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**Gene expression in PBMCs from children with diabetes - Study GBCO3203****Genomics Study Specifications**

<b>Study Name</b>	Gene expression in PBMCs from children with diabetes
<b>Contact Name</b>	Ellen C. Kaizer (University of Texas Southwestern Medical Center)
<b>Publication</b>	<a href="http://www.ncbi.nlm.nih.gov/pubmed/17595242">http://www.ncbi.nlm.nih.gov/pubmed/17595242</a>
<b>My Strategies</b>	<a href="#">Return to My Strategies page</a>
<b>Classification</b>	Tissue expression, surveys and comparisons
<b>Links</b>	 <a href="#">Biomaterials Graph</a>  <a href="#">ArrayExpress</a>
<b>BCBC Release Date</b>	April 13, 2009
<b>Public Release Date</b>	April 13, 2009
<b>Citation</b>	Kaizer EC, Glaser CL, Chaussabel D, Banchereau J, Pascual V, White PC. <a href="#">Gene expression in peripheral blood mononuclear cells from children with diabetes</a> . J Clin Endocrinol Metab. 2007. 92:3705-11

**Synopsis****Study Description**

## Goals

## Approaches


## Results

## Conclusions


## Related Studies

Objective: We hypothesized that type 1 diabetes (T1D) is accompanied by changes in gene expression in peripheral blood mononuclear cells (PBMCs) due to dysregulation of adaptive and innate immunity, counterregulatory responses to immune dysregulation, insulin deficiency and hyperglycemia. Research Design and Methods: Microarray analysis was performed on PBMCs from 43 patients with newly diagnosed T1D, 12 patients with newly diagnosed type 2 diabetes (T2D) and 24 healthy controls. One and four month follow-up samples were obtained from 20 of the T1D patients. Results: Microarray analysis identified 282 genes differing in expression between newly diagnosed T1D patients and controls at a false discovery rate of 0.05. Changes in expression of interleukin-1 (IL1B), early growth response gene 3 (EGR3), and prostaglandin-endoperoxide synthase 2 (PTGS2) resolved within four months of insulin therapy and were also observed in T2D suggesting that they resulted from hyperglycemia. With use of a knowledge base, 81/282 genes could be placed within a network of interrelated genes with predicted functions including apoptosis and cell proliferation. IL1B and the MYC oncogene were the most highly-connected genes in the network. IL1B was highly overexpressed in both T1D and T2D, whereas MYC was dysregulated only in T1D. Conclusion: T1D and T2D likely share a final common pathway for beta cell dysfunction that includes secretion of interleukin-1 and prostaglandins by immune effector cells, exacerbating existing beta cell dysfunction, and causing further hyperglycemia. The results identify several targets for disease-modifying therapy of diabetes and potential biomarkers for monitoring treatment efficacy. Experiment Overall Design: We obtained blood samples from 24 healthy volunteers,

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Primary contributor: [Stoeckert Lab](#)

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Approved on Apr 13, 2009  
Last modified on Jan 17, 2012

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Data courtesy of [dkCOIN](#). Only public resources are displayed.

43 newly diagnosed T1D patients and 12 newly diagnosed T2D patients. All study participants were between the ages of 2 and 18 years. We collected samples one and four months after diagnosis from the last 20 of the T1D patients. For each time point one sample did not pass quality control and was dropped from the analysis. Patients with T2D were distinguished from T1D on the basis of age, body habitus, Experiment Overall Design: presence (11/12 patients) of acanthosis nigricans, family history of type 2 diabetes (11/12 patients), and absence of autoantibodies to insulin, IA-2, and GAD65. We allowed low titers of insulin antibodies in T2D patients (< 4 U/mL), which have been previously reported. All but two Experiment Overall Design: of the T1D patients with positive anti-insulin antibodies were also positive for at least one additional autoantibody.

<b>Platform types</b>	Expression microarray, Expression
<b>Platforms</b>	<a href="#">Show platform Affymetrix HG-U133A</a>
<b>Study Design Type</b>	<ul style="list-style-type: none"> <li>disease_state_design</li> <li>time_series_design</li> </ul>
<b>Study Factors</b>	<a href="#">Show study factors</a>
<b>Study Assays</b>	<a href="#">Show study assays</a>

## 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

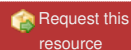
There are no genome browser tracks currently available for this study.

## 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.

