

Regulation of GSK3 β May Offer Disease Treatments

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Overview

A newly discovered approach to the mediation of a process that regulates cell function may lead to effective treatments for a variety of diseases.

GSK3 β , one of two genes known to encode a type of enzyme called Glycogen Synthase Kinase-3, regulates diverse cell functions such as signaling, gene expression, and metabolism through phosphorylation of cellular substrates.

Abnormally high and low levels of GSK3 β activity have been associated with a wide variety of disorders, including neurological diseases, diabetes, and cancer.

Future treatments for these disorders may be based on Dr. Rincon's discovery.

Invention

Dr. Rincon's research shows the ability of p38 mitogen-activated protein kinase (MAPK) to phosphorylate GSK3 β activity. Activation of .beta.-catenin-mediated signaling through GSK3 β inhibition may provide a mechanism for p38 MAPK-mediated survival in specific tissues.

In conditions associated with *reduced* GSK3 β activity, such as cancer and diabetes, treatments would be intended to reduce cell survival by inhibiting the phosphorylation of GSK3 β .

In conditions associated with *elevated* GSK3 β activity, particularly neurological conditions such as stroke, head trauma, and Alzheimer's disease, treatments would be intended to increase cell survival by increasing the level of GSK3 β phosphorylation.

Advantages

- New approach to increasing or decreasing GSK3 β activity
- Potential treatment for a variety of clinical disorders

Applications

- In potential disease therapies, a synthetic peptide of GSK3 β (or similar small molecule) could be used as a specific GSK3 β blocker.
- Antibodies that recognize the peptide may prove useful in diagnosing reduced or elevated GSK3 β activity levels.

I.P. Status

US Patent # [8,445,648](#)

Learn more about Dr. Rincon's research at:
www.uvm.edu/~mrincon/

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