

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 report highlighting the research efforts and programs supported by the Institute. The NIDDK has a broad research responsibility that includes some of the most common, debilitating, and costly conditions affecting Americans. These conditions include diabetes and other endocrine and metabolic diseases; liver disease and other digestive diseases and conditions, such as inflammatory bowel disease and irritable bowel syndrome;

nutritional disorders and obesity; kidney diseases, such as polycystic kidney disease; urologic diseases and conditions, such as interstitial cystitis/bladder pain syndrome and prostatitis; and hematologic diseases.

The 18th edition of this report illustrates recent NIDDK-supported scientific advances, such as:

- The discovery that youth with type 2 diabetes develop complications more often than peers with type 1 diabetes
- Identification of a critical role for an enzyme in the complex genetic disorder Prader-Willi Syndrome
- The development of a personalized medicine treatment plan following the discovery of a rare genetic mutation that causes a blood disease
- The finding that infection with a common virus, called a reovirus, may trigger celiac disease in people who are genetically susceptible to developing the disorder
- Optimizing screening schedules for an eye disease, retinopathy, in people with type 1 diabetes
- Insights into the kidney's role in salt and water balance and blood pressure regulation
- Multiple revelations from the first U.S.-based, long-term, observational study of gastric bypass in adults, including durability of weight loss and a reduction, by more than 90 percent, of new-onset type 2 diabetes
- The discovery that accumulation of a type of immune cell in the brain causes an inflammatory response that can lead to excess food intake and obesity in mice
- New insights into prediction and patterns of pain that could help pave the way to personalized care for people with urologic chronic pelvic pain syndromes

- Improved understanding of the potentially life-threatening outcomes from drug-induced liver injury and which racial/ethnic groups are at risk of suffering worse outcomes
- The development of a new method for calculating the average rate at which a single kidney nephron can filter blood—an important measure of kidney health
- Innovations in testing for a rare genetic disorder, Pompe Disease

In addition to reporting on recent advances, this publication traces the multi-step path to research achievements through three “Stories of Discovery.” These essays illustrate how major new discoveries that have greatly advanced biomedical science and are benefitting human health often emerge from many incremental insights gained from research investments spanning many years and even multiple research disciplines.

This report also includes personal stories of those who have given time and effort to participate in NIDDK-sponsored clinical research or whose lives have been transformed by biomedical research. A teenager at high risk of developing type 1 diabetes describes her passion for participating in a clinical trial to test a strategy for stopping the disease progression at its earliest stage. An educator with type 2 diabetes gives an account of her longstanding participation in the largest, most diverse study of diabetes among U.S. youth ever conducted. A man shares his decade-long struggle with urinary urgency and describes his subsequent participation in a clinical trial to help researchers advance understanding of lower urinary tract dysfunction. A woman tells her story of living with debilitating gastroparesis, and how participating in a national gastroparesis registry gives her hope for the future.

The NIDDK continues efforts to ensure that knowledge gained from its research is disseminated to health care providers, patients, and the public. We develop science-based information on diseases and disorders within the NIDDK mission and distribute it through our information and education programs and our website. I invite you to visit us at www.niddk.nih.gov Health information, news, and scientific advances related to NIDDK research are also available on our Twitter feed: [@NIDDKgov](https://twitter.com/NIDDKgov)

The efforts featured in this publication reflect the core mission of the NIDDK, including the Director’s 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
- Ensure knowledge dissemination through outreach and communications

More information on how the NIDDK’s activities support these core values can be found in the “NIDDK Funding Trends and Support of Core Values” section at the end of this report and on our website at www.niddk.nih.gov

This report reflects only a fraction of the immense body of NIDDK-funded research across the country, performed by basic scientists, clinical investigators, and patient volunteers. Moving forward, we remain committed to supporting these important areas of research and translating scientific discoveries 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

U.S. Department of Health and Human Services