UNIVERSITY OF LIVERPOOL

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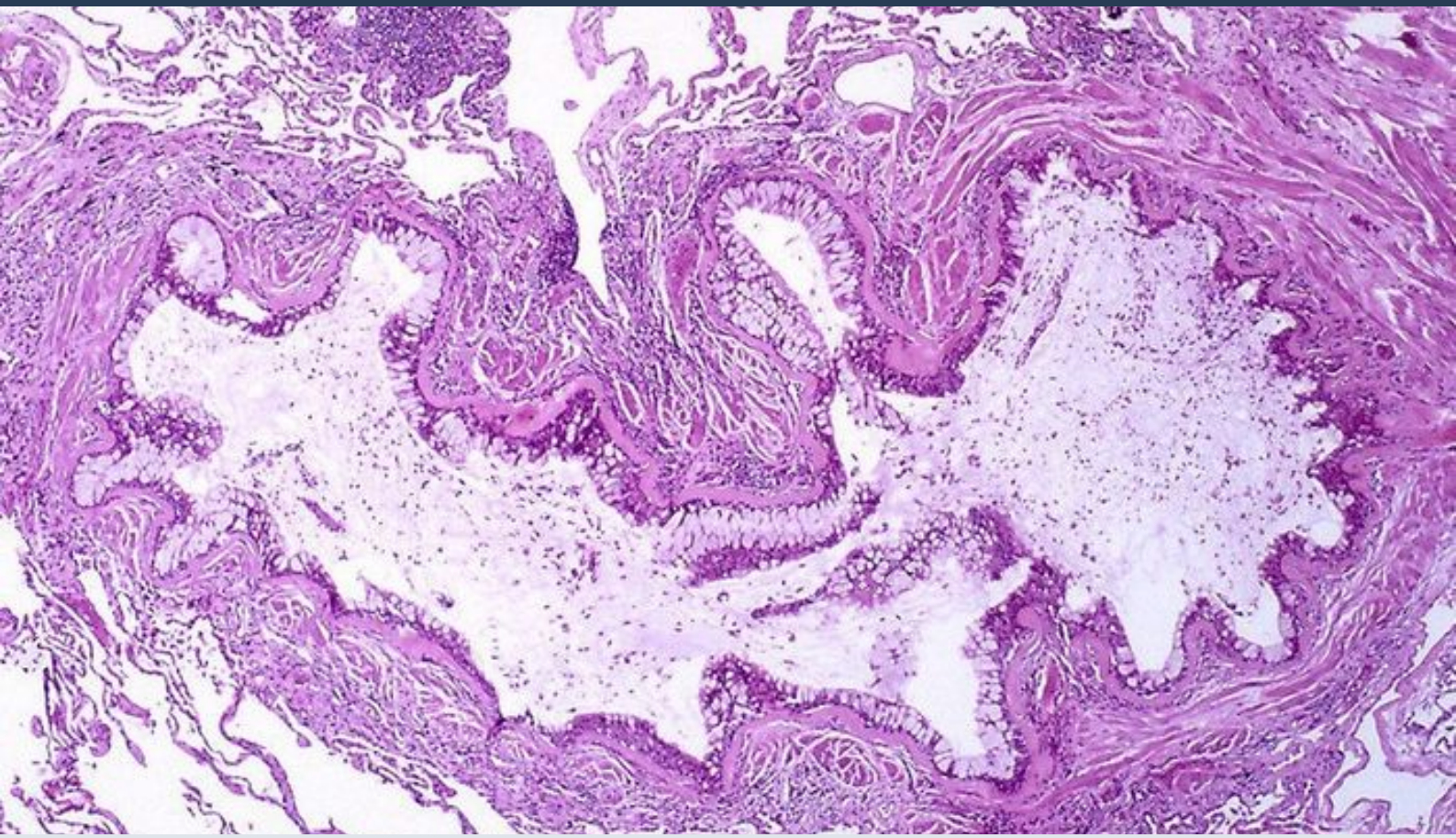
New Predictive Biomarker for Adrenal Suppression

A Single Nuclear Polymorphism (SNP) in a gene that increases the risk of developing adrenal suppression using inhaled corticosteroids (ICS)



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IP Status

Patent application submitted

Seeking

Licensing, Commercial partner

About **University of Liverpool**

By facilitating access to our expertise, facilities and networks, the University of Liverpool offers the means to transform ideas into creative solutions, improved performance, new technologies, strategies, applications, products or skills.

Background

Inhaled corticosteroids (ICS) have been used as first line treatment of asthma and COPD for many decades.

ICS can suppress the endogenous production of cortisol, a condition known as adrenal suppression. Stopping the drugs, decreasing the dose or changing the type of ICS may trigger features of adrenal insufficiency.

Adrenal insufficiency may cause a spectrum of presentations varying from vague symptoms of fatigue to potentially life threatening acute adrenal crises.

Tech Overview

Researchers at the University of Liverpool have identified a Single Nuclear Polymorphism (SNP) in a gene that increases the risk of developing adrenal suppression in children and adults using inhaled corticosteroids (ICS). This is believed to be the first predictive adverse effect polymorphism identified in asthma and COPD.

This biomarker could form the basis of a point of care predictive test to help develop personalised treatment plans for all patients with asthma, a disease that has multiple alternative treatment options but at present no suitable guidelines for treatment decision-making.

This biomarker could align well with other biomarkers that are predictive of ICS efficacy in asthma. More broadly it could be used to select patients at risk of adrenal suppression in a wide range of illnesses treated with ICS (e.g. Duchennes MD, rheumatology, oncology, IBD).

The invention was discovered from a genome-wide association study to assess genomic factors affecting responses to a Low Dose Short Synacthen Test (LDSST) in populations using corticosteroids. This test is used to monitor adrenal suppression in 'at risk' patients. Three cohorts of patients were investigated (499, 81 and 78 patients) and the association was found to be significant in all individual cohorts. A meta-analysis of the entire patient sample gave a P value of 3.5 x 10-9. The presence of this mutation was found to triple a patient's risk of adrenal suppression.

Applications

In 2017, there were estimated to be approximately 146 million patents globally suffering from asthma, with about half as many again suffering from COPD.

The market opportunity is to provide a test to identify the subsection of the patients who are at higher risk from adrenal suppression. This will enable clinicians to improve treatment and higher levels of patient support if they know a patient is in a high risk category. Asthma is ideally situated to implement this test as there are steroid

alternative drugs, and maintenance therapy with steroids is undertaken electively allowing time for a patients genomic status to be ascertained.

Opportunity

The University of Liverpool is currently seeking a licensing partner to provide expertise in the commercialisation of the technology.