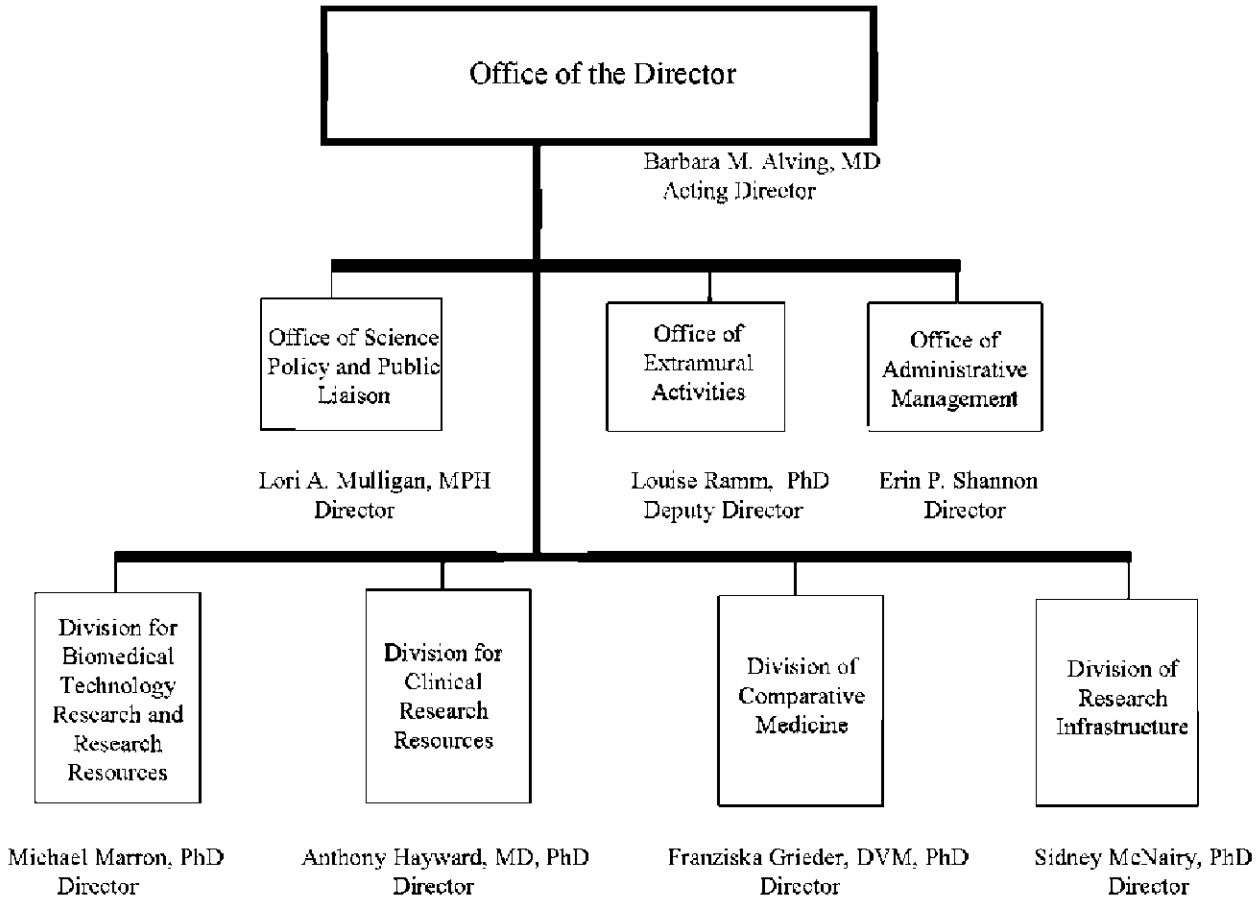
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Center for Research Resources

National Center for Research Resources
Organizational Chart



NATIONAL INSTITUTES OF HEALTH

National Center for Research Resources

For carrying out section 301 and title IV of the Public Health Service Act with respect to research resources and general research support grants, [$1,110,203,000] *$1,098,242,000*: *Provided,* That none of these funds shall be used to pay recipients of the general research support grants program any amount for indirect expenses in connection with such grants.

[Departments of Labor, Health and Human Services, Education, and Related Agencies Appropriations Act, 2006, as enacted by Public Law (109-149)

National Institutes of Health
National Center for Research Resources

Amounts Available for Obligation 1/

Source of Funding	FY 2005 Actual	FY 2006 Appropriation	FY 2007 Estimate
Appropriation	$1,124,141,000	$1,110,203,000	$1,098,242,000
Enacted Rescissions	(9,051,000)	(11,102,000)	0
Subtotal, Adjusted Appropriation	1,115,090,000	1,099,101,000	1,098,242,000
Real transfer under NIH Director's one-percent transfer authority for Roadmap	(7,050,000)	(9,822,000)	0
Comparative transfer from OD for NIH Roadmap	7,050,000	9,822,000	0
Subtotal, adjusted budget authority	1,115,090,000	1,099,101,000	1,098,242,000
Unobligated Balance, start of year			
Unobligated Balance, end of year			
Subtotal, adjusted budget authority	1,115,090,000	1,099,101,000	1,098,242,000
Unobligated balance lapsing	(12,000)	0	0
Total obligations	1,115,078,000	1,099,101,000	1,098,242,000

1/ Excludes the following amounts for reimbursable activities carried out by this account:
FY 2005 - $6,016,000 FY 2006 - $16,301,000 FY 2007 - $16,487,000

Justification
National Center for Research Resources

Authorizing Legislation: Section 301 of the Public Health Service Act, as amended.

Budget Authority:

FY 2005 Actual		FY 2006 Appropriation		FY 2007 Estimate		Increase or Decrease	
FTEs	BA	FTEs	BA	FTEs	BA	FTEs	BA
91	$1,115,090,000	94	$1,099,101,000	95	$1,098,242,000	1	-$ 859,000

This document provides justification for the Fiscal Year 2007 activities of the National Center for Research Resources (NCRR), including HIV/AIDS activities. A more detailed description of NIH-wide Fiscal Year 2007 HIV/AIDS activities can be found in the NIH section entitled "Office of AIDS Research (OAR)." Detailed information on the NIH Roadmap for Medical Research may be found in the Overview section.

Introduction

The National Center for Research Resources (NCRR) strengthens and enhances the research environments and tools used by scientists who are working to prevent, detect, and cure a wide range of diseases. By developing and funding essential research resources, such as imaging and bioinformatics technologies, preclinical models, and clinical research centers, NCRR contributes to major medical discoveries made by scientists supported by the National Institutes of Health, other Federal agencies, and the private sector. NCRR supports training and career development pathways and builds research capacity at research institutions across the country, with a particular focus on developing institutional programs for underserved communities. Through partnerships with museums and other organizations, NCRR also increases public understanding of medical research and brings information about healthy living and career opportunities in science to the nation's children and to the general public. In essence, NCRR ensures that more than 35,000 scientists have the opportunity to make biomedical discoveries, translate those findings to pre-clinical and animal-based studies, and then apply them in clinical research trials, pursuing the ultimate goal to alleviate suffering and improve human health.

Clinical and Translational Science: Building an Academic Home

In FY 2006, NCRR, on behalf of NIH, launched a new NIH Roadmap for Medical Research initiative—the Clinical and Translational Science Awards (CTSAs)—designed to speed the process by which biomedical discoveries are translated into effective medical care for patients. Developed with extensive input from the scientific community, the awards will help institutions

nationwide create an academic home for clinical and translational research. CTSAs will provide an opportunity for institutions to develop critical resources and integrate clinical and translational science across multiple disciplines and academic departments, schools, clinical and research institutes, and hospitals. By lowering barriers among disciplines, and encouraging creative, innovative approaches to solve complex medical problems, the new CTSAs are expected to fundamentally transform the conduct of clinical and translational science in the United States and usher in a new decade of preemptive medical care.

To address the need for more integrated and focused institutional clinical and translational research support, the nationwide network of NCRR-funded General Clinical Research Centers (GCRCs) will gradually be transformed under the new CTSA program. The program will encourage the development of novel methods and approaches to clinical and translational research, enhance informatics and technology resources, and improve training and mentoring to ensure that new investigators can navigate the increasingly complex research system. The program will allow for local flexibility so that each institution can determine whether to establish a center, department, or institute in clinical and translational science.

In FY 2006, NCRR anticipates awarding an initial set of 4 to 7 CTSA awards. NCRR will also award approximately 50 planning grants that will allow institutions more time to prepare a CTSA application in the future. Over the next 6 to 8 years, the CTSA program is expected to transform the clinical and translational research enterprise, resulting in approximately 60 CTSAs at institutions across the country.

