**Introduction**

Discovery of genetic determinants of type 2 diabetes (T2D) can spark insights into novel therapeutic targets. The Accelerating Medicines Partnership in T2D aims to catalyze such insights by forging collaboration between multiple stakeholders to produce and aggregate data, develop and implement analytical methods and tools, and build infrastructure for data storage and presentation. This collaboration has produced an open-access resource, the T2D Knowledge Portal.

Data are stored in a Data Coordinating Center at the Broad Institute and also at a federated node at the European Bioinformatics Institute. Federation allows integrated analysis across data sets, while protecting information that must remain in its site of origin. Patient privacy is protected for all data in the Portal: interfaces present summary results, while some tools allow custom analysis of individual-level data but prevent direct access to the data.

The Knowledge Portal includes GWAS and exome and whole-genome sequences covering ~260,000 individuals from large-scale T2D consortia and projects, including health-care systems and biobanks. Genetic data are added regularly, and other data types (e.g., epigenomic annotations, expression) and traits (T2D complications, longitudinal study data) will also be incorporated.

The Portal provides a user-friendly interface that enables scientists to identify variants associated with T2D or related traits, or to investigate the effects of perturbing a specific gene or sequence. Versatile tools allow sophisticated queries, such as custom association analysis on individuals within specific phenotypic ranges to identify those who would be of interest for genotype-based callback studies. We are continuously improving the T2D Knowledge Portal to maximize global access to the wealth of genetic information for T2D research.

The AMP T2D Consortium is a collaboration among the following organizations, which also provide funding and/or governance:

- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Human Genome Research Institute (NHGRI)
- Wellcome Trust
- Diabetes UK
- The Leona M. and Harry B. Helmsley Foundation
- National Institute of Standards and Technology (NIST)
- National Cancer Institute (NCI)
- European Bioinformatics Institute
- Medical and Population Genetics, Broad Institute of MIT and Harvard, Cambridge, MA, USA

**Variant Page summarizes associations and the potential regulatory role of the region**

**Gene Page integrates evidence to suggest hypotheses about the role of a gene in T2D**

**The challenge: spark insights into T2D etiology and accelerate identification of new therapeutic targets**

- > 100 loci are now known to be associated with T2D, explaining 10-15% of heritability
- huge amounts of data are needed to draw significant conclusions
- data are warehoused in disparate locations
- data are not easily accessible to those outside large consortia
- data are not easily manipulated by non-experts
- data from different studies need to be aggregated and harmonized
- individual-level data must be protected

**BUT…**

- genetic mapping identifies known T2D drug targets
- genetic information could help us understand, predict, and treat T2D

**Variant Finder generates sets of variants meeting custom criteria**

- comprehensive T2D associations from the latest studies
- access to data housed at EBI Federated Node
- early access and unpublished results
- public GWAS results for T2D-related traits

**Contact Information**

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