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Abstract Topic: - Omics technologies

Abstract Title: - Exploring the association among celiac disease, rheumatoid arthritis and ulcerative colitis through transcriptome analysis

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Aims: - The immune-mediated inflammatory diseases celiac disease (CeD), rheumatoid arthritis (RA), and ulcerative colitis (UC) share mechanisms of T-cell mediated tissue inflammation. Several susceptibility genes have been found through genetic and molecular investigations, however a comprehensive molecular examination has not been carried out to access the shared and common molecular partners/networks between CeD, RA, and UC. The objective of the current study was to identify differentially expressed genes (DEGs) and discover potential treatment targets for these diseases.

Methods: - RNA microarray and sequencing datasets were retrieved from the Gene Expression Omnibus database. GEO2R and GREIN were used to identify DEGs. Significant RNA microarray and sequencing datasets were retrieved from the Gene Expression Omnibus database. GEO2R and GREIN were used to identify DEGs. Significant DEs were filtered based on adjusted p-value < 0.05 and |log2FC| >1.5. Shared DEGs were identified using the online venn tool. Network and pathway analyses were done to identify the key molecular interactions and hub genes.

Results: - 51 significant DEGs that are shared and common between CeD, RA and UC were identified.

These DEGs were found to enrich inflammation and immune response processes such as such

IL-17 pathway (p=5.51e-16), cytokine pathways (p=6.06e-15), neutrophil chemotaxis (p=8.42e-

12), matrix metalloproteinases (p=1.19e-08), etc. Identified Ten hub genes (CXCL-5,8,10;

MMP1,3; CD247; LCN2; IL1B; IFNG; FCGR3A) were upregulated in the active disease

conditions and shown to get downregulated after anti-inflammatory treatments.

Conclusions: - Identifying common DEGs in the current work offers insightful information about the common disease mechanism and identifies new therapeutic targets for cutting-edge therapy for CeD, RA, and UC. Targeting to inhibit IL-17 alongside these hub genes could be explored to establish their potential role in mitigating these diseases.

Keywords: - 51 significant DEGs that are shared and common between CeD, RA and UC were identified.

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