The CTSAs, along with other NCRR-funded resources, will continue to make key contributions throughout the biomedical research continuum. The Story of Discovery and the Science Advances that follow demonstrate that NCRR enables discoveries that enhance human health.

Story of Discovery: Diagnostic Neuroimaging for Attention Deficit and Hyperactivity Disorder in Mouse, Monkey, and Man

Few disorders resonate so deeply as attention deficit hyperactivity disorder (ADHD), as parents struggle with inattentive and overactive children and treatment decisions once a diagnosis has been made. According to the American Medical Association, ADHD is the most common neuropsychiatric diagnosis among the nation's school-aged children, affecting 3 to 6 percent of that age group. ADHD interferes with a person's ability to focus on a task and to exercise age-appropriate inhibition. Diagnosing a child with ADHD is currently determined merely on the basis of patient history and behavioral assessment, which further complicates parent's concerns about whether to medicate their children. This lack of an objective diagnostic test for ADHD has led to a growing concern that current treatments are being over prescribed. However, a compound called altropane, developed by NCRR-funded researchers, shows promise as a unique imaging agent that may help detect and diagnose ADHD.

Since the 1980s, Bertha Madras and her colleagues at the NCRR-supported New England National Primate Research Center have been developing novel compounds that bind to the dopamine transporter (DAT), a trans-membrane protein found on the neurons that produce the neurotransmitter dopamine in the brain. Because DATs regulate how much dopamine is available for normal neurological function, abnormal DAT density may indicate neurological disorders. For example, low levels of DAT have been associated with Parkinson's disease, and high levels with ADHD.

In the mid-1990s, Madras and colleagues showed that the novel compound altropane selectively binds to the DAT molecule on dopamine-producing neurons. These results suggested that altropane could be used in noninvasive imaging studies to examine the pathophysiology of conditions such as Parkinson's disease and ADHD, as well as the mechanism of actions of medications. Initial imaging experiments in animals showed that radioactively labeled altropane could identify DAT-deficient brain regions in monkeys with a Parkinson-like condition. This was further substantiated in human studies that showed altropane's promise in identifying Parkinson's disease.

Once altropane was shown as a potential aid for diagnosing Parkinson's disease using brain imaging, Madras and colleagues then focused their attention on exploring altropane's potential role in diagnosing ADHD. To test the hypothesis that ADHD can be caused by an overexpression of DAT, the researchers measured DAT density in the brains of adult patients diagnosed with ADHD versus matched controls. SPECT (single photon emission computed tomography) imaging of altropane binding indicated that DAT levels were elevated by about 70 percent in the ADHD patients, supporting the hypothesis. Subsequent studies by Madras and colleagues, as well as other research groups, have verified these results, extending them to studies of children and demonstrating the usefulness of altropane for PET (positron emission tomography) imaging, which has advantages over SPECT imaging for quantitative physiologic measurements. With further development—including clinical trials now underway—altropane or related imaging agents may enable objective and more accurate diagnosis of ADHD.

Meanwhile, anatomical studies provide another angle from which researchers are trying to understand how brain structure and function differs in ADHD and non-ADHD children. Scientists are just beginning to use advanced neuroimaging to detect and measure subtle structural differences in the brains of ADHD patients. Several research groups have pinpointed particular brain regions that appear to be structurally different in many ADHD patients, although more studies are needed to determine if the observed differences are consistent enough to ultimately aid diagnosis.

A recent study conducted at the NIH/NCRR-supported neuroimaging resource at the University of California, Los Angeles used advanced magnetic resonance imaging (MRI) and computational technologies to identify particular brain regions that were smaller in children with ADHD compared with those without the condition. These brain regions—including parts of the frontal cortex, located at the front of the brain, and parts of the temporal cortex, located at the sides—form part of a distributed neural system involved in attention and behavioral inhibition. The researchers believe these structural differences may help to account for many of the symptoms of ADHD.

Researchers at the Kennedy Krieger Institute in Baltimore also found an association between an individual's frontal lobe volume and ADHD. With assistance from the NCRR-supported General Clinical Research Center (GCRC) at Johns Hopkins University School of Medicine, Martha Denckla and her colleagues used MRI to examine 24 boys and found that total cerebral volumes were 8.3 percent smaller, on average, in boys who had ADHD compared to those without the disorder. Nearly half of this reduction resulted from a lower volume in the frontal lobe, the only lobe to show a significant decrease.

The researchers also identified size reductions within specific frontal lobe regions—including areas that contain neural circuits thought to control inhibition of inappropriate social or emotional behavior and in regions that help to mediate motor functions. The scientists hypothesize that ADHD may arise from abnormalities that affect several parallel circuits in these two regions. A much larger study, including both boys and girls, is now being conducted to explain why girls manifest ADHD differently than boys, both in neurobiological features and in academic, social, and emotional behaviors.

Reduced brain volume also has been observed in mice that have abnormal dopamine activity. Using advanced MRI microscopy techniques developed by NCRR-supported researchers at Duke University, G. Allan Johnson and his colleagues found that the abnormal mice have a 9 percent reduction in the volume of a structure deep in the brain that corresponds to a human brain region that plays a role in emotion and cognition. Similarly in humans, this deep-brain region has been shown to be smaller in patients with certain neurological disorders, including ADHD. These mouse findings provide a framework for understanding the corresponding human neurological conditions and possible interventions. Through the NCRR Biomedical Informatics Research Network, an electronic nationwide infrastructure that facilitates data sharing beyond laboratory boundaries, scientists will be able to investigate the mechanisms underlying this and other findings in more detail and compare results of similar regions in the human brain.

Understanding the root causes for ADHD and developing sensitive and specific diagnostic tools may ultimately lead to the development of safe and effective long-term therapies for this disorder. More

accurate diagnosis could also spare children without ADHD from the side effects of receiving daily medication and in turn help to ease their parent's concerns. Further neuroimaging studies cycling from animal to human and back should prove useful in research focusing not only on ADHD, but also on Parkinson's disease, substance abuse, endocrine disorders. schizophrenia. depression, and other medical and psychological conditions.

Science Advances

The following science advances illustrate how NCRR resources cut across all lines of scientific inquiry from basic biomedical discovery, through translational research, and ultimately to clinical application.

ENABLING BIOMEDICAL RESEARCH

Environment May Influence Progression of Alzheimer's Disease. Deposits in the brain, known as amyloid plaques, are often seen in patients with Alzheimer's disease. To better understand how physical activity and the environment may influence the development of amyloid plaques, researchers at the Center of Biomedical Research Excellence at the University of Kentucky and their colleagues studied a mouse model of Alzheimer's disease. The study showed that mice living in an "enriched" environment—including running wheels, colorful tunnels, assorted toys, and physical activity—had significantly reduced levels of plaque-forming protein fragments and amyloid deposits, compared to animals raised in more sedentary "standard" housing. Evidence suggests that these beneficial reductions may result from increased activity of an enzyme believed to break down the protein fragments in the normal brain. This study provides the first experimental evidence that exposure to an enriched environment reduces levels of plaque-forming protein fragments and amyloid deposits in the brain, suggesting that lifestyle factors may delay or prevent the onset and progression of Alzheimer's disease.

New Discovery for Treating Complications from Stroke. Stroke occurs when arteries in the brain become occluded or when the arteries rupture, causing bleeding into brain tissue. In the latter case, the body responds by constricting the brain's arteries for several days or even weeks after the stroke. This delayed and sustained arterial constriction cuts blood flow and oxygen to the brain and is a major contributor to the death and disability associated with stroke. To develop better stroke treatments, scientists at the University of Vermont's Center of Biomedical Research Excellence are taking a close look at the muscle cells that surround brain arteries and cause them to constrict. In particular, the scientists examined the small pores, or channels, in the membranes of these muscle cells. They found that a new type of pore appears in arterial muscle cells after an artery ruptures. These unique pores contribute to continued arterial constriction. This discovery is significant because a drug that effectively reverses arterial constriction following a stroke has yet to be identified, and current therapies have dangerous side effects. Targeting this new type of muscle-cell channel might lead to more effective treatments for cerebral artery rupture and help to improve the outcomes of individuals who experience stroke.

Rat Models of Complex Diseases. Investigators at the University of Michigan and their colleagues hypothesized that selectively breeding rats to have low or high aerobic exercise

capacity would produce offspring with respectively high or low susceptibility for complex diseases, morbidity, and mortality. The scientists bred two lines of rats that differed by more than 300 percent in their capacity for treadmill running. The low-capacity runners had more cardiovascular risk factors and features of the metabolic syndrome—a set of physical changes, such as high blood pressure and increased insulin levels, often seen in people who later develop cardiovascular disease and diabetes. The high-capacity runners scored higher for healthy factors, such as maximal oxygen consumption and enhanced heart function. In addition, low-capacity rats were found to be susceptible, and high-capacity rats resistant, to developing risk factors associated with a high-fat diet. Rats with high or low aerobic capacities provide useful models for unraveling the genetic and environmental causes of complex disease and also form a basis for improving prevention, diagnosis, and treatment.

