

The Review of Diabetic Studies (RDS)

Special Edition on

Genetics of Type 2 Diabetes – Pathogenesis and Function

Today, the prevalence of type 2 diabetes (T2D) has reached epidemic proportions globally. Predisposing causes are genetic factors, today's lifestyle, marked by food oversupply and lack of exercise, and socio-cultural factors. With the availability of genotyping technologies, the situation in the genetic analysis of complex diseases has changed dramatically. In recent years, genome-wide association studies (GWAS) and candidate gene analyzes led to the discovery of a number of variants in the genome that predisposes to T2D. Associations in case-control studies in addition to pathophysiological characteristics, such as glucose tolerance, insulin sensitivity, and serum lipids may provide a clue to the biological mechanism. Absolutely, functional studies of genes/loci harboring these polymorphisms are needed to elucidate the causal relationship. Further, monogenic forms of early onset diabetes in young people, epigenetic modifications, and the "thrifty-gene hypothesis" add valuable knowledge to the complex research field. To bring light in the complex genetic background of T2D is a challenge, which is taken by many excellent groups all over the world.

This Special Edition will focus on the GWAS and candidate gene driven polygenic background of T2D, the monogenic aspects of the maturity onset of diabetes in the young (MODY), and genetics of related metabolic complications. The Edition will have a particular focus on the revelation of function associated with genes and the critical assessment of genetic research with regard to translation to the clinic. Epigenetic mechanisms will be discussed and pharmacogenomic approaches introduced. We invite authors to contribute with original manuscripts and review/opinion articles that will mirror current research results, the (technical) progress in generating large data sets and discuss future aspects of T2D prediction, personalized treatment, and the chance to overcome genetic predisposition.

Topics pertain but are not limited to:

- GWAS vs. candidate gene approach
- Pharmacogenomics
- Epigenetics
- Monogenic type 2 diabetes - MODY
- What can we learn from Neanderthal genome & "thrifty gene hypothesis"
- T2D pathogenesis (adipokines, lipids, glucose & insulin metabolism)

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