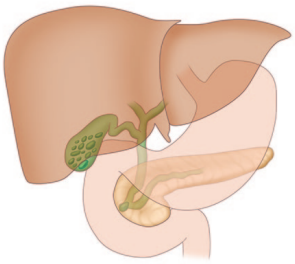
News and Resources from the National Institutes of Health

Digestive Diseases
NEWS
National Digestive Diseases Information Clearinghouse
Summer 2011

NIDDK-funded Scientists Develop Acute Pancreatitis Mouse Model

Scientists at the University of Iowa have developed a mouse model to study acute pancreatitis. The model, which involves pancreatic duct ligation, is the first to closely mimic human gallstone-induced pancreatitis, which is the most common cause of acute pancreatitis in the United States after alcoholism.



Gallstone impaction of ampulla of Vater with stones in the gallbladder

"Acute pancreatitis lacks effective treatment options," said Isaac Samuel, M.D., associate professor at the University of Iowa's Carver College of Medicine, who guided development of the model. "To find a drug, you need a target. And to find a target, you need a model," he said. The model is described in the October 26, 2010, issue of *Pancreatology*.

Gallstones trigger almost half of the approximately 200,000 acute pancreatitis cases that occur annually in the United States. Gallstones form in the gallbladder, a saclike structure that stores fat-digesting bile made by the liver.

Most gallstones pass out of the body unnoticed, but some become lodged in the common bile duct, causing jaundice. The common bile duct is a tubelike structure that carries bile from the gallbladder to the small intestine. The common bile duct and the pancreatic duct, which carries pancreatic juice made in the pancreas, converge to form a common channel before meeting the small intestine. A frequent site of gallstone impaction is the ampulla of Vater, where the common channel meets the small intestine. Blockage of the common channel by a gallstone can induce acute pancreatitis. Bile and pancreatic juice backing up in the ducts affects not only the pancreas and liver but also causes a systemic inflammatory response, affecting multiple organs including the kidneys and lungs.

Most patients with acute pancreatitis arrive at the hospital within 48 hours of symptom onset with severe upper abdominal pain, nausea, and vomiting. "Often by this time, the gallstone has already passed," said Samuel. Systemic

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NIDDK
National Institute of Diabetes and Digestive and Kidney Diseases

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inflammation may persist and progress, however, with risk of serious complications including organ failure and even death.

"Unfortunately, modern-day treatment is just supportive. There is no specific treatment because the pathogenesis is unknown," said Samuel. "Until we define the pathogenesis, we cannot find a therapeutic target."

Average hospital stays for acute pancreatitis last 5 to 14 days, according to The Society for Surgery of the Alimentary Tract. Gallstones that fail to pass on their own must be surgically removed by gallbladder removal once the patient's condition has stabilized.

New Model

Samuel and colleagues produced a mouse version of acute pancreatitis by ligating, or tying, the small and difficult-to-find pancreatic duct in mice. That Samuel is a gastric surgeon helped, as did use of larger-than-average mice.

Signs of acute pancreatitis were evident in samples taken an hour after ligation. Compared with shams—mice that underwent similar surgeries but whose ducts were not ligated—pancreatic duct-ligated (PD) mice had higher blood levels of aspartate transaminase, a sign of liver inflammation. Tumor necrosis factor-α and interleukin-1β, both signs of systemic inflammation, were higher in blood samples taken 24 hours after ligation. And elevated creatinine levels, a sign of kidney injury, were observed in blood samples taken 48 hours after ligation.

Within 4 days of surgery, all PD mice had died. Examination of lung tissue showed an infiltration of neutrophils—immune cells whose presence indicates an inflammatory response. Analysis of liver and kidney tissue also showed neutrophilic infiltration and signs of hemorrhage and necrosis.

For comparison, the researchers included a group of bile duct-ligated (BD) mice. Although mice in this group had their bile ducts ligated, pancreatic juice flowed normally through the common channel to the small intestine. Compared with BD mice, PD mice experienced greater lung dysfunction and mortality, a phenomenon of particular clinical relevance, according to Samuel and co-authors, who stated in their report that "acute lung injury is the major determinant of morbidity and mortality in human acute pancreatitis of any cause."

Existing acute pancreatitis animal models of pancreatic duct obstruction have failed to parallel human disease, while models that resemble severe human pancreatitis—such as special diets—are induced by methods that do not cause pancreatitis in humans.

"The finding of multiple organ dysfunction and mortality in the mouse was a big surprise," said Samuel. Most models use rats because the ducts are much easier to find. "The fact that the pancreas community overlooked the mouse pancreatic duct ligation model as a suitable acute pancreatitis model really astonished me. Everyone assumed that mice would behave like the rat: you get mild inflammation and that's all."