Hormone Treatment May Help Prevent Heart Failure. Thyroid hormones are necessary for adequate heart function, but it is unclear whether low levels of the hormones lead directly to congestive heart failure or are simply a risk factor for heart disease. To better define causal effects, researchers at the University of South Dakota School of Medicine blocked the production of thyroid hormones in rats for up to a year. The rats experienced changes in the anatomy and function of their hearts in ways that mirrored congestive heart failure in humans. In a separate experiment, investigators demonstrated the benefits of administering thyroid hormones to hamsters that are genetically destined to develop heart failure. Specifically, treatment with thyroid hormones largely prevented progression of heart dysfunction and restored heart blood flow to normal in the treated hamsters. These rodent studies pinpoint key mechanisms by which low thyroid function might lead to congestive heart failure in humans. If the animal findings are confirmed in heart disease patients who have low thyroid function, treatment with thyroid hormones may prevent progression to heart failure and improve their chances of survival.

Scrutinizing Nature's Flying Machines. Insect flight muscles bear a functional resemblance to human heart muscle, with similar cyclical contractions. To better understand how these muscles operate, researchers at the Illinois Institute of Technology and their colleagues used extremely bright synchrotron X-ray beams to examine the muscles of a fruit fly in flight. By capturing X-ray images at different stages of muscle contraction, the researchers were able to construct a video clip of molecular changes in muscles as they lengthened and shortened to propel the wings back and forth. The images revealed previously unsuspected interactions of various proteins, allowing researchers to relate muscle performance to changes in molecular structure. Because flight muscles can be genetically manipulated, studies of mutant flies may help to shed light on inherited human heart disease, revealing how changes in cardiac molecular machinery might affect the performance of heart muscle.

Animation of Nerve Signal Transmission. When submicron structures of the brain are studied under the electron microscope, each image represents a frozen-in-time snapshot of a dynamic and crowded space. To obtain a more realistic picture of complex neural processes, researchers used instruments and technology developed at an NCRR-supported microscopy resource at the University of California, San Diego, to animate signal transmission at the interface, or synapse, between neurons. Using an imaging technique called electron tomography, the scientists created a detailed three-dimensional computer model of a synaptic region of a nerve cell. The model revealed how many cellular components influence the flow of signal-carrying molecules, known

as neurotransmitters, from one cell to another. The model also provided unexpected evidence that neurons can release neurotransmitters outside of synapses. Such biologically realistic modeling will facilitate the development of precisely designed drug and gene therapies.

Unraveling the Hepatitis B Virus. According to the World Health Organization, approximately 350 million people worldwide are chronically infected with the hepatitis B virus, and 500,000 die from it every year. Understanding the formation of this highly infectious virus is key to developing treatments for its control. Hepatitis B virus particles must go through an unusual "maturation" process before becoming infectious. Scientists speculate that a molecular signal must trigger immature particles to become infectious. Researchers are now trying to isolate and decipher this signal. At Pennsylvania State University College of Medicine, NIH-funded scientists devised a method to separate mature from immature hepatitis B virus particles. Working together with colleagues in the NCRR-supported Mass Spectrometry Resource for Biology and Medicine at Boston University School of Medicine, the researchers then performed detailed analyses that revealed protein modifications in immature virus particles that were not present in mature particles. These modifications, which regulate activity, appear to be a critical step in envelopment and secretion of the virus. This work will have a significant impact on scientists' understanding of hepatitis B virus as well as broader implications for virology.

Microscopic Worm Aids Studies of Antiviral Defense. Scientists have long wondered why the microscopic worm *C. elegans* is immune to viruses. Some suspect immunity results from RNA interference (RNAi), a process by which small RNA molecules directly regulate gene expression. Many viruses work by invading healthy cells and making them carry and replicate their own DNA. In order to complete this process, viruses must use the RNA in the healthy cell. In the *C. elegans* worm, RNAi is believed to interfere with the process of replicating viral DNA. To prove this, investigators at the University of Arkansas for Medical Sciences and their colleagues tried to infect *C. elegans* with a mammalian virus related to rabies. The scientists were able to infect cells derived from worms lacking RNAi, thus demonstrating the role of RNAi in viral immunity. Since some *C. elegans* cells are similar to human cells, the worm can be used as a model to show how viruses spread from one host to another, and to learn more about how RNAi may be used to prevent viral infection in humans. These are particularly important studies in light of concerns about modern flu strains.

Healing from Intestinal Cancer May Depend on Gender, Exercise. Intestinal cancer risk is linked to both genetics and factors such as diet and exercise. Reports about the benefit of exercise for women with intestinal cancer have been conflicting. Researchers at a University of South Carolina Center of Biomedical Research Excellence completed the first study that directly compared different types of physical activity in male and female mice that were genetically predisposed to developing intestinal polyps, a precursor of cancer. They also examined the relationship between inflammatory agents, which increase cancer progression, and exercise. Their results showed that 9 weeks of moderate exercise led to about a one-third reduction in both the size and number of polyps in male mice. More exercise did not further reduce the number of polyps. These findings correlate with previous studies indicating that moderate exercise enhances the immune system while strenuous exercise represses it. In contrast, female mice showed no changes in polyp size or number regardless of the type of exercise. Nonetheless, the researchers found that increased physical activity in both male and female mice lowered the

secretion of an inflammatory agent that contributes to polyp growth. So while exercise decreased polyp size and number only in male mice, it helped both male and female mice reduce the production of inflammatory substances. These results will guide future investigations on the relationship of physical activity and cancer risk in females.

New Insights into a Possible Cause of Lupus. New research supports the view that lupus, an autoimmune disease, can result from a viral infection. In what seems to be a case of mistaken identity, the body appears to be launching an immune system attack on the common Epstein-Barr virus (EBV), when in fact it is targeting a protein found in the body's own cells. Lupus is an autoimmune disease, in which misdirected antibodies, or auto antibodies, attack and injure a variety of tissues in the body. Researchers at the Oklahoma Medical Research Foundation's Center of Biomedical Research Excellence showed that EBV infection and the appearance of EBV-fighting antibodies always preceded or coincided with the appearance of autoantibodies that target the cellular protein known as Ro, suggesting that EBV triggers the emergence of anti-Ro autoantibodies. This is significant because one of the earliest arising autoantibodies that appear in lupus patients is one that recognizes and binds to the Ro protein. Rabbits immunized with portions of an EBV-related protein developed lupus-like symptoms and also produced antibodies that cross-reacted with human Ro protein, supporting the idea that antibodies directed against EBV can lead to lupus by also targeting Ro. Better understanding of the role of EBV-related proteins in lupus pathogenesis may lead to better prevention, diagnosis, and treatment and may also aid efforts to develop an EBV vaccine.

TRANSLATING RESEARCH RESULTS

Natural Antibiotics for Fighting Urinary Tract Infections. About 1 in 5 women in the United States will develop urinary tract infections (UTI) in their lifetimes, according to the Kidney and Urology Foundation of America.[1] To better understand how natural antibiotics may help to fight this common condition, researchers at Kansas State University's Center of Biomedical Research Excellence are studying urinary tract infections in dogs, which have a disease process similar to humans. They found three newly identified defensins, or biological antibiotics, in various parts of the dog reproductive system. The researchers then used these three defensins to genetically manufacture a synthetic canine defensin molecule that killed bacteria such as *E. coli* and *K. pneumoniae*, which commonly infect the urinary tract. The synthetic defensin molecule also killed bacteria from sexually transmitted diseases such as *Candida albicans* and *N. gonorrhoeae*. The identification of three new natural antibiotics in dogs, and confirmation of their ability to successfully eradicate urinary tract infections, may inform development of improved therapies for people suffering from a UTI, or a sexually transmitted bacterial disease.

Preventing Sexually Transmitted Infections at Mucosal Surfaces. Development of effective microbicides, or agents that destroy germs, to prevent vaginal infections could protect women from human immunodeficiency virus (HIV) and other sexually transmitted pathogens. One such microbicidal agent, known as SPL7013, potently binds and blocks replication of HIV-1 and a hybrid simian/HIV-1 virus in cultured cells. Researchers at the NCRR-supported Washington National Primate Research Center demonstrated that SPL7013 is effective against cell-to-cell

[1] Kidney and Urology Foundation of America, Inc. Web site (www.kidneyurology.org/Patient_Resources/PaR_Lib_Stats.htm).

viral spread in tissue culture. In later experiments using pigtailed monkeys, all animals treated vaginally with a single gel application of the microbicide resisted infection after a single challenge with the hybrid virus and experienced no adverse effects. In the second stage of experiments, vaginal gels containing lower doses of SPL7013 were progressively less effective in preventing infection. These findings indicate that SPL7013 gel is a promising anti-HIV microbicide formulation and is a candidate for clinical evaluation in humans.

