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Human skeletal muscle - type 2 diabetes and family history positive individuals - Mexican American - Study GBCO2363

Genomics Study Specifications

Study Name	Human skeletal muscle - type 2 diabetes and family history positive individuals - Mexican American
Contact Name	Mary-Elizabeth Patti (Joslin Diabetes Center and Harvard Medical School)
Publication	http://www.ncbi.nlm.nih.gov/pubmed/12832613
My Strategies	Return to My Strategies page
Classification	Cell stimulation/injury
Links	Biomaterials Graph ArrayExpress
BCBC Release Date	April 13, 2009
Public Release Date	April 13, 2009
Citation	Patti ME, Butte AJ, Crunkhorn S, Cusi K, Berria R, Kashyap S, Miyazaki Y, Kohane I, Costello M, Saccone R, Landaker EJ, Goldfine AB, Mun E, DeFronzo R, Finlayson J, Kahn CR, Mandarino LJ. Coordinated reduction of genes of oxidative metabolism in humans with insulin resistance and diabetes: Potential role of PGC1 and NRF1. Proc Natl Acad Sci U S A. 2003. 100:8466-71
Synopsis	Study Description | Goals | Approaches | Results | Conclusions | Related Studies Type 2 diabetes mellitus (DM) is characterized by insulin resistance and pancreatic beta-cell dysfunction. In high-risk subjects, the earliest detectable abnormality is insulin resistance in skeletal muscle. Impaired insulin-mediated signaling, gene expression, and glycogen synthesis, and accumulation of intramyocellular triglycerides have all been linked with insulin resistance, but no specific defect responsible for insulin resistance and DM has been identified in humans. To identify genes potentially important in the pathogenesis of DM, we analyzed gene expression in skeletal muscle from healthy metabolically characterized nondiabetic (family history negative and positive for DM) and diabetic Mexican-American subjects. We demonstrate that insulin resistance and DM associate with reduced expression of multiple nuclear respiratory factor-1 (NRF-1)-dependent genes encoding key enzymes in oxidative metabolism and mitochondrial function. While NRF-1 expression is decreased only in diabetic subjects, expression of both PPARg coactivator 1-alpha and -beta (PGC1-a/PPARGC1, and PGC1-b/PERC), coactivators of NRF-1 and PPARg-dependent transcription, is decreased in both diabetic subjects and family history positive nondiabetic subjects. Decreased PGC1 expression may be responsible for decreased expression of NRFdependent genes, leading to the metabolic disturbances characteristic of insulin resistance and DM.
Platform types	Expression microarray, Expression
Platforms	

Access Status

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Primary contributor: Stoeckert Lab

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Resource History & Actions

Approved on Apr 13, 2009
Last modified on Aug 02, 2011

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	Show platform Affymetrix HuGeneFL
Study Design Type	• disease_state_design • family_history_design • replicate_design
Study Factors	Show study factors
Study Assays	Show 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

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Stock #: *Not provided*
Availability Notes: *Not provided*

Comments

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