

Scientists unlock gender key to treating stroke

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(Medical Xpress)—Stroke is Australia's second biggest killer after coronary heart disease and a leading cause of disability, and there is no treatment for the disease which costs the Australian economy more than \$49 million every year.

It has long been known that a gender difference exists among [stroke patients](#) - the incidence of stroke is higher in men up to the age of 75, similar in the 75-84 age group, and higher in women in the age group greater than 85. Why this is the case has been largely a mystery, but it

has been suspected to at least partly relate to the presence or absence of oestrogen.

Researchers at Monash University's Faculty of Biomedical and Psychological Sciences studied a little known oestrogen receptor that occurs in men and women. They have found that by blocking this receptor in males they can alleviate the symptoms of stroke if given up to four hours after the event. However – they have also shown that – by triggering this receptor in older women, it has the potential to protect females from the harmful effects of stroke.

The results have been published in the prestigious international journal, *Stroke*. It is the first time that a drug with the potential to reduce and even stop the effect of a stroke in a sex-specific manner has been found and is considered a significant breakthrough in stroke research.

According to Associate Professor Chris Sobey, it has been well known in the past that there are two [receptors](#) for oestrogen. However over in the last decade a third [oestrogen receptor](#) was found in heart, blood vessels and brain tissue. Sobey, Dr Brad Broughton and their team discovered that the receptor behaves completely differently in males and females following a stroke.

Using mouse models, the researchers found that the receptor – called GPER – when triggered following a stroke makes the stroke outcome worse in older males but better in older females. Targeting the receptor has no effect in younger females, presumably because of the competing effects of high levels of oestrogen naturally present, "which is fine because we are essentially looking at women who are post-menopausal as the main female patients who suffer strokes," Associate Professor Sobey said.

The researchers have also found the same pattern exists for changes in

receptor levels in both mouse and human brain tissue in [stroke victims](#) as well as controls, opening the way for new ways to effectively treat the disease, depending on the gender of the patient.

"It is quite conceivable that a post-menopausal woman presenting at the ER with a stroke would be treated by stimulating this receptor through a targeted drug, whereas a man of similar age would receive a GPER blocker – each respective treatment should similarly halt the symptoms of the [stroke](#)," Associate Professor Sobey said.

Provided by Monash University

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