Primate Research Sheds Light on HIV/Tuberculosis Double Infection. Individuals infected with HIV often do not die from the direct effects of HIV infection but from the opportunistic diseases that arise from a weakened immune system. As an example, tuberculosis (TB), often treatable in healthy individuals, is one of the leading causes of death among HIV-infected people.[2] The World Health Organization estimates that about 13 million people worldwide are infected with both HIV and TB.[3] Even though a healthy immune system can effectively control a TB infection, the bacteria sometimes lie dormant in the body. If an individual with a dormant TB infection becomes infected with HIV, the individual is much more likely to develop full-fledged reactivation of the TB infection. Because the mechanisms of this HIV/TB double infection are poorly understood in humans, investigators at the University of Illinois and the New England National Primate Research Center are studying nonhuman primates with a similar type of double infection. Monkeys with dormant TB-related infections also were infected with HIV's cousin, the simian immunodeficiency virus (SIV). While previous studies of SIV-infected monkeys had demonstrated that CD4 T cells are critical to controlling acute TB-like infections, this new study suggests that CD4 T cells are also important for containing reactivated dormant infections. These findings provide new insights into immune system response during double infection and may lead to new or improved TB antibiotics or antiretroviral treatments.

Genetically Modified Viruses May Protect Against AIDS Virus. In the quest for an effective AIDS vaccine, some researchers are exploring the potential of immunizations based on the rhabdoviruses, a viral family that includes the rabies virus. In earlier studies, scientists developed genetically modified rhabdoviruses that produced proteins associated with SIV. These genetically altered viruses were able to induce strong immune responses in mice and monkeys and to protect monkeys from AIDS-like disease, although the immunizations did not prevent viral infection. Therefore, further improvements are needed. Investigators supported by the Research Centers in Minority Institutions (RCMI) Program at the University of Hawaii immunized mice intranasally with a safe, weakened rabies virus genetically altered to produce an HIV surface protein. The researchers found that immunized mice exhibited a strong immune response when later exposed to the HIV surface protein. Vaccines based on the rhabdovirus may offer several advantages over other vaccine candidates. Because few people have been exposed to rabies or other rhabdoviruses, these candidate vaccines are likely to produce robust immune responses. In addition, the mucosal route of administration may be advantageous, because HIV is transmitted primarily through openings in mucus membranes. Therefore, inducing an immune response in mucus-lined cavities may help to neutralize the virus at the onset of infection. Alternative approaches such as these provide promise for developing effective anti-viral treatments to HIV.

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[2] World Health Organization Web site: Tuberculosis Fact Sheet (www.who.int/mediacentre/factsheets/fs104/en/).
[3] World Health Organization Web site: Frequently Asked Questions about TB and HIV (www.who.int/tb/hiv/faq/en/).

Antisense DNA as an Additional Treatment for HIV. Investigators at the University of Kansas Medical Center and their colleagues studied monkeys and cells infected with the simian-human immunodeficiency virus (SHIV) to learn how the immune molecule known as interleukin-4 (IL-4) affects the outcome of AIDS virus infection. Using cultures of monkey immune cells, the scientists showed that IL-4 enhanced viral replication. The researchers then examined whether antisense DNA, which is the strand of DNA that does not carry the information necessary to make proteins, of IL-4 would bind to or block the interleukin's activity. After learning that the antisense molecule inhibited viral replication in monkey cell cultures, the investigators administered the molecule to SHIV-infected animals. Treated animals had significantly less virus in their tissues after 2 weeks than did untreated SHIV-infected monkeys. This finding suggests antisense DNA or related therapies might be developed as adjuncts to currently used antiviral drugs for HIV-infected individuals.

New Animal Model for Hepatitis C Infections. With nearly 4 million Americans infected with the hepatitis C virus (HCV), according to the Centers for Disease Control and Prevention,[4] development of a vaccine to prevent HCV infection is critically important. Since animal models are often an early step in developing human vaccines, researchers at the Southwest National Primate Research Center are exploring animal viruses that are similar to HCV. One example is GBV-B virus, a close relative of HCV, which infects small monkeys called tamarins. However, the viruses still have significant differences. Investigators overcame differences in the two viruses by genetically implanting parts of the HCV virus into the GBV-B virus, creating hybrid GBV-B viruses with several functional elements of HCV. Each element is useful for discovering how specific viral genes interact with the host. These discoveries, in turn, may help researchers develop and test specific antiviral drugs and vaccines. The investigators demonstrated that one strain of the hybrid GBV-B virus replicated in the liver of tamarins, causing changes typical of HCV infections in humans. This work will allow investigators to continue studying specific aspects of HCV in monkeys and screen multiple families of antiviral agents, which ultimately may be tested for therapeutic safety and efficacy in humans infected with HCV.

Anxiety Disorders and Specific Brain Receptors. Pharmaceuticals called benzodiazepines—including Valium, Xanax, and Ambien—are widely prescribed for anxiety, sleep, and seizure disorders. Although effective, benzodiazepines produce undesirable side effects such as drowsiness, impaired motor coordination, and sometimes physical dependence. Benzodiazepines exert their effects by binding to a class of brain proteins known as GABA-A receptors. Researchers at the New England National Primate Research Center and their colleagues are studying nonhuman primates to determine how different subtypes of the GABA-A receptor contribute to the therapeutic or addictive effects of benzodiazepines. They uncovered the first evidence that specific subtypes of GABA-A receptors play a key role in the anti-anxiety effects of benzodiazepines and that a different subtype may contribute to the drugs' sedating, motor-impairing, and dependence-related effects. This research provides an important framework for developing improved therapies for anxiety and reducing unwanted side effects.

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[4] *National Hepatitis C Prevention Strategy: A Comprehensive Strategy for the Prevention and Control of Hepatitis C Virus Infection and its Consequences*, Centers for Disease Control and Prevention, 2001.

FACILITATING CLINICAL RESEARCH

New Therapy for Osteoporosis. Osteoporosis, a disease in which bones become porous and subject to fracture, affects close to 10 million people in the United States, according to the National Osteoporosis Foundation.[5] The condition, which occurs most often in post-menopausal women, can be treated with parathyroid hormone, which stimulates bone formation, or drugs such as alendronate, which block bone removal. A recent study of 238 women in their 60s and 70s showed that a one-year treatment with parathyroid hormone, followed by a one-year treatment with alendronate, is more effective in enhancing bone mineral density than using either of these treatments alone. Additionally, the study found that gains in bone density achieved through parathyroid hormone therapy use are lost if patients do not prevent bone removal by taking alendronate afterwards.

Infant Diet Tied to Increased Risk of Autoimmune Disease. Celiac disease arises when ingestion of gluten—a protein present in wheat, barley, and rye products—leads to chronic inflammation of the small intestine. Affected individuals often experience diarrhea and may lose weight or even fail to grow normally. While the disease usually strikes during childhood, often before 10 years of age, the factors associated with the initial appearance of the disease are not well understood. To help determine if the timing of the introduction of gluten-containing products has an effect on an infant's risk of later developing celiac disease, researchers at the General Clinical Research Center at Children's Hospital in Denver, Colorado, conducted a 10-year study involving 1,560 children, documenting when the infants were first introduced to gluten. Their findings showed that infants exposed to gluten between 4 and 6 months of age had no increased risk of developing celiac disease. However, infants exposed during the first 3 months of life had a fivefold increase in risk to develop the disease. These results support an American Academy of Pediatrics recommendation that complementary foods, such as cereals, be introduced to infants only after the first 6 months of life.

New Test Detects Progression of Fatal Inherited Disease. Huntington's disease, a debilitating neurodegenerative disorder caused by a mutation in the huntingtin gene, sometimes remains undiagnosed until symptoms begin to appear, usually around the age of 40. When physicians can readily identify and assess the disease before the onset of major symptoms—including loss of mental sharpness and slurred speech—then steps can be taken to slow or even prevent disease progression. With assistance from the General Clinical Research Center at Oregon Health and Science University, scientists examined changes in the blood caused by Huntington's disease. They found that levels of certain messenger RNA molecules—which indicate activation of the huntingtin gene—were significantly different in patients with Huntington's disease compared to people without the disease. Some of these differences were detectable in blood samples even before major symptoms appeared, and the differences became more pronounced as the disease progressed. These findings may allow researchers to assess disease progression in presymptomatic carriers of the mutant huntingtin gene and also track how the disease responds to different therapies, thereby improving the efficiency and cost-effectiveness of the drug development process.

