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### Systems and precision medicine in diabetes management

The current classification of diabetes into type 1 and type 2 is based on insulin dependency and lags behind major scientific advances in molecular bases of pathobiological processes. So, there is a need to incorporate advanced biomedical translational research findings to the demands of precision medicine. Integrated multiple networks of phenotyping and genotyping associations via molecular profiling and interactome networks may improve diabetes specificity and molecular diversity. Rapid tremendous progress in diabetes genomics, epigenomics, proteomics, transcriptomics and metabolomics leads to discovery of novel biomarkers and alters our understanding of diabetes pathobiology, disease progression and its complications. Consequently, many novel anti-diabetic drugs are approved during the past two decades with marvelous cardioprotective and renoprotective advantages beyond glycemic control. Future potential impacts of precision medicine in diagnosis and treatment of type 2 diabetes are discussed. The new

trends in the management of monogenic diabetes that best exemplifies implications of precision medicine in diabetes management are discussed. However there remain several challenges, hurdles and limitations such as big data analytics of diabetic phenotypic data standardization in electronic health records and the need for advances in computational sciences, biostatistics and innovative software programs to fill the gaps in phenotypic and genotyping data associations by further researches. Advances in diabetes clinical bioinformatics, molecular bioinformatics and radiomics are proposed and discussed. Immense concentration of precision medicine is given to oncology in past decades that is based mostly on pure genomics with major discoveries of novel anti-cancer treatments, clarifies the importance of extending it to diabetes and other common chronic diseases for innovating precise preventive, diagnostic, risk stratification, prognostic and molecular therapeutic modalities.

### Biography

He is interested in clinical medical researches since he was an undergraduate second-year medical student, published a brief review of acute diarrhea in 1984. He continued making researches after graduation along with his career as medical clinician. Now he supervises Master and Ph.D. theses in molecular biology of diabetes. He also works as an editor, peer reviewer, member of editorial boards of many medical journals worldwide.

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