Researchers funded by the National Institutes of Health and the Foundation for the NIH (FNIH) have expanded a recently launched online library, called a knowledge portal, which allows open-access searching of human genetic and clinical information on type 2 diabetes. Individual data will remain confidential. The portal includes information from several major international networks, collected from decades of research.

A product of the Accelerating Medicines Partnership (AMP) for type 2 diabetes, the portal is aimed at advancing type 2 diabetes research and treatment, and will include data from over 100,000 genetic samples obtained from clinical consortia supported by the NIH and FNIH. AMP is an innovative project of government, industry and nonprofit organizations working together to speed research in type 2 diabetes, Alzheimer’s disease, rheumatoid arthritis and lupus.

“Through AMP, we have an unprecedented opportunity to advance international research in type 2 diabetes,” said NIH Director Francis S. Collins, M.D., Ph.D. “Our hope is that this portal – and this partnership – will lead to better disease targets and a shorter, less expensive drug development process, enabling companies to get safe and effective medications to patients who need them faster.”

The portal collects data from human genetic samples, since the animal and cellular models that are typically used in diabetes drug development before human testing do not always replicate human behavior. The portal provides a way to identify the most promising therapeutic targets for diabetes from troves of potentially relevant human data.

“The knowledge portal will allow us to translate differences in an individual’s genome into an understanding of how those differences affect a person’s risk of developing type 2 diabetes. By harnessing the power of international data sets, we can also better account for differences in race, ethnicity and locality,” said Philip Smith, Ph.D., of the NIH’s National Institute of Diabetes and Digestive and Kidney Diseases. Smith is co-chair of AMP’s Type 2 Diabetes Steering Committee.
The knowledge portal makes genetic and clinical information searchable in myriad ways, while keeping individual data confidential, to help researchers identify and describe the effects of genes on disease. Searches can include genes, gene variants and genetic regions, and can be cross-referenced with associations between glucose and insulin measurements and other criteria. The data can be sorted to include relevant genetic studies and the kind of data collected, and allows researchers to test biological hypotheses, and conduct many other analyses.

The portal is publicly searchable and can be used as a tool to learn about genetics and health. However, only approved researchers will be able to access detailed data, while the general public can access aggregate results. Creators of the research engine are eager to expand the network to include more national and international research networks. The international source samples of genetic and clinical data will be housed in their home networks to ensure use of each sample complies with each country’s health information confidentiality rules.

The portal’s creation was led by David Altshuler, M.D., Ph.D., while at Broad Institute of Massachusetts Institute of Technology and Harvard University in Cambridge. Jose Florez, M.D., Ph.D., also from Broad Institute, and Michael Boehnke, Ph.D., and Goncalo Abecasis, Ph.D., from the University of Michigan, Ann Arbor, were awarded respective grants from NIDDK (U01 DK105554) and FNIH, to continue the portal’s development. The FNIH grant to the University of Michigan supports portal infrastructure and expanded development of analytical tools.

The portal team will work closely with Broad Institute’s Daniel MacArthur, Ph.D., and Benjamin Neale, Ph.D., who will lead a Center for Genome Interpretation (U54 DK105566) to develop methods to analyze the genomic data collected in the portal.

“Type 2 diabetes is among our country’s and the world’s greatest and most costly health problems. In the United States alone, the disease affects more than 29 million people, with an additional 79 million more at high risk,” said NIDDK Director Dr. Griffin P. Rodgers. “We need more targeted drug therapies to treat type 2 diabetes. While multiple drugs are available to stabilize the disease, people still progress to complications including heart and kidney diseases.”

In addition to NIH, support for the AMP Type 2 Diabetes project includes pharmaceutical companies Eli Lilly and Company; Janssen Research and Development, LLC; Merck & Co.; Pfizer Inc.; and Sanofi US Services and the not-for-profit organizations FNIH, JDRF International and the American Diabetes Association. Support from these sources funds awards made by the FNIH directly to awardees institutions. Additional support to Broad Institute for the portal is provided by the Carlos Slim Foundation.

Links:
Knowledge Portal: www.type2diabetesgenetics.org
Accelerating Medicines Partnership: www.nih.gov/amp
Diabetes information: http://diabetes.niddk.nih.gov/
The NIDDK, part of the NIH, conducts and supports basic and clinical research and research training on some of the most common, severe and disabling conditions affecting Americans. The Institute's research interests include: diabetes and other endocrine and metabolic diseases; digestive diseases, nutrition, and obesity; and kidney, urologic and hematologic diseases. For more information, visit www.niddk.nih.gov.

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