"The fact that the pancreas community overlooked the mouse pancreatic duct ligation model as a suitable acute pancreatitis model really astonished me. Everyone assumed that mice would behave like the rat: you get mild inflammation and that's all."

Isaac Samuel, M.D.
Associate Professor, Carver College of Medicine, University of Iowa

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Digital Diseases
NEWS

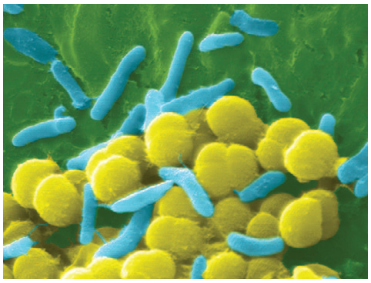
Digestive Diseases News, an email newsletter, is sent to subscribers by the National Digestive Diseases Information Clearinghouse (NDDIC). The newsletter features news about digestive diseases, special events, patient and professional meetings, and new publications available from the NDDIC and other organizations.

You can read or download a PDF version or subscribe to the newsletter at *www.digestive.niddk.nih.gov/about/newsletter.aspx*.

Executive Editor: Stephen P. James, M.D.

Dr. James is the director of the Division of Digestive Diseases and Nutrition within the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). As director, Dr. James oversees planning, implementation, and evaluation of a national research effort focused on gastrointestinal, pancreatic, hepatobiliary, and nutrition diseases and conditions. Before joining the NIDDK in 2001, Dr. James directed the division of gastroenterology at the University of Maryland's School of Medicine for 10 years.

Intestinal Alkaline Phosphatase Helps Balance Intestinal Bacteria



Intestinal alkaline phosphatase (IAP), an enzyme found among cells that line the gastrointestinal (GI) tract, helps balance intestinal bacteria, according to research funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The research helps explain how the body allows beneficial bacteria to flourish in the intestines while limiting the proliferation of harmful bacteria. The finding also provides clues to understanding and treating conditions linked to disturbances in intestinal ecology, such as *Clostridium difficile (C. difficile)*-associated disease.

"Orally administered IAP might be an effective treatment for bacterial pathogenesis as well as a variety of disease conditions associated with dysregulated intestinal microbiota."

Richard A. Hodin, M.D.
Surgical Director, Crohn's and Colitis Center, Massachusetts General Hospital, and co-authors

The researchers studied the quantity and diversity of bacteria in the stools of normal mice, called wild-type (WT), and mice genetically altered so they are unable to produce IAP, called IAP-knockout (IAP-KO) mice.

"IAP-KO mice had dramatically fewer and also different types of aerobic and anaerobic microbes in their stool compared with WT mice," wrote Richard A. Hodin, M.D., surgical director of the Massachusetts General Hospital's Crohn's and Colitis Center, and co-authors in their report, which appeared in the November 2010 issue of *Gut*.

Scientists increasingly recognize the important role the millions of microorganisms living in and on the human body play in maintaining health. Collectively known as the microbiota, these "bugs" liberate nutrients from food, fend off pathogenic microorganisms, and help regulate metabolism.

IAP was discovered more than 50 years ago. Its role in fat metabolism is well documented; however, during the past decade, IAP has also been recognized for its role in maintaining the gut mucosa—the epithelial cell barrier that lines the GI tract—according to Hodin and co-authors. Hodin is currently funded by the NIDDK to delineate the mechanisms that govern IAP gene regulation to better characterize the dynamic physiological role this enzyme plays in metabolism and immune defense.

The researchers also found that feeding mice IAP helps restore healthy intestinal bacteria and fends off bacterial pathogens. The scientists gave two groups of WT mice the antibiotic streptomycin for 3 days to disrupt the normal intestinal microbiota. One group was also given supplemental IAP purified from calves (cIAP). *Escherichia coli* bacteria returned to cIAP-fed mice about 2 days earlier than mice that were not fed cIAP. Four days after discontinuation of antibiotic treatment, the mice were infected with pathogenic *Salmonella* bacteria. Whereas 70 percent of cIAP-fed mice survived infection, only 20 percent of mice that were not fed cIAP survived.

"It is well known that enteric pathogenic bacteria compete with the endogenous microbiota and that enteric infections are more common in settings where the normal intestinal microbiota is lost or disrupted," wrote Hodin and co-authors. IAP, through a yet unknown mechanism, somehow preserves the normal gut microbiota.

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Pancreatitis Mouse Model, continued from page 2

New Information

The model has already yielded new information about the pathogenesis of acute pancreatitis. Using their model, Samuel and colleagues observed activation of the extracellular regulated kinase (ERK) within 1 hour of pancreatic duct ligation. ERK is a mitogen-activated protein kinase that stimulates proinflammatory cytokines—biochemical messengers that stimulate the immune system. Proinflammatory cytokines help fend off infection but when expressed at high levels can lead to organ dysfunction.

