Transcription profiling of wild type and PGC-1alpha KO liver and skeletal muscle - Study GBCO2380

Genomics Study Specifications

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<td>Bruce Spiegelman (Dana-Farber Cancer Institute)</td>
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Synopsis

PGC-1alpha is a coactivator of nuclear receptors and other transcription factors that regulates several metabolic processes, including mitochondrial biogenesis and respiration, hepatic gluconeogenesis, and muscle fiber-type switching. We show here that, while hepatocytes lacking PGC-1alpha are defective in the program of hormone-stimulated gluconeogenesis, the mice have constitutively activated gluconeogenic gene expression that is completely insensitive to normal feeding controls. C/EBPbeta is elevated in the livers of these mice and activates the gluconeogenic genes in a PGC-1alpha-independent manner. Despite having reduced mitochondrial function, PGC-1alpha null mice are paradoxically lean and resistant to diet-induced obesity. This is largely due to a profound hyperactivity displayed by the null animals and is associated with lesions in the striatal region of the brain that controls movement. These data illustrate a central role for PGC-1alpha in the control of energy metabolism but also reveal novel systemic compensatory mechanisms and pathogenic effects of impaired energy homeostasis.

Platform types

| Platform | Expression, Expression microarray |

Platforms

- Show platform Affymetrix MG_U74A

Study Design Type

- genetic_modification_design
- growth_condition_design
- organism_part_comparison_design
- stimulus_or_stress_design

Study Factors

- Show study factors
Study Assays

Access to Study Data
This Study Data is publicly available to all users.

Gene List(s)
There are no gene lists currently available for this study.

Genome Browser
There are no genome browser tracks currently available for this study.

Lists of Locations
There are no genomic location datasets currently available for this study.

Repositories
Stoeckert Lab

Stock #: Not provided
Availability Notes: Not provided

Comments
There are no comments for this entry.

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