[5] National Osteoporosis Foundation Web Site (www.nof.org/osteoporosis/diseasefacts.htm).

Iron Overload in a Racially Mixed Population. Iron overload leading to tissue damage is a common, treatable condition known as hemochromatosis. The NIH-funded Hemochromatosis and Iron Overload Screening study is a multi-center effort that evaluates prevalence and risk factors for the condition across all ethnic groups. Of the 99,711 participants, 299 had inherited two copies of a genetic mutation called C282Y, a known cause of hemochromatosis among whites. The researchers found that whites had the highest prevalence of C282Y mutations in both copies of their genes, with 4.4 out of 1,000 whites affected. Among other ethnic groups, the prevalence of this double mutation was found to be highest in Native Americans, affecting 1.1 out of 1,000 individuals, followed by Hispanics, African Americans, Pacific Islanders, and Asians. Based on these findings, the researchers concluded that the C282Y mutation is a useful screening tool for hemochromatosis in whites but not in non-whites. Additional research will be needed to identify genetic screening approaches that might be effective in diverse populations.

NIH Roadmap

In FY 2006, on behalf of the NIH Roadmap for Medical Research, NCRR launched the Clinical and Translational Science Awards (CTSA) initiative. The CTSA program has been created to develop an academic home for the discipline of clinical and translational science at institutions across the country and is described in more detail in the Introduction and in the FY 2007 Initiatives section. Several NIH Roadmap initiatives will be combined into the new CTSA program.

NCRR serves as the lead Institute/Center (IC) partnering with other NIH components to support Exploratory Centers for Interdisciplinary Research, a series of planning center grants to develop new interdisciplinary approaches to solve significant and complex biomedical research problems. Each planning center was funded for 3 years, and the awards for these centers will end in July 2007. NIH plans to support a follow-on program to support Interdisciplinary Research Consortia that will use a newly approved model for large programs that involves teams of investigators. NCRR is also the lead NIH IC in support of the National Technology Centers for Networks and Pathways, another Roadmap initiative, to develop new technologies to study the dynamics of molecular interactions within cells. NCRR is a lead partner in another Roadmap initiative, the National Centers for Biomedical Computing. This effort is establishing the computational infrastructure for biomedical computing, ranging from basic research in computational science to providing the tools and resources that biomedical and behavioral investigators need to do their research.

FY 2007 Initiatives

Expand the Clinical and Translational Science Awards Program. Over the next 6 to 8 years, the new Clinical and Translational Science Award (CTSA) program, which NCRR is leading on behalf of the NIH Roadmap for Medical Research, will transform and advance clinical and translational science as a distinct discipline within a definable academic home at institutions across the country. The CTSA program will build on existing programs by incorporating the General Clinical Research Centers and several other relevant institutional NIH clinical training and career development programs held by the applicant institution and its affiliates.

While the initial set of 4 to 7 awards will be made in FY 2006, there will be annual opportunities for institutions to participate in the CTSA program. NCRR expects that many of the recipients of the one-time planning grants offered in FY 2006 will apply for a CTSA in FY 2007 and beyond. NCRR plans to fund approximately 10 more CTSAs in FY 2007 as part of the long-term plan to transform the clinical and translational research enterprise by 2012 with a total of 60 CTSAs implemented and integrated across the country.

Train Veterinarians in Clinical Nonhuman Primate Medicine. The number of clinically trained primate veterinarians is currently insufficient, as documented in a recent National Academy of Sciences report entitled, *Critical Needs for Research in Veterinary Science*. The increased research demand for nonhuman primates (NHPs) to respond to the emergence and spread of potentially deadly human diseases such as severe acute respiratory syndrome (SARS), influenza, and hepatitis increases the severity of this shortage. Through competing supplements to primate centers and other major facilities that house NHPs, NCRR plans to support an initiative to attract and train graduate veterinarians in the highly specialized clinical and management procedures required for primate research. It will also provide a pre-doctoral component to allow centers to identify and attract veterinary students that are interested in NHP clinical medicine. Each resident is expected to receive 2 years of training, and 5 new residents will be admitted to the program each year for 4 years. An evaluation of the program is planned after 5 years when 20 residents have completed their training.

Develop Semantic Resource Tools and Technologies for Researchers. The modern research enterprise is characterized by dramatic, and often overwhelming, increases in the volume and complexity of data generated by and available to investigators. At the same time, investigators often find it difficult to share data and to integrate or interpret data from disparate sources. A major stumbling block is a lack of ways for researchers to use consistently applied standards to express semantic content or meaning. To facilitate the widespread use of semantic standards in biomedical, translational, and clinical research, NCRR will support the development and provision of tools and technologies for investigators to access, navigate, create, maintain, compare, evaluate, integrate, and share semantic resources (e.g., terminologies and ontologies), and to map data to such resources. Tools that are developed will be intuitive, easy to use and transparent to the end user. These semantic resource tools and technologies for researchers will be primarily developed through the Small Business Innovative Research and Small Business Technology Transfer programs.

NIH Neuroscience Blueprint

NCRR is one of 15 NIH Institutes and Centers that participate in the NIH Neuroscience Blueprint, which enhances cooperative activities across NIH that support research on the nervous system. By pooling resources and expertise, the Blueprint takes advantage of economies of scale, confronts challenges too large for any single Institute or Center, and develops research tools and infrastructure that serve the entire neuroscience community. "Best practices" developed at a single Institute or Center are implemented more widely; planning is coordinated at the early concept stage; resources established by one Institute or Center are opened to neuroscientists supported by others; and multi-institute working groups focus on diseases and cross-cutting scientific issues.

The first Blueprint initiatives, released in FY 2005, include a comprehensive inventory and analysis of neuroscience tools funded by the NIH and other government agencies, enhancement of training in the neurobiology of disease for basic neuroscientists, and expansion of programs in genome analysis and in neuroimaging. Blueprint initiatives for FY 2006 develop training programs, genetic mouse models, neuroimaging tools, core research facilities, and tools to enhance the value of clinical research conducted by each Blueprint institute or center. Specifically, NCRR will participate in the NIH Blueprint's NeuroMouse Project. The purpose of the project is to develop genetically engineered mouse strains, focusing on genes that contribute to a healthy or diseased nervous system. Developing such strains will allow researchers to investigate the anatomy, physiology, and behavior of mouse models in which the genes have been deleted and allowing them to gain a better understanding of how genes impact the nervous system. NCRR's role in the NeuroMouse Project complements other trans-NIH mouse activities where NCRR is an active participant, such as in the Knockout Mouse Project (KOMP), which is an effort to develop mutant mice for every gene and to make those mice available for a wide range of biomedical research investigations.

Other Items of Interest

NCRR-funded Chimpanzee Sanctuary Opens, Fulfilling the CHIMP Act of 2000. Chimp Haven, the first federally funded chimpanzee sanctuary, opened on October 28, 2005. The sanctuary, funded by an NCRR contract, provides lifetime care for federally owned or supported chimpanzees that are no longer needed for biomedical research. NCRR also awarded construction grants so that Chimp Haven could develop and build a state-of-the-art facility that closely resembles the chimpanzees' natural habitat. At capacity, Chimp Haven will be able to accommodate about 175 chimpanzees. The sanctuary was established in response to the Chimpanzee Health Improvement, Maintenance, and Protection (CHIMP) Act of December 2000, which authorized $30 million in federal dollars for the sanctuary.

Research Centers in Minority Institutions Program Celebrates 20 Years. The NCRR Research Centers in Minority Institutions (RCMI) Program, launched in 1985 with Congressional support, fosters environments that are conducive to excellence in basic, clinical, and behavioral research. Through training and career development opportunities, the RCMI program also establishes a critical mass of scientists that more closely reflect the growing ethnic and cultural diversity of the U.S. population. The program commemorated its 20th anniversary with events such as a national symposium at Texas Southern University in Houston, an awards program and lecture at Howard University in Washington, D.C., and a Symposium on Addiction, Neurosciences, and HIV/AIDS at the Universidad Central del Caribe in Bayamon, Puerto Rico.

NCRR Increases Scientific Literacy through new Science Education Partnership Awards. In FY 2005, NCRR funded 20 new Science Education Partnership Awards (SEPAs) to stimulate public interest in health issues and encourage young people to pursue careers in science. SEPA programs serve K-12 students and teachers, as well as science centers and museums across the country. Many of the programs target underserved and/or minority populations that are less likely to pursue careers in science. For example, the SEPA program at Jackson State University in Mississippi will develop a cadre of African American students who will learn about major

health issues that affect minorities and will be encouraged to promote change in their communities. The Oregon Health and Science University project will attempt to close the cultural gaps between scientists and teachers, and improve the communication of scientific information to students as well as the general public. The University of Medicine and Dentistry of New Jersey in Newark will gear its program to under-represented minority youth and their parents to increase awareness of health issues such as obesity, develop knowledge of science, nurture interest in science careers, and enhance parental involvement. Harvard Medical School will create a summer program to encourage American Indian high school students to engage in science and pursue science-related careers. In addition, SEPA partnerships develop projects that educate the general public about health and disease, with the aim of helping people make better lifestyle choices as new medical advances emerge.