Data presented by Zuobiao Yuan, M.D., Ph.D., a postdoctoral investigator in Samuel's laboratory, at the May 18–21, 2011, American Society of Gene & Cell Therapy's Annual Meeting, showed that modulation of ERK through an adeno-associated virus in PD mice significantly reduced mortality. The finding, according to Samuel, is strong experimental evidence of a distinct role for ERK in the early phase of acute gallstone pancreatitis.

These discoveries, said Samuel, highlight the important role animal models play in facilitating the testing of diagnostic, preventive, and therapeutic interventions.

The research was funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Additional research support was provided by the Veterans Health Administration and the American Recovery and Reinvestment Act of 2009.

The National Digestive Diseases Information Clearinghouse, an information service of the NIDDK, has free fact sheets and easy-to-read booklets about pancreatitis. For more information or to obtain copies, visit *www.digestive.niddk.nih.gov.* ■

Intestinal Alkaline Phosphatase, continued from page 3

Age, immune status, pH of the GI tract, the presence of antimicrobial peptides, and other external factors are known to influence the intestinal microbiota; however, "no specific endogenous factor has been identified that functions either directly or indirectly to preserve the normal homeostatic number and composition of the intestinal microbiota," wrote Hodin and co-authors. The researchers speculated that IAP favors the growth of good bacteria through an indirect mechanism that affects pH of the GI tract, inflammation, immunity, or other factors. The resulting increase in good bacteria thereby limits the availability of nutrients and anchorage sites for pathogenic bacteria.

Work by Hodin's group and others suggests IAP has the potential to treat a number of conditions associated with the disruption of GI bacteria. For example, *C. difficile*-associated disease, which causes severe colitis, results when antibiotics wipe out good bacteria and allow pathogenic *Clostridia* bacteria to flourish.

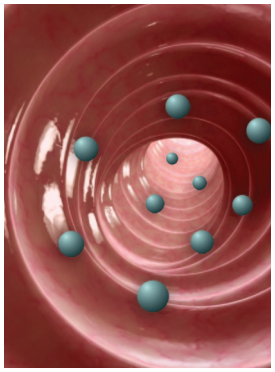
"Orally administered IAP might be an effective treatment for bacterial pathogenesis as well as a variety of disease conditions associated with dysregulated intestinal microbiota," wrote the researchers. Other conditions associated with dysregulated intestinal microbiota include inflammatory bowel disease (IBD), AIDS, and obesity.

The report proposed several ideas for future exploration of IAP's role in balancing the gut microbiota, including studies to determine how the pH of the intestinal epithelial cell microenvironment—the space immediately adjacent to cells—affects IAP expression. Also helpful would be an investigation of the effect IAP supplementation has on gut bacterial populations in IBD mouse models.

The National Digestive Diseases Information Clearinghouse, an information service of the NIDDK, has free fact sheets and easy-to-read booklets about digestive diseases. For more information or to obtain copies, visit *www.digestive.niddk.nih.gov.* ■

Nanoparticles Deliver IBD Treatment Straight to the Gut

Scientists funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) have potentially developed a safer, more effective, and more convenient way to treat inflammatory bowel disease (IBD), a group of conditions that causes painful ulcers of the gastrointestinal (GI) tract. In experiments with mice, thioketal nanoparticles (TKNs) specifically targeted inflamed tissues of the GI tract while protecting their therapeutic payload from digestion. When coated with TKNs, anti-tumor necrosis factor-α (TNF-α) small interfering RNA (siRNA) effectively protected mice from dextran sodium sulfate (DSS)-induced colitis.



"On the basis of our results, we expect that TKNs will make a significant contribution to the treatment of numerous gastrointestinal diseases linked to intestinal inflammation, including GI cancers, inflammatory bowel diseases, and viral infections."

Niren Murthy, Ph.D.
Wallace H. Coulter Department of Biomedical Engineering, Georgia Tech, and co-authors

"Using a murine model of ulcerative colitis, we demonstrate that orally administered TKNs loaded with siRNA against the proinflammatory cytokine TNF-α diminish TNF-α messenger RNA levels in the colon and protect mice from ulcerative colitis," wrote Niren Murthy, Ph.D., of Georgia Tech's Wallace H. Coulter Department of Biomedical Engineering, and co-authors in the November 2010 issue of *Nature Materials*.

Crohn's disease and ulcerative colitis are the two major forms of IBD. Both are caused by the body's own immune cells attacking the intestinal epithelium. Whereas Crohn's disease affects any part of the GI tract, ulcerative colitis usually only affects the large intestine. Both conditions can cause chronic, painful, and sometimes bloody diarrhea. About 1.4 million Americans have Crohn's disease or ulcerative colitis.

