

Trojan Horse ploy to sneak protective drug into brains of stroke patients

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Scientists are reporting development of a long-sought method with the potential for getting medication through a biological barrier that surrounds the brain, where it may limit the brain damage caused by stroke. Their approach for sneaking the nerve-protective drug erythropoietin into the brain is medicine's version of the Trojan Horse ploy straight out of ancient Greek legend. It also could help people with traumatic head injuries, Parkinson's disease, and other chronic brain disorders. Their report appears in ACS' *Molecular Pharmaceutics*.

William Pardridge and colleagues explain that [erythropoietin](#) is a protective protein that has engendered great medical interest for its potential in protecting [brain cells](#) cut off from their normal blood supply by a stroke, or brain attack. Tests, however, show that erythropoietin, like other drugs, cannot penetrate a tightly-knit layer of cells called the blood-brain-barrier that surrounds and protects the brain from disease-causing [microbes](#) and other harmful material. Other proteins, however, can penetrate the barrier, and the scientists decided to test one of them as a Trojan Horse to sneak in erythropoietin.

The researchers found an antibody that can go through the blood brain barrier and linked it to erythropoietin to make a hybrid protein. Tests showed that the approach worked in laboratory mice, with the hybrid protein successfully penetrating the blood-brain barrier. The advance will allow scientists to begin testing erythropoietin's effects on mice with simulated stroke and other [brain](#) disorders, so that scientists can establish the most effective dose and best timing for possible future tests in

humans.

More information: "Re-engineering erythropoietin as an IgG fusion protein that penetrates the blood-brain barrier in the mouse", *Molecular Pharmaceutics*.

Provided by American Chemical Society

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