Analysis of Endocrine Interactions and Sex Differences Via Tissue Pair Gene Expression Correlations

(Technical Report)

Medical Analytics in Health Care Networks

(STS Research Paper)

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Preface

Medical analytics are useful tools for more than just researchers. The aim of the technical work is to produce a novel bioinformatics approach for the analysis of sex differences in human endocrine interaction. The sociotechnical work analyzes how the implementation of similar tools is being addressed by various groups in medically related fields.

How do endocrine interactions differ between males and females and how can this contribute to likelihoods for one sex to develop certain metabolic disorders? Inter-organ communication via secretion and uptake of endocrine factors by primary and peripheral organs maintains homeostasis. The developed novel bioinformatics approach can analyze the expression of genes between tissue pairs in human donor data. Genes with highly correlated levels of expression are indicators of key metabolic tissue interactions. The discovery of both known and novel endocrine interactions in the body can give insight into the pathways for metabolic disorders, and potentially lead to new therapeutic options.

How has the implementation of medical analytics in research, clinical practice, and insurance provision impacted the views of involved individuals, and how are ethical concerns being addressed? The benefits of such tools in medical networks are abundant. Issues on privacy, bias, and applicability have left many individuals skeptical against analytics in medical fields. Interested groups and individuals have developed frameworks and solutions that will guide the safe, ethical use of data analytics in relevant medical applications.

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