Three new gene faults found to increase melanoma risk by 30 percent

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An international team of researchers has discovered the first DNA faults linked to melanoma - the deadliest skin cancer - that are not related to hair, skin or eye colour.

Cancer Research UK scientists at the University of Leeds, together with a team from the GenoMEL consortium, scanned the genes in blood samples from almost 3000 Europeans with melanoma, and compared these with samples taken from the general population. Their findings are published in Nature Genetics today.

Known risk factors for melanoma include fair skin, blue or green eyes, blond or red hair, a high number of moles, people who burn easily and those who have a family history.

Previous research by these and other scientists identified five pigmentation genes and three 'mole formation' genes, linked to melanoma risk. But the scientists have now discovered three new risk genes not associated with pigmentation or moles.

Four per cent of the UK population, around 2.3m people, will carry two copies of all three gene faults (one copy inherited from each parent). The average risk of developing melanoma is about one in 60. This goes up to one in 46 if a person has both copies of all three gene faults.

Lead author, Professor Tim Bishop, based in the Cancer Research UK centre at the University of Leeds, said: "We know that overexposure to

UV increases the risk of developing melanoma – but this evidence shows that there are new additional genetic faults which can push up the risk further.

"It is fascinating to discover these new melanoma risk factors – and we expect that the results of similar studies underway will reveal even more."

Dr Lesley Walker, Cancer Research UK's director of cancer information, said: "These intriguing results provide deeper understanding of the causes of melanoma and provide a potential new approach to identify people most at risk of developing melanoma and other cancers."

One DNA fault was found in the region of a gene called MX2 linked to narcolepsy – a disease thought to be triggered by the immune system which causes people to fall asleep spontaneously.

Another fault was found in a gene called ATM involved in DNA repair – preventing cancer-causing mistakes being passed onto daughter cells.

The third gene fault was found in the CASP8 gene, which plays a role in controlling cell spread by triggering automatic cell death.

There are around 11,770 new cases of malignant melanoma diagnosed each year in the UK and these are mainly caused by overexposure to UV light. Almost one third of all cases of malignant melanoma occur in people under 55. Over the last twenty-five years, rates of malignant melanoma in Britain have risen faster than any of the most common cancers.

Dr Lesley Walker added: "Cancer Research UK has invested heavily in research to identify tiny DNA changes to paint an overall picture of which regions of DNA could be linked to cancer – and we hope that

research like this will reveal further genetic secrets to help us diagnose and treat the disease.

"The best way to reduce the risk of skin cancer, is to protect yourself from strong sun by covering up with clothing, spending some time in the shade, and applying at least SPF 15 sunscreen with four or more stars generously and regularly."

More information: Genome-wide association study identifies three new melanoma susceptibility loci. *Nature Genetics*. Barrett et al. doi:10.1038/10.1038/ng.959

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