

# 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, such as cystic fibrosis; 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 16th edition of this report illustrates recent NIDDK-supported scientific advances, such as:

- Finding that early and intensive blood glucose control can result in better eye health and longer life for people with type 1 diabetes
- Identification of a group of fatty acids that improves blood glucose control and reduces inflammation in mice, with implications for treating or preventing type 2 diabetes
- Demonstration that a noninvasive technique for imaging small nerves in the eye appears to be just as effective as a skin biopsy at detecting evidence of diabetic nerve damage, a result that could have clinical implications
- Results showing modest improvements in breathing and resistance to infection using a two-drug approach for treating the underlying cause of cystic fibrosis, providing a new therapy for people with the most common disease-causing genetic mutation
- Finding that overweight or obese preschoolers participating in Head Start programs were more likely to reach healthier weights by kindergarten age than other groups of overweight and obese children
- New research in mice showing that restricting eating to a shorter period of the day might confer metabolic benefits or allow weight loss without reducing caloric intake, eating a rigid diet, or taking weight-loss medications
- Discovery that human genetic factors shape the composition of the gut microbial community and that some gut microbes may in turn affect the metabolism of their human “hosts,” knowledge that could inform future health-promoting interventions

- Identification of viruses in the gut that are part of the “microbiome” and linked to inflammatory bowel disease, which could pave the way to new prevention or treatment approaches
- Discovery that an over-the-counter drug indicated for treating allergy symptoms limited hepatitis C virus activity in infected mice, opening up possibilities for a low-cost therapy
- Results showing that using two drugs to treat high blood pressure in people with autosomal dominant polycystic kidney disease is no more effective than using a single drug, and that decreasing blood pressure below usual targets slowed growth of kidney cysts but had little effect on kidney function
- Insights into how bacteria such as *E. coli* use different yet critical processes to survive and promote urinary tract infections in people, which could have therapeutic implications
- New understanding of how the hematopoietic (blood) stem cell microenvironment promotes the survival and function of these cells, with implications for bone marrow or other transplant procedures

In addition to reporting on recent advances, this publication traces the multi-step path to research achievements through several “Stories of Discovery” and “Scientific Presentations.” 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 woman enthusiastically shares her experience of participating in a clinical trial focused on the risks and benefits of bariatric surgery for persons with mild obesity and type 2 diabetes. A teenager and her family share their story of how research advances and a correct diagnosis dramatically reduced the burden of treatment for her rare—and often misdiagnosed—form of diabetes. Another girl and her family share the story of her journey from incapacitating abdominal pain to an active teenage life following a surgical procedure to treat chronic inflammation of the pancreas. A man with a kidney stone describes his participation in a clinical trial testing whether a drug could help stones pass more quickly and/or with less pain.

The NIDDK is continuing efforts to ensure that knowledge gained from its research

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](http://www.niddk.nih.gov)

advances is disseminated to health care providers, patients, and the general public. Such efforts include the Institute's education programs: the National Diabetes Education Program and the National Kidney Disease Education Program. Additionally, 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 to patients, health care providers, and the public both in printed format and on the NIDDK website. I invite you to visit us at [www.niddk.nih.gov](http://www.niddk.nih.gov) Health information, news, and scientific advances related to NIDDK research are also available on our new Twitter feed: [@NIDDKgov](https://twitter.com/NIDDKgov)

This report reflects only a fraction of the immense body of NIDDK-funded research 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.



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