# First melanoma test identifies those at low risk of cancer spreading

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Researchers and directors of AMLo Biosciences Prof Penny Lovat and Dr Rob Ellis. Credit: Newcastle University

ITV Tyne Tees presenter, Pam Royle, is one of the first to try a new test developed by Newcastle University which predicts whether her skin cancer is likely to return.

The test which reliably predicts that a melanoma is unlikely to spread or return has been developed by scientists at Newcastle University.

The pioneering test is expected to be available within 2 years, offering reassurance for patients with melanoma, the most deadly form of skin cancer.

Called AMBLor, the prognostic test for the earliest stages of melanoma is able to better identify a patient's true risk of disease progression. It provides all those diagnosed with stage 1 melanoma with more accurate information about the risk of the disease spreading. This is up to 70 percent of new patients.

The team tested 400 archived biopsies from patients who had a stage 1 melanoma diagnosis and showed that the test could predict long term prognosis of the disease and in the future could help clinicians develop personalized treatment plans for patients.

Melanoma is increasing worldwide and 17,000 patients are diagnosed every year with the condition in the UK alone.

The research identifies biomarkers which form the basis of the AMBLor test and is published in the *British Journal of Dermatology*. It demonstrates that two protein markers, AMBRA1 and loricrin, are normally present in the epidermis, the upper layer of the skin. The Newcastle scientists identified that the loss of these markers in patients with early-stage melanoma is associated with high-risk tumors while the markers are retained in the epidermis overlying genuinely low-risk tumors. They have used this discovery to develop the AMBLor testing kit.

By applying the AMBLor test to the standard biopsy of the primary tumor on its removal, patients can be identified who have the low-risk, less aggressive cancers.

At present, the primary tumors are removed by surgery and pathologists

study the biopsy under the microscope to determine the stage the skin cancer is at and the risk of it spreading (metastasis). If defined as low risk, the patient is followed up in clinic for as long as 5 years—and it is these patients that the test is able to identify. Approximately 10 percent of patients with stage 1 melanomas will go on to develop metastasis, resulting in poor prognosis and a 5 year survival rate of 15—20 percent.

Chief scientist Professor Penny Lovat, Professor of Cellular Dermatology and Oncology at Newcastle University and Chief Scientific Officer at AMLo Biosciences, the University spin-out company behind the testing kit says: "Building on our previous studies, this new research demonstrates that the loss or reduction of these proteins indicate that the tumor is more likely to spread allowing us to develop our test, called AMBLor. This can be applied to the standard biopsy and identifies those who have these low-risk, less aggressive cancers.

"As a patient, the AMBLor test tells you if you're in the low risk category—and can offer you reassurance. It could also save the NHS up to £38 million a year by reducing the number of follow-up appointments for those identified as low-risk."

Dr. Rob Ellis is an Honorary Clinical Senior Lecturer at Newcastle University, and also a Consultant Dermatologist and Chief Medical Officer at AMLo Biosciences. He explains: "My colleagues and I are seeing more and more patients referred to our NHS clinics as the number of cases of melanoma increases—and we know that 17,000 patients are diagnosed in the UK every year.

"What we have developed is a test which will offer personalized, prognostic information—so we will be able to more accurately predict if your skin cancer is unlikely to spread. This is a really exciting finding for clinicians and in the future it will help us tailor the treatment and follow up appointments in an appropriate fashion."

And patients like Rachel Lucas from Guisborough in the Tees Valley have welcomed the test: "I had been diagnosed with stage 1 melanoma and I was told there was still a risk it could develop. I just thought, I could be the unlucky one and I just didn't know how serious it could become.

"If someone had been able to offer me this test and said that you're really genuinely low risk, it would have taken a lot of the worry away and made me feel reassured. It also means if I was high risk then we could do something about it."

The research was funded by Melanoma Focus, The British Skin Foundation, Cancer Research UK, The Newcastle Healthcare Charities, and The North Eastern Skin Research Fund.

Professor Paul Lorigan, chairman of Melanoma Focus, commented: "We congratulate Professor Lovat, Dr. Ellis and their team at Newcastle on this important discovery. Knowing which patients with early stage melanoma are not at risk of their cancer returning will be a key element in how clinicians plan their follow-up. It offers the prospect of treating patients more accurately, reducing their stress and saving the NHS a great deal of money. Melanoma Focus is delighted to have helped fund this research."

The team have created AMLo Biosciences and are seeking approvals for the test to make it available to patients within a couple of years.

**More information:** R. Ellis et al. Epidermal autophagy and beclin 1 regulator 1 and loricrin: a paradigm shift in the prognostication and stratification of the American Joint Committee on Cancer stage I melanomas, *British Journal of Dermatology* (2019). DOI: 10.1111/bjd.18086

Provided by Newcastle University