*Case #740*

# $PIP_2$ Treatment for Small Vessel Disease and Stroke

Cerebral small vessel diseases (SVD) are responsible for more than 25% of ischemic stroke and are a leading cause of age-related cognitive dementia and disability. Despite the enormous impact of SVDs on human health, little is known about disease processes and key biological mechanisms and there are no specific therapeutic treatments of these diseases. Research from the lab of National Academy of Science member, Mark Nelson, has identified certain functional and structural attenuations in the cerebral micro vascularization that are early culprits in the manifestations of SVDs and more recently found that provision of a minor inner leaflet lipid, $PIP_2$, is able to rescue these early deficits in an *in vivo* model of SVD. Provision of $PIP_2$ may also offer vasodilation of constricted blood vessels and perfusion of brain regions following an ischemic stroke.

## Applications:

- Small vessel disease, stroke and vascular dementia.

## Advantages:

- No current FDA approved treatment of SVDs.
- Prevention of vascular dementia and stroke.
- Vasodilation based reperfusion of ischemic stroke injury.
- Neurovascular coupling mechanism is a model for new therapeutics.

## Intellectual Property and Development Status:

US Provisional Application 62/823,378
Looking for both licensing and industry partners for lead compound optimization

## References:

Endothelial GqPCR activity controls capillary electrical signaling and brain blood flow through PIP2 depletion, Harraz OF *et al* PMC5899484

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