The anti-TNF-α biologics infliximab (Remicade) and adalimumab (Humira) consist of antibody proteins that bind and halt the action of the proinflammatory cytokine TNF-α. Inflammatory cytokines are biochemical messengers made by the body that mediate the immune response to infection. In people with IBD, halting TNF-α interrupts the inflammatory pathway that leads to intestinal ulcers.

Anti-TNF-α biologics have dramatically improved the lives of many people with IBD but are unstable in the GI tract and, therefore, must be administered intravenously or by subcutaneous injection. More than painful and inconvenient, intravenous and subcutaneous administration means systemic exposure to these potent biologics, increasing the risk of serious side effects.

The therapeutic strategy developed by Murthy and co-authors takes advantage of a relatively new technology called siRNA to decrease TNF-α production. siRNA bind cells' RNA, the biochemical intermediary between DNA and functional proteins, to suppress gene function. TNF-α siRNA specifically target TNF-α RNA, preventing TNF-α protein production and thus interrupting the inflammatory pathway that leads to intestinal ulcers. Like protein-based anti-TNF-α biologics, siRNA also breaks down in the GI system. However, because of its smaller size, siRNA is easier to coat with nanoparticles.

The researchers developed TKNs, polymers composed of thioketal linkages, to protect TNF-α siRNA and specifically target inflamed intestinal tissues. Thioketal linkages are resistant to the digestive enzymes and the acidic environment of the GI tract; however, they degrade when exposed to reactive oxygen species (ROS), a substance released by inflamed tissues. "At sites of intestinal inflammation, the elevated ROS levels trigger the degradation of the TNF-α TKNs, thus localizing the release of siRNA to inflamed intestinal tissues," wrote Murthy and co-authors.

IBD Treatment,
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Placebos Effectively Treat IBS Symptoms

A number of studies have shown improvements in irritable bowel syndrome (IBS) symptoms in response to placebo treatments. According to a recent study funded in part by the National Institutes of Health's National Center for Complementary and Alternative Medicine (NCCAM), placebos improved symptoms of IBS, even when study participants knew they were taking placebos—essentially sugar pills with no active ingredient.

"Further research is warranted in IBS and perhaps other illnesses to confirm that placebo treatments can be beneficial when provided openly and to determine the best methods for administering such treatments."

Ted J. Kaptchuk, O.M.D.
Associate Professor of Medicine, Beth Israel Deaconess Medical Center, and co-authors

IBS is characterized by abdominal pain, bloating, constipation, and diarrhea. The disorder causes gastrointestinal (GI) discomfort and distress but is not linked to other GI problems, such as cancer and inflammatory bowel disease.

In the past, scientists had generally attributed beneficial responses to placebos to the fact that patients did not know if they were receiving a placebo or an active treatment. Despite the recognition of possible benefit, the use of a placebo without a patient's knowledge poses an ethical problem for most clinicians. The new study examined the use of a placebo pill, given with the patients' knowledge, compared with no treatment in relieving symptoms of IBS.

Researchers followed 80 adults with IBS for 3 weeks. Participants were randomly assigned to receive either placebo pills or no treatment. The participants in the placebo group were informed that "placebo pills, made of an inert substance, like sugar pills, have been shown in clinical studies to produce significant improvement in IBS symptoms through mind-body healing processes."

The researchers assessed the participants at the midpoint and at the end of the study with a brief physical examination and patient questionnaires that measured symptom improvement. The researchers found that the participants in the placebo group had significantly better scores in global improvement, severity of symptoms, and adequate relief than the no-treatment group at both the midpoint and the end of the study. In addition, the placebo group had a trend toward improvement in quality of life.

Based on these findings, the researchers suggested that placebo treatments, when administered without concealment and with a plausible rationale of their potential effects, may produce beneficial responses in patients.

"Further research is warranted in IBS and perhaps other illnesses to confirm that placebo treatments can be beneficial when provided openly and to determine the best methods for administering such treatments," wrote Ted J. Kaptchuk, O.M.D., associate professor of medicine, Beth Israel Deaconess Medical Center, and co-authors in their report, which appeared in the December 2010 issue of *PLoS One*.

For more information about complementary and alternative medicine, visit the NCCAM website at *www.nccam.nih.gov*.

For more information about clinical trials involving the use of placebos to treat IBS, search for NCT01010191 at *www.ClinicalTrials.gov*.

