the older group; instead it is the inability of their skin tissue to attract T-cells where and when they are needed that is the source of reduced immunity.

Professor Akbar added: "Knowing this now raises the question of whether the same defect also occurs in other tissues during ageing. Is it possible that, for example, lung tissues also fail to give out the right message to T-cells to bring them into the tissue to do their job? This may explain, in part, the higher rates of lung cancer, chest infections and pneumonia in older people, perhaps.

"We also, obviously, would like to know if it is possible to reverse the skin defect in older people. We've done some experiments that show that, at least in the test tube, it is possible to make older skin express the missing signals that attract T cells. This indicates that, in principle, the defect is entirely reversible. Once we get to the bottom of exactly which part of the signal to T-cells has gone wrong we might then be in a position to intervene to boost [skin](#) immunity in older people."

BBSRC Deputy Chief Executive, Steve Visscher said: "We are living longer and longer in the UK, but we need to ensure that a long life is also a healthy one. What Professor Akbar and his team have identified is a normal part of the ageing process that contributes to disease and therefore reduced quality of life in older people. The more knowledge we have about healthy ageing, the better we get at preventing, managing and treating diseases that are simply a factor of an ageing body."

Source: Biotechnology and Biological Sciences Research Council ([news : web](#))

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