CHRD 2021: Abstract & Poster Submission Form

Submitter Name

Nikho
First

Hizon
Last

Email

nikho.hizon@umanitoba.ca

Research Category:

- ◉ Basic Science
- ○ Clinical
- ○ Community Health / Policy

What was your role in the project?

- ☐ Design
- ☐ Perform Experiments
- ☑ Analyze Data
- ☑ Write Abstract
- ☐

Presenter Status:

- ○ Undergraduate Students
- ○ Masters Student
- ○ PhD Student
- ○ Post-Doctoral Fellows
- ○ Residents
- ◉ Non-Trainee

Title

Altered DNA Methylation in Patients with Youth Onset Type 2 Diabetes in the iCARE Cohort

Background

Type 2 diabetes (T2D) incidence in youth is on the rise. Early environmental exposures are suspected risk factors for youth onset T2D. However, the underlying mechanism by which these exposures confer risk have not been explained.

Objective

We hypothesize that early exposures alter DNA methylation (DNAm) patterns that play a key role in youth onset T2D. This study examined DNAm patterns and potential biological pathways implicated in youth onset T2D.

Methods

We examined whole blood DNAm from 306 youths (Ages 9 – 26; diagnosed before 18) from the iCARE cohort using the Illumina EPIC methylation array. DNAm changes associated with T2D were identified by comparing the DNAm profiles of children with (n = 224) and without (n = 82) T2D, matched for BMI and ethnicity, using linear regression.

Results

We identified 2,982 differentially methylated CpGs (adjusted p-value < 0.05, effect size >= 1%), a subset of which were previously associated with T2D in adults (TXNIP: effect size -11%; ABCG1: 3%; SREBF1: 3%). In addition, we identified CpGs with roles in mitochondrial metabolic regulation (VWA8: -7%) and insulin-induced vasodilation (MPRIP: 7%).

Conclusion

Our findings build the basis for future studies to identify pathways involved in youth onset T2D, assess the utility of these signatures as biomarkers for screening and early detection, and identify protective environmental exposures.

We would like to acknowledge the important contributions and guidance of the iCARE Participant Advisory Group and Data Access Committee in this work’s interpretation.

Authors

- For each author, please click "**[+] Add Item**" and provide the author's information

Name	Email	Role	Profession
Nikho Hizon	nikho.hizon@umanitoba.ca	Presenting Author	Graduate
Allison Dart	adart@hsc.mb.ca	Co Author	Associate Professor
Melissa Del Vecchio	MGabbs@chrim.ca	Co Author	Graduate
Kurt Kolsun	Kurt.Kolsun@umanitoba.ca	Co Author	Graduate
Mario Fonseca	Mario.Fonseca@umanitoba.ca	Co Author	Graduate
Julia L MacIsaac	julie.macisaac@bcchr.ca	Co Author	Graduate
Michael S Kobor	msk@bcchr.ca	Co Author	Full Professor
Elizabeth Sellers	ESELLERS@hsc.mb.ca	Co Author	Associate Professor
Vern Dolinsky	VDolinsky@chrim.ca	Co Author	Associate Professor
Brandy Wicklow	bwicklow@hsc.mb.ca	Co Author	Associate Professor
Meaghan Jones	Meaghan.Jones@umanitoba.ca	Co Author	Assistant Professor