

Asthma could be stopped by turning off rogue gene

By Sarah Knapton SCIENCE EDITOR

A CURE for asthma is on the horizon after scientists discovered a genetic switch which prevents the condition.

The research, carried out at the University of Southampton, discovered that the gene ADAM33 plays a crucial role in causing the inflammation of airways that triggers an attack.

The gene makes an enzyme, which attaches to the muscles in the airways.

But the enzyme can become detached and “go rogue”, sparking unnecessary production in the lungs of new muscles and blood vessels – known as airway remodelling – which makes breathing difficult when coupled with an allergen such as pollen or dust.

Studies in human tissue samples and mice show that if the gene is switched off, the enzyme stops being a problem.

Prof Hans Michael Haitchi, associate professor in respiratory medicine, said

the finding “radically alters our understanding of the field, to say the least”.

“For years we have thought that airway remodelling is the result of the inflammation caused by an allergic reaction, but our research tells us otherwise,” he added.

“More importantly, we believe that if you block ADAM33 from going rogue or you stop its activity if it does go rogue, asthma could be prevented.”

Around 5.4 million people in Britain

suffer from asthma. The new study suggests drugs to halt the effects of the ADAM33 gene could prevent attacks.

The scientists found that on its own, the gene leads to the development of more muscle and blood vessels around the airways of developing lungs, but does not cause problems.

However, when scientists introduced a house dust mite, both airway remodelling and allergic airway inflammation were significantly enhanced. In

another study, remodelling of the airways was shown in mice which had ADAM33 switched on in utero. The gene was then switched off and the remodelling was completely reversed.

Researchers also studied the impact of the house dust mite allergen on asthma in mice which had the ADAM33 gene removed. Airway remodelling and twitchiness, as well as airway inflammation rates, were respectively reduced by 50 per

cent and 35 per cent in mice which did not have the rogue gene.

Dr Samantha Walker, Asthma UK’s director of research and policy, welcomed the report – published in *The Journal of Clinical Investigation Insight* – and said scientists will next study how the gene causes the changes that lead to asthma. “Each day three people die of asthma attacks,” she said. “Research like this is a step in the right direction although much more investment is needed.”