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Proteomics, metabolomics and metagenomics for type 2 diabetes and its complications

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### ACCEPTED MANUSCRIPT

## Proteomics, metabolomics and metagenomics for

### type 2 diabetes and its complications

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Abstract: Type 2 diabetes mellitus (T2DM) is one of the most common diseases of endocrine and metabolic disorders, whose mechanism is still largely unknown. Fortunately, various "omics" tools have been employed to better understand the progression pathologies of T2DM and its complications. More specifically, proteomics, metabolomics and metagenomics have played crucial roles in advancing deeper understanding of the physiological processes and regulatory mechanisms of T2DM, such as regulation of signaling pathways perturbed by glucose levels, intestinal microorganism, and inflammation and so on. By analyzing the dynamic change and modification of proteins, proteomics has become an important tool in biology and medicine. Metabolomic analysis can amplify and quantify metabolites in living organisms to reveal the relative relationship between metabolites and physiological and pathological changes. There are also increasing evidences that the human microbiome, specifically the gastrointestinal microbiome have a potential role in the etiology and pathological outcomes of T2DM and its complications. This article summarized and discussed the recent applications of these "omics" tools in finding biomarkers for T2DM and its complications. We also reviewed employing multiple "omics" to further advance our understanding of this pathology. This review will benefit deeper understanding in new Download English Version:

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