Enhancing Nationwide Connectivity and Data Sharing. The following provide a few examples of ways that NCRR supports complementary efforts to enhance connectivity and scientific data sharing across the nation.

Biomedical Informatics Research Network. The purpose of the Biomedical Informatics Research Network (BIRN) is to provide readily available infrastructure to support collaborative research among biomedical and clinical investigators, including the wide sharing of software tools, distributed computation, and data. It is a cooperative effort of information and computer scientists and biomedical and clinical scientists. Currently the BIRN involves a consortium of 28 universities and 37 research groups that participate in research collaborations that are centered around brain imaging of human neurological disorders and associated animal models. BIRN technology is being shared with other research groups, such as the NIH Roadmap National Centers for Biomedical Computing, and used for large neuroscience projects, such as the NIMH Treatment Units for Research on Neurocognition and Schizophrenia.

The Lariat Project. Through the Lariat Project, NCRR is establishing a network among 6 states (Montana, Idaho, Nevada, Alaska, Hawaii, and Wyoming) that need state-of-the art network infrastructure to expand their opportunities for research collaborations through greater connectivity. The Lariat Project is the first phase of IDeANet, which is an Internet-based network providing connectivity for high-bandwidth science applications to institutions in several Institutional Development Award (IDeA) states. IDeANet will enable institutions in IDeA states to join the high-speed network and collaborate with other institutions. Ultimately, these networks will support all participants in the IDeA Program and the Research Centers in Minority Institutions (RCMI) Program. By linking the IDeA and RCMI researchers to national high-speed network backbones, IDeANet will also provide new opportunities for greater inclusion of under-represented minority and rural populations in biomedical and behavioral research. IDeANet will also provide connectivity to other NCRR-supported networks, such as the BIRN.

The following table shows a programmatic display of NCRR funding.

National Center for Research Resources
Funding by Division and Selected Program Areas
(Dollars in thousands)

	FY 2005 Actual 1/	FY 2006 Appropriation	FY 2007 President's Budget Request
Clinical Research:	**358,068**	**367,693**	**369,976**
Clinical and Translational Science Awards/ General Clinical Research Centers	286,118	299,592	309,092
Career Development Program	35,756	29,073	22,573
Science Education Partnership Award	16,645	15,980	15,686
Clinical Research Resources	19,549	23,048	22,625
Biotechnology Research	**173,121**	**167,698**	**164,365**
Biotechnology Research Resources	103,446	102,180	100,053
Shared Instrumentation Grants	69,675	65,518	64,312
Comparative Medicine	**178,566**	**184,168**	**183,735**
National Primate Research Centers	75,843	74,335	74,019
Career Development Program	4,064	3,689	4,319
Comparative Medicine - Other	98,659	106,144	105,397
Research Infrastructure	**318,802**	**286,116**	**280,874**
Research Ctrs in Minority Institutions	53,170	52,672	51,711
Construction & Animal Facilities Improvem	42,650	12,688	12,455
Institutional Development	222,208	219,986	215,938
Other Research Infrastructure	774	770	770
SBIR/STTR	**27,804**	**27,861**	**27,720**
Research Mgmt and Support	**27,269**	**27,419**	**27,830**
NIH Roadmap for Medical Research	**7,050**	**9,822**	**13,257**
Non Program R&D Contracts	**24,410**	**28,324**	**30,485**
TOTAL	**1,115,090**	**1,099,101**	**1,098,242**

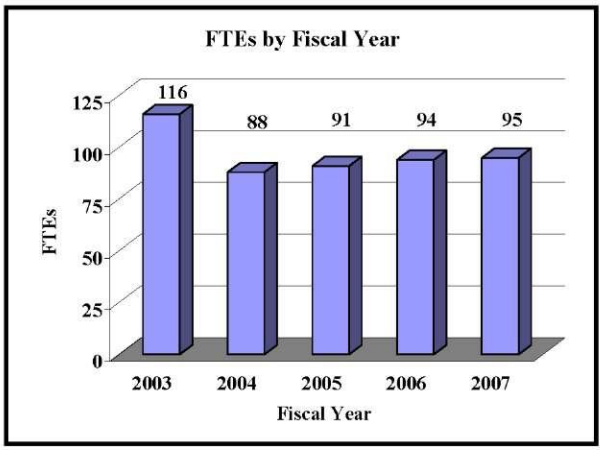
Note: Clinical and Translational Science Awards includes all linked awards

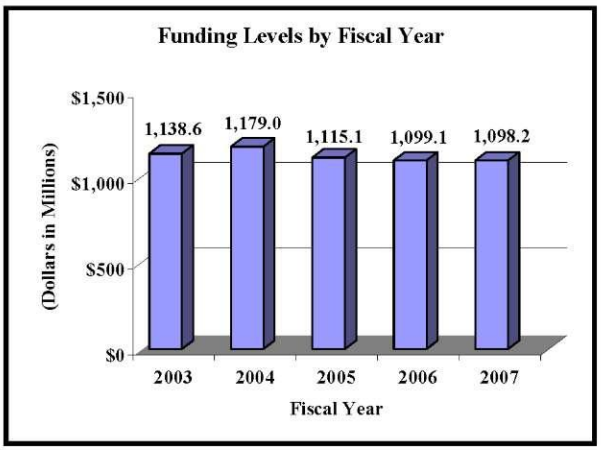
1/ - FY 2005 actual includes funds transferred out for the NIH Roadmap for Medical Research and a comparable shift of $1.6 million to RMS for the administration and management of the Scientific Review and Evaluation Award program which occurs in FY 2006

Budget Policy

The Fiscal Year 2007 budget request for the NCRR is $1,098,242,000, a decrease of $859,000 and -0.1 percent over the FY 2006 Appropriation. Included in the FY 2007 request is NCRR support for the trans-NIH Roadmap initiatives, estimated at 1.2 percent of the FY 2007 budget request. A full description of this trans-NIH program may be found in the NIH Overview.

A 5-year history of FTEs and Funding Levels for NCRR are shown in the graphs below. Note that as the result of several administrative restructurings in recent years, FTE data is non-comparable.





NIH's highest priority is the funding of medical research through research project grants (RPGs). Support for RPGs allows NIH to sustain the scientific momentum of investigator-initiated research while pursuing new research opportunities. We estimate that the average cost of competing RPGs will be $295,000 in FY 2007. While no inflationary increases are provided for direct recurring costs in noncompeting RPGs, where the NCRR has committed to a programmatic increase for an award, such increases will be provided.

NIH must nurture a vibrant, creative research workforce, including sufficient numbers of new investigators with new ideas and new skills. In the FY 2007 budget request for NCRR, $630,000 will be used to support 7 awards for the new K/R "Bridges to Independence" program.

NCRR will also support the Genes, Environment, and Health Initiative to: 1) accelerate discovery of the major genetic factors associated with diseases that have a substantial public health impact; and 2) accelerate the development of innovative technologies and tools to measure dietary intake, physical activity, and environmental exposures, and to determine an individual's biological response to those influences. The FY 2007 request includes $1,607,000 to support this project.

