

Message from the Director



As the Director of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), I am pleased to present this annual compendium highlighting the research efforts and programs supported by the Institute. The NIDDK has a broad research responsibility, which includes some of the most common, debilitating, and costly conditions affecting Americans. These conditions include diabetes and other endocrine and metabolic diseases, such as cystic fibrosis; liver disease and other digestive diseases, such as inflammatory bowel diseases; nutritional disorders and obesity; kidney diseases, such as polycystic kidney disease; urologic diseases, such as interstitial cystitis and prostate disease; and hematologic diseases, such as Cooley's anemia.

Now in its ninth year, this compendium illustrates recent NIDDK-supported scientific advances, such as the:

- Discovery of a novel group of adult pancreatic progenitor cells that generate insulin-producing beta cells.
- Revelation that gut bacteria may protect against development of type 1 diabetes.
- Identification of additional genetic variants associated with risk of developing type 2 diabetes.
- Demonstration that a protein, *menin*, may be involved in the development of gestational diabetes mellitus.
- Finding of a defective biological pathway that may contribute to IgA nephropathy, a relatively common form of kidney disease.
- Discovery of how *H. pylori* interacts with stomach stem cells to influence disease progression that can lead to stomach cancer.
- Demonstration that more intensive renal dialysis in patients with acute kidney injury does not improve outcomes.
- Revelation that a protein, BMP-7, contributes to the formation of "brown fat," which may lead to a novel strategy for counteracting obesity.
- Discovery of genetic variation near the *MHY9* locus as conferring greatly increased risk in African Americans for both non-diabetic end-stage renal disease and focal segmental glomerulosclerosis.

This compendium also includes stories of patients who are participating in—and thus helping to advance—NIDDK-supported research. An adolescent girl is participating in a clinical trial to determine whether an experimental drug may slow the progression of type 1 diabetes. A woman is enrolled in a YMCA-based diabetes prevention program designed to help people with risk factors for type 2 diabetes lose weight and increase physical activity. Another adolescent girl is participating in an observational clinical study to help determine whether bariatric surgery is an appropriate treatment option for extremely overweight teens. A man is enrolled in a clinical trial that tested the impact of anti-clotting reagents in preventing early failure in "vascular access," which is required for dialysis.

The NIDDK continues its efforts to ensure that knowledge gained from its major research advances is disseminated to health care providers, patients, and the general public. Such efforts include the Institute's educational programs, such as the National Diabetes Education Program and the National Kidney Disease Education Program. The

Weight-control Information Network, the National Diabetes Information Clearinghouse, the National Digestive Diseases Information Clearinghouse, and the National Kidney and Urologic Diseases Information Clearinghouse develop and distribute science-based information on diseases and disorders within the NIDDK mission. Several hundred brochures, fact sheets, and publications are available in printed copy and on the NIDDK website so that they are readily available for patients, health care providers, and the public. I invite you to visit the website at: www.niddk.nih.gov

This compendium reflects only a fraction of the immense body of work performed by basic scientists, clinical researchers, and patient volunteers. We remain committed to translating their efforts into improvements in the health and quality of life of all people.



Griffin P. Rodgers, M.D., M.A.C.P.

Director

National Institute of Diabetes and Digestive and Kidney Diseases

National Institutes of Health

Department of Health and Human Services

The materials featured in this publication reflect the core mission of the NIDDK, including the Director's following guiding principles:

- Maintain a vigorous investigator-initiated research portfolio;
- Support pivotal clinical studies and trials;
- Preserve a stable pool of talented new investigators;
- Foster exceptional research training and mentoring opportunities; and
- Ensure knowledge dissemination through outreach and communications.