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Small molecule inducers of pancreatic beta-cell expansion - Study GBCO3815

Genomics Study Specifications

Study Name	Small molecule inducers of pancreatic beta-cell expansion
Contact Name	John R. Walker (Genomic Institute of the Novartis Research Foundation)
Publication	http://www.ncbi.nlm.nih.gov/pubmed/19164755
My Strategies	Return to My Strategies page
Classification	Islet/beta-cell stimulation/injury; Cell stimulation/injury; Pancreas development and growth
Links	Biomaterials Graph GEO
BCBC Release Date	April 15, 2010
Public Release Date	April 15, 2010
Citation	Wang W, Walker JR, Wang X, Tremblay MS, Lee JW, Wu X, Schultz PG. Identification of small-molecule inducers of pancreatic beta-cell expansion. Proc Natl Acad Sci U S A. 2009. 106:1427-32
Synopsis	Study Description | Goals | Approaches | Results | Conclusions | Related Studies New insulin-producing pancreatic beta-cells are formed primarily by self-replication during adult life. To identify small molecules that can induce beta cell replication, a large chemical library was screened for proliferation of growth-arrested, reversibly immortalized mouse beta-cells using an automated high-throughput screening platform. A number of structurally diverse, active compounds were identified including phorbol esters, which likely act through protein kinase C, and a group of thiophene-pyrimidines that stimulate beta-cell proliferation by activating the Wnt signaling pathway. A group of dihydropyridine (DHP) derivatives was also shown to reversibly induce beta-cell replication in vitro by activating L-type calcium channels (LTCCs). Our data indicate that the LTCC agonist 2a affects the expression of genes involved in cell cycle progression and cellular proliferation. Furthermore, treatment of beta-cells with both LTCC agonist 2a and the Glp-1 receptor agonist Ex-4 showed an additive effect on beta-cell replication. The identification of small molecules that induce beta-cell proliferation suggests that it may be possible to reversibly expand other quiescent cells to overcome deficits associated with degenerative and/or autoimmune diseases.
Platform types	Expression, Expression microarray
Platforms	Show platform Affymetrix Mouse430_2
Study Design Type	• compound_treatment_design • time_series_design
Study Factors	Show study factors

Access Status

This resource is publicly viewable.

Request this Resource

Request from a repository

Primary contributor: Stoeckert Lab

Resource Tags

Ccnd2, Egr1, Egr2, Fos, Fosb, Ier2, Ins1, Ins2, Irs2, Jun, Junb, Pdx1, Rasgef1b, Rasgrf1

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Resource History & Actions

Approved on Jun 02, 2010
Last modified on Jan 17, 2012

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Related resources

BCBC

No matching resources

Other Consortia

No matching resources

Data courtesy of dkCOIN. Only public resources are displayed.

Study Assays Show study assays

Access to Study Data

This Study Data is publicly available to all users.

Gene List(s)

Use the following form(s) to refine the parameters and add the gene list to a strategy:

BayK8644(2a) treatment of R7T1 beta cells across time

|Fold Change| Greater Than: 1.5

Confidence Level: High Confidence All Results

For a microarray experiment a result with high confidence has a confidence level of at least 80%.

For a ChIP-chip experiment a result with high confidence has a confidence level of at least 90% and all fold changes are positive.

Reference (Denominator): NA

Find Genes

Exendin-4 treatment of R7T1 beta cells across time

BayK8644-2a and Exendin-4 treatment of R7T1 beta cells across time

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

Request this resource

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

Comments

There are no comments for this entry.

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