Docket #: S22-005

Treatment with a Protein Pharmaceutical Improves Functional Stroke Recovery

Stanford inventors have found that Stanniocalcin 2 (STC2) treatment following stoke leads to improved functional recovery and a pharmaceutical composition containing STC2 as an active ingredient can be used to facilitate post stroke recovery. There are over 10 million strokes occurring annually, most of which leave patients with functional deficits. While acute treatment of strokes has improved, there are no approved drugs to facilitate functional recovery after stroke. Researchers in the George lab show that STC2 is an important factor that following stroke improves functional outcome in a rodent stroke model. STC2 is a secreted glycoprotein that is upregulated in a rodent model following treatment with neural progenitor cell transplantation and electrical stimulation after stroke, suggesting STC2 facilitates neurological recovery. Additional experiments illustrate a critical role of STC2 in endogenous stem cell production in addition to generally improved functional recovery. Functional recovery is measured using the vibrissae-forepaw model and the neurological severity scale, both of which are well-characterized endpoints indicative of behavioral function in stroke models. Treatment with STC2 offers an opportunity to pharmacologically improve the functional consequences of stroke.

Stage of Development

In vivo and *in vitro* data

Applications

- Treatment for functional deficits consequent of stroke
- Treatment to improve stroke recovery

Advantages

- Pharmaceutical alternative to physical therapy, the only existing treatment for stroke recovery
- No approved pharmaceutical treatments that improve recovery following stroke exist

Publications

- Oh, B., Santhanam, S., Azadian, M., Swaminathan, V., Lee, A. G., McConnell, K. W., ... & George, P. M. (2022). Electrical modulation of transplanted stem cells improves functional recovery in a rodent model of stroke. Nature Communications, 13(1), 1-11.

Patents

- Published Application: WO2023154676
- Published Application: 20250099547

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