The National Digestive Diseases Information Clearinghouse, an information service of the National Institute of Diabetes and Digestive and Kidney Diseases, has free fact sheets and easy-to-read booklets about IBS. For more information or to obtain copies, visit *www.digestive.niddk.nih.gov*. ■

Magnetic Resonance Elastography May Alleviate the Need for Invasive Liver Biopsies

Investigators at the Mayo Clinic in Rochester, MN, have developed magnetic resonance (MR) elastography as an alternative to liver biopsies to noninvasively measure fibrosis, or stiffness, of the liver and other internal organs.

MR elastography is based on magnetic resonance imaging (MRI), a noninvasive technique that uses radio waves and magnets to create images of internal organs and tissues. Development of MR elastography was led by Richard L. Ehman, M.D., and funded by the National Institutes of Health (NIH). MR elastography offers patients multiple advantages over biopsy examination, including less discomfort, a much lower risk of complications, and lower cost.

Nearly 200,000 Americans are hospitalized each year for chronic liver disease. Typically, a biopsy is used to diagnose and evaluate the liver for signs of fibrosis. For a biopsy, the doctor uses a needle to take a tiny sample of liver tissue and then examines it with a microscope for scarring or other signs of disease.

According to Ehman, MR elastography has already made a substantial difference in patient care. Ehman gave the example of a hemophilia patient who previously contracted hepatitis C from a blood transfusion. Liver biopsy was not an option due to the risk of hemorrhage. Instead, MR elastography was used to assess the presence of hepatitis-associated fibrosis. In this case, results indicated fibrosis and the individual soon began antiviral therapy.

Research suggests MR elastography could also be used to improve breast cancer detection by helping to distinguish benign masses from fibrocystic disease from cancerous masses.

The National Digestive Diseases Information Clearinghouse, an information service of the National Institute of Diabetes and Digestive and Kidney Diseases, has free fact sheets and easy-to-read booklets about liver diseases and liver biopsy. For more information or to obtain copies, visit *www.digestive.niddk.nih.gov.* ■

IBD Treatment, continued from page 5

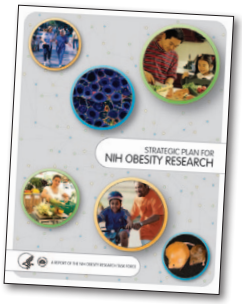
When coated with TKNs, TNF-α siRNA effectively protected mice from DSS-induced colitis. Mice given DSS for 7 days developed bowel ulcers similar to ulcers seen in people with IBD. However, mice given TNF-α TKNs alongside DSS were free of ulcers, had normal-looking intestinal epitheliums, and were significantly heavier compared with controls. Intestinal tissues from mice that received TNF-α TKNs also had lower levels of myeloperoxidase, a proinflammatory enzyme released by immune cells.

"On the basis of our results, we expect that TKNs will make a significant contribution to the treatment of numerous gastrointestinal diseases linked to intestinal inflammation, including GI cancers, inflammatory bowel diseases, and viral infections," wrote Murthy and co-authors.

The National Digestive Diseases Information Clearinghouse, an information service of the NIDDK, has free fact sheets and easy-to-read booklets about IBD. For more information or to obtain copies, visit *www.digestive.niddk.nih.gov.*

For more information about nanotechnology, visit *www.nih.gov/science/nanotechnology.* ■

Strategic Plan for NIH Obesity Research Seeks to Curb Epidemic



In March 2011, the National Institutes of Health (NIH) released the comprehensive *Strategic Plan for NIH Obesity Research.* The plan was assembled by health care professionals, researchers, and the public to combat the obesity epidemic. More than one-third of U.S. adults and nearly 17 percent of U.S. children are obese. Obesity increases health risks such as type 2 diabetes, heart disease, high blood pressure, fatty liver disease, and cancer.

"Obesity has many causes and contributing factors. This plan is a bold blueprint that will encourage the research community to examine the epidemic of obesity from diverse perspectives," said NIH Director Francis S. Collins, M.D., Ph.D. "Through the scientific opportunities outlined in the strategic plan, researchers can work together toward the goals of preventing and treating obesity, to help people lead healthier and more fulfilling lives."

The plan recognizes that eating less and exercising more is easier said than done. Highlighting the crucial role of research in efforts to reduce obesity, the plan emphasizes using education and outreach to move proven research strategies from the laboratory into clinical trials and ultimately into practical solutions for community programs and medical practice. Recommendations include

- discovering the key processes that regulate body weight and influence behavior
- understanding the factors that contribute to obesity and its consequences
- designing and testing new approaches for achieving and maintaining a healthy weight
- evaluating promising strategies to prevent and treat obesity in real-world settings and diverse populations
- using technology to advance obesity research and improve health care delivery

The *Strategic Plan for NIH Obesity Research* was developed by the NIH Obesity Research Task Force, which is co-chaired by Griffin P. Rodgers, M.D., M.A.C.P., director of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); Susan B. Shurin, M.D., acting director of the National Heart, Lung, and Blood Institute; and Alan E. Guttmacher, M.D., director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development.

Though there is no funding directly tied to the plan, NIH funds research to better understand the causes and consequences of obesity and to develop and test new prevention and treatment strategies, an investment of $824 million in fiscal year 2010, plus awards totaling $147 million made in the same year through the American Recovery and Reinvestment Act of 2009.

To order or download the *Strategic Plan for NIH Obesity Research* or the 8-page nontechnical summary, visit *www.obesityresearch.nih.gov.*

The NIH offers free tools, tips, and resources to help people achieve or maintain a healthy weight through the NIDDK Weight-control Information Network. For more information visit *www.win.niddk.nih.gov.* ■

NIH Launches Bowel Control Awareness Campaign for Health Care Professionals and the Public

On June 1, 2011, the National Institutes of Health (NIH) launched the Bowel Control Awareness Campaign to raise awareness of bowel control problems, also known as fecal incontinence. A bowel control problem is a mild to severe inability to control bowel movements. The Awareness Campaign stems from the recommendations of an independent panel of experts convened by the NIH to assess the current prevalence, risk factors, diagnosis, treatment, and management of the condition.

NIDDK Bowel Control Awareness Campaign materials

"People experiencing bowel control problems need to know they are not alone and that the condition can be managed. The Bowel Control Awareness Campaign will inform health care professionals and the public that bowel incontinence is a common condition and that effective treatments are available."

Stephen P. James, M.D.
Director, Division of Digestive Diseases and Nutrition, NIDDK

"Our findings indicate that fecal incontinence is a significant public health burden in the U.S.—affecting close to 10 percent of the adult population over 40 years old," said Griffin P. Rodgers, M.D., M.A.C.P., director of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the NIH Institute leading the effort. "The Bowel Control Awareness Campaign's main objective is raising public awareness of fecal incontinence to aid in prevention of incontinence and to improve the lives of men and women living with the condition."

Bowel control problems affect an estimated 18 million U.S. adults—one out of 12 people. People with bowel control problems are often reluctant to discuss the condition with their doctor. The embarrassment associated with fecal incontinence can have a crippling effect on quality of life for millions, and the condition is believed to be widely underdiagnosed.

Developed by the NIDDK, along with professional and voluntary organizations, the Awareness Campaign offers materials and resources about the symptoms, diagnosis, treatment, and management of bowel control problems for patients and health care professionals. Available through the Awareness Campaign's "Let's Talk about Bowel Control" website are publications such as a fecal incontinence fact sheet, an easy-to-read bowel control booklet, and a health fair flyer; NIH bowel control research information; and links to professional and voluntary organizations.

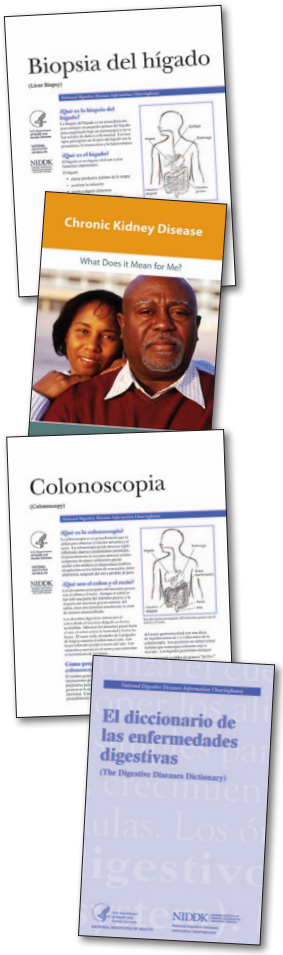
"The lack of communication between health care professionals and patients appears to be one of the main challenges with bowel control problems. Being able to talk about the problem is the first step in both prevention and treatment," said Stephen P. James, M.D., director of the Division of Digestive Diseases and Nutrition at the NIDDK. "People experiencing bowel control problems need to know they are not alone and that the condition can be managed. The Bowel Control Awareness Campaign will inform health care professionals and the public that bowel incontinence is a common condition and that effective treatments are available."

For more information about the Bowel Control Awareness Campaign, or to download any of the campaign materials, visit the website at *www.bowelcontrol.nih.gov.*

For health information about digestive diseases, visit the National Digestive Diseases Information Clearinghouse, part of the NIDDK, at *www.digestive.niddk.nih.gov.* ■

NIDDK Health Information Resources Win NIH Plain Language/Clear Communication Awards

Six health information resources produced by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) won 2010–2011 National Institutes of Health (NIH) Plain Language and Clear Communication awards. The annual awards program, now in its 11th year, honors communication products that help the NIH reach all Americans with health information they can use and research results they can easily understand.



2010–2011 NIDDK NIH Plain Language/Clear Communication Award winners:

Biopsia del higado (Liver Biopsy), produced by the National Digestive Diseases Information Clearinghouse (NDDIC), is a Spanish-language fact sheet that provides general information about liver biopsy: the purpose of the test, how to prepare for it, and what to expect during and after the procedure. The fact sheet is also available in English. To view, download, or order the fact sheet, visit the NDDIC website at *www.digestive.niddk.nih.gov.*

Chronic Kidney Disease: What Does it Mean for Me?, produced by the National Kidney Education Program (NKDEP), is a full-color brochure designed to help recently diagnosed patients understand chronic kidney disease. View, download, or order the brochure at the NKDEP's website, *www.nkdep.nih.gov/resources/CKD_Basics_brochure.htm.*

Colonoscopia (Colonoscopy), produced by the NDDIC, is a Spanish-language fact sheet that provides general information about colonoscopy: the purpose of the test, how to prepare for it, and what to expect during and after the procedure. The fact sheet is also available in English. To view, download, or order the fact sheet, visit the NDDIC website at *www.digestive.niddk.nih.gov.*

El diccionario de las enfermedades digestivas (The Digestive Diseases Dictionary), produced by the NDDIC, is a Spanish-language booklet that defines more than 400 terms and includes illustrations. The booklet is also available in English. To view, download, or order the booklet, visit the NDDIC website at *www.digestive.niddk.nih.gov.*

Healthy Moments is a weekly radio report series from NIDDK Director Griffin P. Rodgers, M.D., M.A.C.P. The series, broadcast online and on radio, provides health tips about how to prevent and control diseases that fall within the NIDDK's purview. For more information and to listen to new and archived reports, visit *www2.niddk.nih.gov/HealthEducation/HealthyMoments.*

The National Diabetes Education Program's (NDEP's) Managing Your Diabetes campaign materials, based on health messaging research and focus groups, reinforce the seriousness of diabetes and the importance of managing diabetes as early as possible. The materials, including posters and public service announcements, were developed for NDEP partners and media outlets and feature people living with diabetes. Visit the NDEP website for more information about the campaign and to access campaign materials at *www.ndep.nih.gov.*

The NDEP's Managing Your Diabetes podcasts series features real people living with diabetes and shares their personal stories about how they manage their diabetes every day. Visit the NDEP website for more information and to access the podcasts at *www.ndep.nih.gov.*

Information about the NIH Plain Language/Clear Communication Awards program and a complete list of winners is available at *www.nih.gov/clearcommunication/plainlanguage.htm.* ■

2011 Edition of NIDDK's Annual Scientific Report Now Available

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) annual scientific report, *NIDDK Recent Advances & Emerging Opportunities,* is now available. This report highlights examples of NIDDK-supported research advances published in fiscal year 2010. The report includes "Stories of Discovery," which traces research progress in specific areas over a longer time frame, and profiles of patients who are benefiting from NIDDK-supported clinical research. This year's report also contains a special section highlighting the NIDDK's 60th anniversary activities, as well as a feature about the 2010 Albert Lasker Basic Medical Research Award winners—current and former NIDDK grantees Jeffrey Friedman, M.D., Ph.D., and Douglas Coleman, Ph.D.

To read the report online, visit *www2.niddk.nih.gov/AboutNIDDK/ResearchAndPlanning/Advances/FY2011.* To request a copy, fill out the form at *www.catalog.niddk.nih.gov/ContactUs.cfm,* call 1–800–860–8747, or write to the NIDDK Clearinghouses Publications Catalog, 5 Information Way, Bethesda, MD 20892–3568.

The NIDDK has health information, including easy-to-read booklets and fact sheets. For more information or to obtain copies, visit *www.niddk.nih.gov.* ■

NIDDK Staff Update

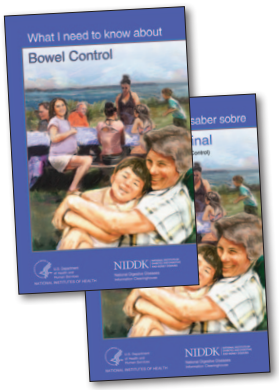
Padma Maruvada, Ph.D., joined the Division of Digestive Diseases and Nutrition as the new director of the Nutrition and Clinical Obesity Program. Maruvada served as the program officer in the National Center for Research Resources for the Institutional Development Awards Program, where she managed a multidisciplinary research portfolio. She also served as program director in the National Cancer Institute's Division of Cancer Prevention. Maruvada trained in the National Institute of Diabetes and Digestive and Kidney Diseases' intramural research program. ■

