

The genetic studies of type 2 diabetes mellitus in Japan

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Diabetes mellitus is a clinical syndrome characterized by chronic hyperglycemia and complications affecting almost all organs of the body. Type 2 diabetes, the major type of the disease, is already prevailing all over the world, and on the rapid increase especially in Asian and African countries. It has both genetic and environmental factors, but the genetic research of diabetes has been very tough and thus called a "geneticists' nightmare".

In 2000, the Japanese government started a multi-faceted 5-year national project called "The Millennium Project", and among a variety of research fields, one of the most important was a disease-oriented genomic research, with a special focus on five common diseases in Japan, namely, cancer, dementia, hypertension, diabetes, and allergy.

The diabetes research team, led by Professor Kasuga at Kobe University, constitutes of more than twelve universities and institutes, and applied both candidate gene approach and genome-wide association studies using 100,000 validated SNPs to tackle with this very heterogenous disorder. I will introduce some of the results, although they have not been so satisfactory enough, partly due to the complexity of the disease.

I would also like to overview and share the information on the on-going genetic studies of diabetes, and to discuss the strategies and the future direction of research and clinical application in this field.