Protein linked to aggressive skin cancer

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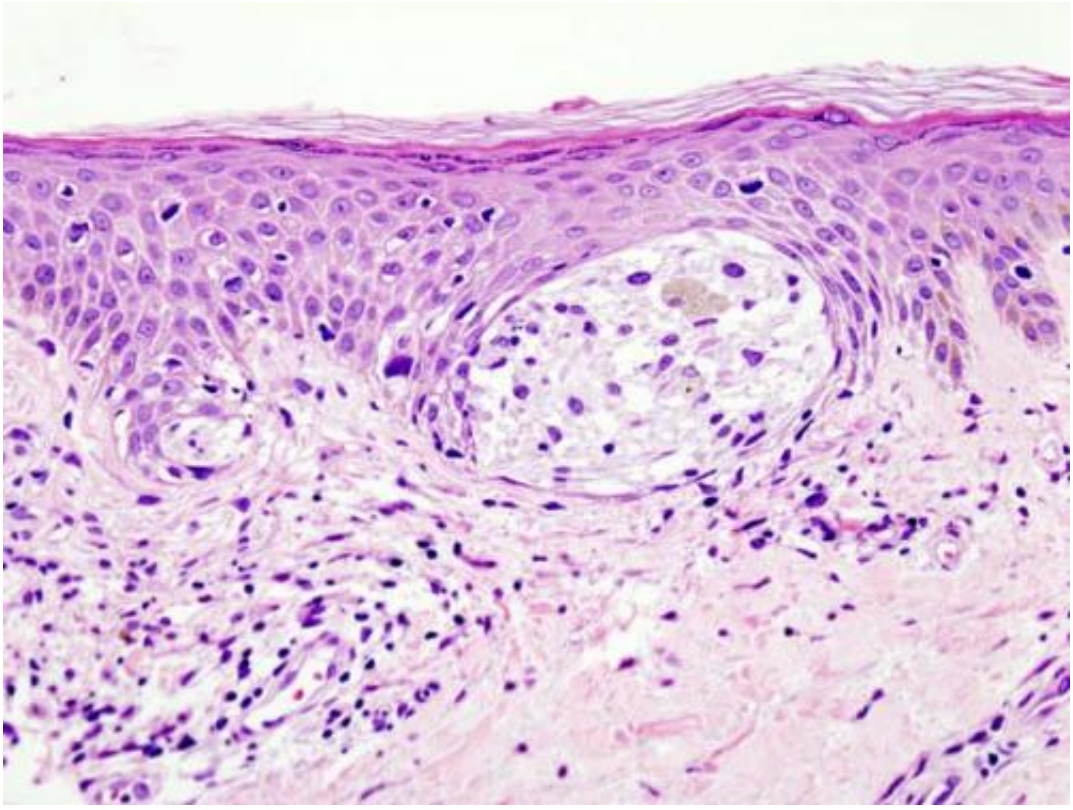

Melanoma in skin biopsy with H&E stain—this case may represent superficial spreading melanoma. Credit: Wikipedia/CC BY-SA 3.0

Almost 300,000 people worldwide develop malignant melanoma each year. The disease is the most serious form of skin cancer and the number of cases reported annually is increasing, making skin cancer one of Sweden's most common forms of cancer. A research team at Lund University in Sweden has studied a protein that regulates a gene linked to

metastasis of malignant melanoma.

Over the past 10 years, new treatment alternatives to strengthen the immune system or attack specific cancer cells have been developed for patients with metastatic skin cancer. The introduction of these treatments is due to an increased understanding of how melanoma develops. However, there is still a lack of knowledge about how the tumor cells spread to other parts of the body.

"We have discovered that a specific protein, called DDX3X, regulates the gene that is central to the development of the pigment cells in the skin. The gene is called MITF. Previously, other researchers have found that MITF is a melanoma-specific oncogene, i.e. a gene that can trigger the development of tumors. The general function of DDX3X was known, but the link to the MITF gene was not understood. We understand more about it now," say Cristian Bellodi, who led the study with Göran Jönsson.

The Lund researchers have now seen that the DDX3X protein does not affect whether or not you develop malignant melanoma, but that it plays a considerable role in the aggressiveness of the tumor. The patient's level of DDX3X can therefore serve as a biomarker for predicting how intractable the disease will be.

"The activity of the MITF gene determines the melanoma cells' specific characteristics, which are then linked to the disease prognosis. The lower the level of DDX3X protein the patient has in the tumor cell, the more aggressive the disease and the worse the prognosis will be," says Göran Jönsson, professor of Molecular Oncology at Lund University.

Both researchers consider that more knowledge is needed about how the MITF gene is regulated in order to understand the mechanisms behind how tumor cells move around in the body, with an aim for the future to

prevent the spread of the cancer and improve treatment for melanoma patients.

More information: Bengt Phung et al, The X-Linked DDX3X RNA Helicase Dictates Translation Reprogramming and Metastasis in Melanoma, *Cell Reports* (2019). DOI: 10.1016/j.celrep.2019.05.069

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