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Chemists identify genetic mutation that opens door in combatting age-related diseases

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Researchers at the University of Surrey, in collaboration with the Universities of Reading and Cologne, and the Royal Berkshire Hospital, have discovered that it is possible to stop the activation of a group of proteins (NADPH Oxidase) known to cause most of the diseases of ageing. This will potentially pave the way for the development of drugs to treat a range of age-related diseases.

The NADPH Oxidase complex attacks blood vessels, the heart lining, joints and the brain when placed under metabolic stress, causing most of the diseases of ageing. However it has another vital role in helping cells to 'talk' to each other, which means that humans need the complex in order to live.

The new research has found that the natural mutation SNP (single nucleotide polymorphism) protects against cardiovascular disease and also affects the activation of NADPH oxidase.

By identifying the molecular mechanism of an SNP, the research enables the design of drugs that will prevent the activation process in conditions of stress, without affecting the function of NADPH Oxidase in cell health. The researchers believe it will lead to the development of drugs to treat heart disease, diabetes, arthritis and dementia, and also fibrosis in the lungs.

In addition, the research has exciting implications for personalised medicine - a concept which is likely to change the face of healthcare in

the future - as it will be possible, in theory, to give patients tailored doses of medicine depending on the SNP mutations they have.

Dr Brendan Howlin, Director of Postgraduate Research at the University of Surrey, said: "This breakthrough could have a revolutionary impact on healthcare and individuals by tackling two of the key challenges in healthcare today: an ageing population and a growing requirement for personalised medicine. Since the initial research, we have developing a series of drugs that prevent the activation process, and are now working on bringing these drugs to market."

Provided by University of Surrey

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