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Abstract Topic: - Complex traits and polygenic disorders

Abstract Title: - Transcriptomic study of duodenal tissue identified downregulation of a novel gene CDH18 in celiac disease

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Aims: - To investigate the differentially expressed genes (DEGs) in duodenum tissue to identify clinically relevant gene expression pattern in Celiac Disease.

Methods: - RNA sequencing data of three CD patients and four non-CD control duodenal biopsies were analyzed. Significant DEGs were identified. Prioritized DEGs were validated using RT-PCR in an independent group (CD=23;control=26). Enriched pathways were assessed, protein-protein interactions network were evaluated.

Results: - 923 DEGs comprising of 135 up-regulated, and 788 down-regulated genes, with p-value≤0.05; log2FC>2or<-2 were identified. A novel down-regulated gene CDH18 (p=0.03;log2FC=-0.74) was identified. Previously known CXCL9 was replicated. CDH18, a trans-membrane protein was found to interact with other CDH proteins, α/β catenins, and other membrane transporters such as SLC and ABCB. Pathways and protein networks contributing in channel activity (p=2.15E-12), membrane transporters (p=2.15E-12), and cellular adhesion (p=8.05E-6) were identified.

Conclusions: - CDH18, a novel DEG identified in the present study is a critical gene involved in maintaining epithelial membrane integrity. The functional significance of lower expression of CDH18 in pathogenesis of CD warranted to be investigated. CDH18 expression could be tested for its effectiveness in diagnostic, prognostic and therapeutic purposes.

Keywords: - 923 DEGs comprising of 135 up-regulated, and 788 down-regulated genes, with p-value≤0.05; log2FC>2or<-2 were identified. A novel down-regulated gene CDH18 (p=0.03;log2FC=-0.74) was identified. Previously known CXCL9 was replicated. CDH18, a trans-membrane protein was found to interact with other CDH proteins, α/β catenins, and other membrane transporters such as SLC and ABCB. Pathways and protein networks contributing in channel activity (p=2.15E-12), membrane transporters (p=2.15E-12), and cellular adhesion (p=8.05E-6) were identified.