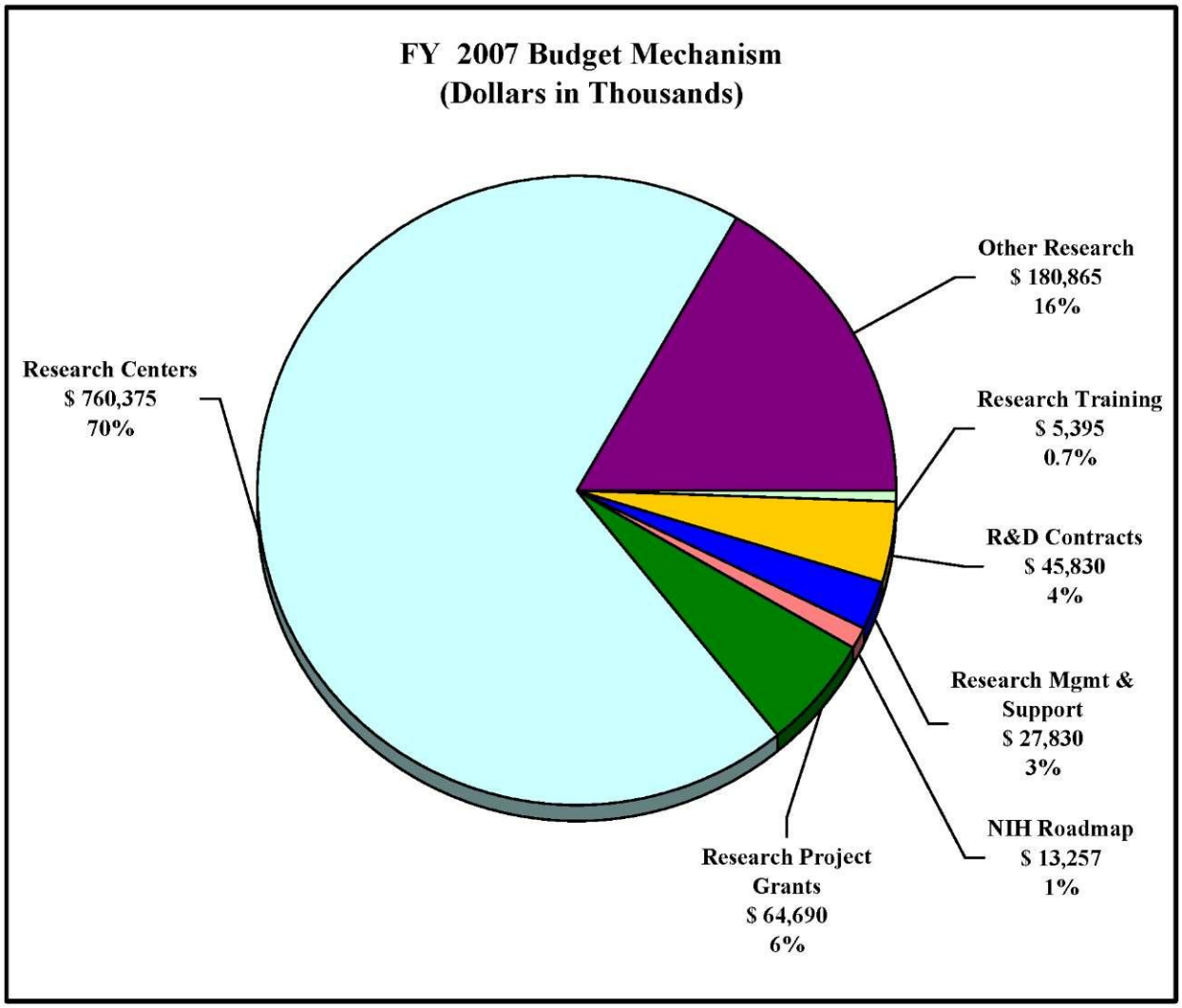
NCRR has, on behalf of NIH, launched the new Clinical and Translational Science Awards which are designed to speed the process by which biomedical discoveries are translated into

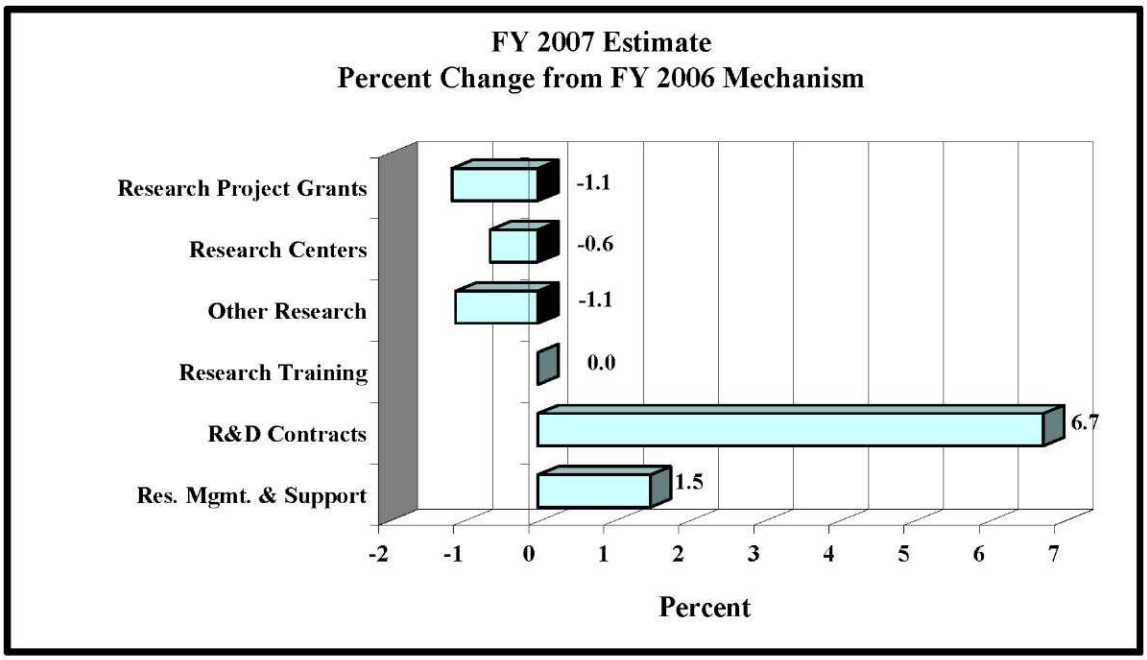
effective medical care for patients. The FY 2007 budget request includes an additional $3,000,000 for the new Clinical and Translational Science Awards, including the linked awards for career development and research training.

In the FY 2007 request, stipend levels for trainees supported through the Ruth L. Kirschstein National Research Service Awards will remain at the FY 2006 levels.

The FY 2007 request includes funding for 322 research centers, 511 other research grants, including 212 career awards, and 72 R&D contracts. Research Management and Support increases by 1.5 percent.

The mechanism distribution by dollars and percent change are displayed below:




FY 2007 Estimate
Percent Change from FY 2006 Mechanism
Research Project Grants
Research Centers
Other Research
Research Training
R&D Contracts
Res. Mgmt. & Support
-1.1
-0.6
-1.1
0.0
6.7
1.5
-2
-1
0
1
2
3
4
5
6
7
Percent

NATIONAL INSTITUTES OF HEALTH
National Center for Research Resources

Budget Mechanism - Total

MECHANISM	FY 2005 Actual		FY 2006 Appropriation		FY 2007 Estimate	
Research Grants:	No.	Amount	No.	Amount	No.	Amount
Research Projects:						
Noncompeting	86	$35,865,000	77	$25,268,000	79	$26,732,000
Administrative supplements	(0)	193,000	(0)	0	(0)	0
Competing:						
Renewal	7	3,581,000	9	4,608,000	8	4,096,000
New	24	5,582,000	33	7,806,000	27	6,244,000
Supplements	0	0	0	0	0	0
Subtotal, competing	31	9,163,000	42	12,414,000	35	10,340,000
Subtotal, RPGs	117	45,221,000	119	37,682,000	114	37,072,000
SBIR/STTR	99	27,742,000	97	27,757,000	97	27,618,000
Subtotal, RPGs	216	72,963,000	216	65,439,000	211	64,690,000
Research Centers:						
Specialized/comprehensive	94	215,234,000	95	219,986,000	93	215,938,000
Clinical research	103	297,560,000	105	304,909,000	101	307,693,000
Biotechnology	51	79,243,000	51	76,526,000	50	74,934,000
Comparative medicine	51	111,024,000	51	111,131,000	50	110,099,000
Research Centers in Minority Institutions	17	53,170,000	28	52,672,000	28	51,711,000
Subtotal, Centers	316	756,231,000	330	765,224,000	322	760,375,000
Other Research:						
Research careers	213	39,820,000	205	39,197,000	212	39,827,000
Cancer education	0	0	0	0	0	0
Cooperative clinical research	0	0	0	0	0	0
Biomedical research support	156	69,675,000	142	65,518,000	139	64,312,000
Minority biomedical research support	0	0	0	0	0	0
Other	165	71,734,000	161	78,149,000	160	76,726,000
Subtotal, Other Research	534	181,229,000	508	182,864,000	511	180,865,000
Total Research Grants	1,066	1,010,423,000	1,054	1,013,527,000	1,044	1,005,930,000
Research Training:	FTTPs		FTTPs		FTTPs	
Individual awards	0	0	0	0	0	0
Institutional awards	134	5,097,000	132	5,395,000	132	5,395,000
Total, Training	134	5,097,000	132	5,395,000	132	5,395,000
Research & development contracts	69	35,491,000	73	42,938,000	72	45,830,000
(SBIR/STTR)	(1)	(62,000)	(1)	(104,000)	(1)	(102,000)
	FTEs		FTEs		FTEs	
Intramural research						
Research management and support	87	27,269,000	86	27,419,000	87	27,830,000
Cancer prevention & control						
Construction		29,760,000		0		0
Buildings and Facilities						
NIH Roadmap for Medical Research	4	7,050,000	8	9,822,000	8	13,257,000
Total, NCRR	91	1,115,090,000	94	1,099,101,000	95	1,098,242,000
(Clinical Trials)		(102,105,000)		(103,146,000)		(102,739,000)