In Memoriam

Vanessa Z. Ameen, M.D., a senior scientific advisor within the Division of Digestive Diseases and Nutrition, died in February 2011. Specializing in pediatrics and gastroenterology, Ameen was recruited to the National Institutes of Health (NIH) from private industry, where she served as medical director to several pharmaceutical manufacturers. Ameen was previously an assistant professor of pediatrics at Temple University, and she taught at Indiana University and the Medical College of Wisconsin. Ameen served as science officer for the Patient-Reported Outcomes Measurement Information System (PROMIS), a network of NIH-funded facilities working to develop better measures for patient symptom-based outcomes. ■

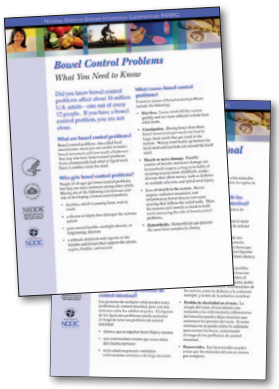
New Publications

Bowel Control



In support of the Bowel Control Awareness Campaign, a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the National Digestive Diseases Information Clearinghouse (NDDIC) has released two new publications about bowel control problems.

What I need to know about Bowel Control is a 28-page, easy-to-read booklet that defines bowel control problems and explains how normal bowel control works. The booklet provides helpful tips for talking with health care providers and coping with bowel control problems. The booklet is available in English and Spanish.



Bowel Control Problems: What You Need to Know, part of the NIDDK Awareness and Prevention Series, provides a brief overview of the causes, diagnosis, and treatment of bowel control problems. The 4-page, printed fact sheet includes English and Spanish versions and is perfect for distribution at health fairs and health care providers' offices.

To view, download, or order copies, or to learn more about the Awareness Campaign, visit *www.bowelcontrol.nih.gov.*

Celiac Disease

"Dental Enamel Defects and Celiac Disease," was re-released in May 2011 in support of Celiac Disease Awareness Month. The 2-page feature article explains that celiac disease, although often considered a digestive disorder, causes a variety of problems outside the gastrointestinal tract, including dental enamel defects such as discolored spots, pitting or banding of teeth, and mottled or translucent-looking teeth.

The article originally appeared in the National Institutes of Health Celiac Disease Awareness Campaign's newsletter, *Celiac Disease News,* and was updated for print and distribution at health fairs and health care providers' offices.

To view, download, or order copies, or to learn more about the Awareness Campaign, visit *www.celiac.nih.gov.*

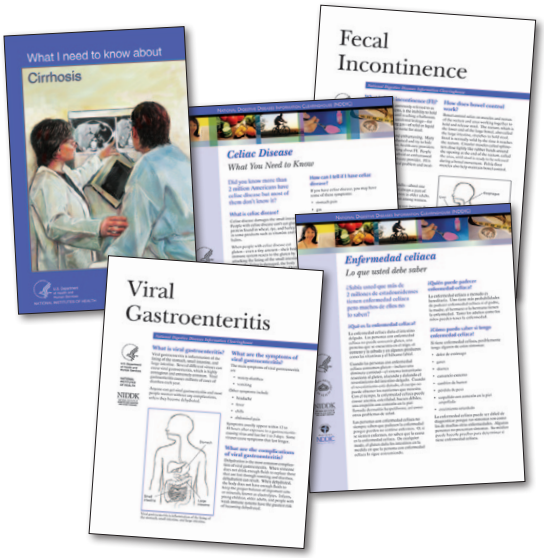
These publications are also available at *www.digestive.niddk.nih.gov.*

Updated Publications

The NDDIC has updated the following publications:

- *Celiac Disease: What You Need to Know* (English and Spanish)
- *Diarrhea*
- *Fecal Incontinence*
- *Hemorrhoids*
- *Viral Gastroenteritis*
- *What I need to know about Celiac Disease* (English and Spanish)
- *What I need to know about Cirrhosis* (English and Spanish)
- *What I need to know about Diarrhea*

These publications are available at *www.digestive.niddk.nih.gov.*



Upcoming Meetings, Workshops, and Conferences

The National Institute of Diabetes and Digestive and Kidney Diseases Information Clearinghouse will exhibit at the following upcoming event:

American College of Gastroenterology Scientific Meeting

October 28–November 2 in Washington, D.C.
For more information, visit *www.acg.gi.org.* ■

Would you like to know more about NIDDK-supported research?

The National Institutes of Health (NIH) provides access to a variety of reporting tools, reports, data, and analyses of NIH research activities at the Research Portfolio Online Reporting Tools (RePORT) website, *www.projectreporter.nih.gov/reporter.cfm.* One of the tools available is RePORT Expenditures and Results (RePORTER), which allows users to search a repository of NIH-funded research projects and access and download publications and patents resulting from NIH funding. ■

NIH Publication No. 11–4552
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