3T3-L1 Mouse PGC-1 Alpha Overexpression for Studying Mitochondrial Function and Aging

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a novel cell line that may be used as a disease model for an association between mitochondrial function and aging, where PGC-1a may be a candidate target in anti-aging interventions.

Overview

Mitochondrial function plays a central role in longevity and healthy aging, and delayed aging by calorie restriction activates PGC-1a (peroxisome proliferator-activated receptor gamma coactivator-1 alpha) which is a regulator of metabolism through regulating mitochondria. Activation of mitochondrial pathways have been linked to delayed aging. PGC-1a is a transcriptional coactivator where it elicits its effects by recruiting other coactivators, and PGC-1a has been shown to interact, directly or indirectly, with numerous transcriptional regulators involved in diverse cellular function. Calorie restriction activation of PGC-1a integrates mitochondrial status with metabolism and growth, structure, and macromolecule homeostasis. The PGC-1a network may be the basis in the association between mitochondrial function and aging.

The Invention

UW-Madison researchers have created a stable overexpression of PGC-1a in 3T3-L1 mouse cell line. Researchers took cDNA from a modified PGC-1a isoform missing the last 3 residues on the C-terminus from a transgenic mouse, pcDNA3.1-PGC1a cDNA (D. Kelly, WUSTL), which was subcloned into a lentiviral transfer vector, pWPXL (Addgene). The 3T3 PGC-OE clonal line was generated through pWPXL-PGC-1a viral delivery. This novel cell line can be used to study PGC-1a without it being cytotoxic. This line may be used as a disease model for an association between mitochondrial function and aging, where PGC-1a may be a candidate target in anti-aging interventions.

Applications

- Provides a stable overexpression cell line to study PGC-1a

Key Benefits

- This overexpression cell line has not been reported before.
- This stable overexpression is not toxic to the cell.

Stage of Development

The researchers have confirmed PGC-1a overexpression and use in a 2019 peer-reviewed manuscript.

Tech Fields
- Research Tools : Cell lines

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854

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