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research

NATIONAL INSTITUTES OF HEALTH
National Center for Research Resources

Budget Authority by Activity
(dollars in thousands)

ACTIVITY	FY 2005 Actual		FY 2006 Appropriation		FY 2007 Estimate		Change	
	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount
Extramural Research		$1,080,771		$1,061,860		$1,057,155		($4,705)
Research Management & Support	87	27,269	86	27,419	87	27,830	1	411
NIH Roadmap for Medical Research	4	7,050	8	9,822	8	13,257	0	3,435
Total	91	1,115,090	94	1,099,101	95	1,098,242	1	(859)

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research

NATIONAL INSTITUTES OF HEALTH
National Center for Research Resources

Summary of Changes

FY 2006 Estimate				$1,099,101,000
FY 2007 Estimated Budget Authority				1,098,242,000
Net change				(859,000)
	FY 2006 Appropriation		Change from Base	
CHANGES	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:				
1. Intramural research:				
a. Within grade increase		$0		$0
b. Annualization of January 2006 pay increase		0		0
c. January 2007 pay increase		0		0
d. Payment for centrally furnished services		0		0
e. Increased cost of laboratory supplies, materials, and other expenses		0		0
Subtotal				0
2. Research Management and Support:				
a. Within grade increase		10,763,000		187,000
b. Annualization of January 2006 pay increase		10,763,000		83,000
c. January 2007 pay increase		10,763,000		182,000
d. Payment for centrally furnished services		3,097,000		46,000
e. Increased cost of laboratory supplies, materials, and other expenses		13,559,000		269,000
Subtotal				767,000
Subtotal, Built-in				767,000

NATIONAL INSTITUTES OF HEALTH
National Center for Research Resources

Summary of Changes--continued

CHANGES	FY 2006 Appropriation		Change from Base	
	No.	Amount	No.	Amount
B. Program:				
1. Research project grants:				
a. Noncompeting	77	$25,268,000	2	$1,464,000
b. Competing	42	12,414,000	(7)	(2,074,000)
c. SBIR/STTR	97	27,757,000	0	(139,000)
Total	216	65,439,000	(5)	(749,000)
2. Research centers	330	765,224,000	(8)	(4,849,000)
3. Other research	508	182,864,000	3	(1,999,000)
4. Research training	132	5,395,000	0	0
5. Research and development contracts	73	42,938,000	72	2,892,000
Subtotal, extramural				(4,705,000)
	FTEs		FTEs	
6. Intramural research	0	0	0	0
7. Research management and support	86	27,419,000	1	(356,000)
8. Cancer control and prevention	0	0	0	0
9. Construction		0		0
10. Buildings and Facilities		0		0
11. NIH Roadmap for Medical Research	8	9,822,000	0	3,435,000
Subtotal, program		1,099,101,000		(1,626,000)
Total changes	94		1	(859,000)

NATIONAL INSTITUTES OF HEALTH
National Center for Research Resources

Budget Authority by Object

	FY 2006 Appropriation	FY 2007 Estimate	Increase or Decrease
Total compensable workyears:			
Full-time employment	94	95	1
Full-time equivalent of overtime & holiday hours	0	0	0
Average ES salary	$156,723	$159,309	$2,586
Average GM/GS grade	13.0	13.0	0
Average GM/GS salary	$92,771	$94,301	$1,530
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	$98	$103	$5
Average salary of ungraded positions	$141,347	143,679	2,332

	OBJECT CLASSES	FY 2006 Appropriation	FY 2007 Estimate	Increase or Decrease
	Personnel Compensation:			
11.1	Full-Time Permanent	$7,438,000	$7,842,000	$404,000
11.3	Other than Full-Time Permanent	918,000	968,000	50,000
11.5	Other Personnel Compensation	296,000	312,000	16,000
11.7	Military Personnel	98,000	104,000	6,000
11.8	Special Personnel Services Payments	14,000	14,000	0
	Total, Personnel Compensation	8,764,000	9,240,000	476,000
12.0	Personnel Benefits	1,977,000	2,083,000	106,000
12.2	Military Personnel Benefits	22,000	22,000	0
13.0	Benefits for Former Personnel	0	0	0
	Subtotal, Pay Costs	**10,763,000**	**11,345,000**	**582,000**
21.0	Travel & Transportation of Persons	480,000	458,000	(22,000)
22.0	Transportation of Things	52,000	49,000	(3,000)
23.1	Rental Payments to GSA	0	0	0
23.2	Rental Payments to Others	1,000	1,000	0
23.3	Communications, Utilities & Miscellaneous Charges	136,000	130,000	(6,000)
24.0	Printing & Reproduction	278,000	265,000	(13,000)
25.1	Consulting Services	8,543,000	7,711,000	(832,000)
25.2	Other Services	604,000	582,000	(22,000)
25.3	Purchase of Goods & Services from Government Accounts	40,864,000	43,030,000	2,166,000
25.4	Operation & Maintenance of Facilities	7,000	7,000	0
25.5	Research & Development Contracts	6,411,000	7,968,000	1,557,000
25.6	Medical Care	0	0	0
25.7	Operation & Maintenance of Equipment	1,647,000	1,570,000	(77,000)
25.8	Subsistence & Support of Persons	0	0	0
25	**Subtotal, Other Contractual Services**	**58,076,000**	**60,868,000**	**2,792,000**
26.0	Supplies & Materials	153,000	146,000	(7,000)
31.0	Equipment	418,000	398,000	(20,000)
32.0	Land and Structures	0	0	0
33.0	Investments & Loans	0	0	0
41.0	Grants, Subsidies & Contributions	1,018,922,000	1,011,325,000	(7,597,000)
42.0	Insurance Claims & Indemnities	0	0	0
43.0	Interest & Dividends	0	0	0
44.0	Refunds	0	0	0
	Subtotal, Non-Pay Costs	**1,078,516,000**	**1,073,640,000**	**(4,876,000)**
	NIH Roadmap for Medical Research	**9,822,000**	**13,257,000**	**3,435,000**
	Total Budget Authority by Object	**1,099,101,000**	**1,098,242,000**	**(859,000)**

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research

NATIONAL INSTITUTES OF HEALTH
National Center for Research Resources

Salaries and Expenses

OBJECT CLASSES	FY 2006 Appropriation	FY 2007 Estimate	Increase or Decrease
Personnel Compensation:			
Full-Time Permanent (11.1)	$7,438,000	$7,842,000	$404,000
Other Than Full-Time Permanent (11.3)	918,000	968,000	50,000
Other Personnel Compensation (11.5)	296,000	312,000	16,000
Military Personnel (11.7)	98,000	104,000	6,000
Special Personnel Services Payments (11.8)	14,000	14,000	0
Total Personnel Compensation (11.9)	**8,764,000**	**9,240,000**	**476,000**
Civilian Personnel Benefits (12.1)	1,977,000	2,083,000	106,000
Military Personnel Benefits (12.2)	22,000	22,000	0
Benefits to Former Personnel (13.0)	0	0	0
Subtotal, Pay Costs	**10,763,000**	**11,345,000**	**582,000**
Travel (21.0)	480,000	458,000	(22,000)
Transportation of Things (22.0)	52,000	49,000	(3,000)
Rental Payments to Others (23.2)	1,000	1,000	0
Communications, Utilities and Miscellaneous Charges (23.3)	136,000	130,000	(6,000)
Printing and Reproduction (24.0)	278,000	265,000	(13,000)
Other Contractual Services:			
Advisory and Assistance Services (25.1)	1,530,000	1,459,000	(71,000)
Other Services (25.2)	604,000	582,000	(22,000)
Purchases from Govt. Accounts (25.3)	11,454,000	11,525,000	71,000
Operation & Maintenance of Facilities (25.4)	7,000	7,000	0
Operation & Maintenance of Equipment (25.7)	1,647,000	1,570,000	(77,000)
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	**15,242,000**	**15,143,000**	**(99,000)**
Supplies and Materials (26.0)	153,000	146,000	(7,000)
Subtotal, Non-Pay Costs	16,342,000	16,192,000	(150,000)
Total, Administrative Costs	**27,105,000**	**27,537,000**	**432,000**

NATIONAL INSTITUTES OF HEALTH

National Center for Research Resources

SIGNIFICANT ITEMS IN HOUSE AND SENATE APPROPRIATIONS COMMITTEE REPORTS

FY 2006 House Appropriations Committee Report Language (H. