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Global epigenomic analysis of primary human pancreatic islets provides insights into type 2 diabetes susceptibility loci - Study GBCO4078

Genomics Study Specifications

Study Name	Global epigenomic analysis of primary human pancreatic islets provides insights into type 2 diabetes susceptibility loci
Contact Name	Francis S. Collins (NHGRI)
Publication	http://www.ncbi.nlm.nih.gov/pubmed/21035756
My Strategies	Return to My Strategies page
Classification	Tissue expression, surveys and comparisons
Links	Biomaterials Graph ArrayExpress
BCBC Release Date	January 04, 2011
Public Release Date	January 04, 2011
Citation	Stitzel ML, Sethupathy P, Pearson DS, Chines PS, Song L, Erdos MR, Welch R, Parker SC, Boyle AP, Scott LJ, NISC Comparative Sequencing Program, Margulies EH, Boehnke M, Furey TS, Crawford GE, Collins FS. Global epigenomic analysis of primary human pancreatic islets provides insights into type 2 diabetes susceptibility loci. Cell Metab. 2010. 12:443-55
Synopsis	Study Description | Goals | Approaches | Results | Conclusions | Related Studies Identifying cis-regulatory elements is important to understand how human pancreatic islets modulate gene expression in physiologic or pathophysiologic (e.g., diabetic) conditions. We conducted genome-wide analysis of DNase I hypersensitive sites, histone H3 lysine methylation marks (K4me1, K4me3, K79me2), and CCCTC factor (CTCF) binding in human islets. This identified ~18,000 putative promoters (several hundred novel and islet-active). Surprisingly, active promoter marks were absent at genes encoding islet-specific hormones, suggesting a distinct regulatory mechanism. Of 34,039 distal (non-promoter) regulatory elements, 47% are islet-unique and 22% are CTCF-bound. These findings present a global snapshot of the human islet epigenome and should provide functional context for non-coding variants emerging from genetic studies of T2D and other pancreatic islet disorders. Three different islet samples were tested for DNase I hypersensitivity by DNase-Seq. Five different primary pancreatic islet samples were evaluated for several chromatin modifications (H3K4me3, H3K4me1, H3K79me2) by ChIP-seq. One islet sample was evaluated for CTCF binding via ChIP-seq, All ChIP-seq samples have both non-specific IP (GFP) and input DNA controls.
Platform types	TF Binding ChIP-Seq, TF Binding, Open chromatin DNase-Seq, Histone modification ChIP-Seq, Epigenomic
Platforms	*Not available*
Study Design Type	• binding_site_identification_design

Access Status

This resource is publicly viewable.

Request this Resource

Request from a repository

Primary contributor: Stoeckert Lab

Resource Tags

ctcf, dnasei, h3k4me1, h3k4me3, h3k79me2, tcf7l2

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Resource History & Actions

Approved on Jan 04, 2011
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 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

Browse related tracks on the genome browser by clicking on the link(s) below:

View tracks for this study in the region around the INS gene	CTCF Binding Peak Calls; H3K4me3 Peak Calls; DNAsel Hypersensitivity Peak Calls

Lists of Locations

Use the following form(s) to refine the parameters and add the list of genomic sequences corresponding to peak calls to a strategy. Depending on your choices, these searches may be slow.

DNaseI Hypersensitivity in Human Islets (MACS Peak Calls)

Retrieve:

- ○ Whole Genome
- ◉ Peaks in a Region of Interest (specify below):

chr5

Enter a region (e.g., chr:start-stop) or enter just the chromosome (e.g., chr12 or chrX) to search for peaks on a single chromosome. Select the "Whole Genome" option or leave the text box blank to return all results from this analysis.

Find Locations

H3K4me3 Histone Modification in Human Islets (MACS Peak Calls)

CTCF Binding in Human Islets (MACS Peak Calls)

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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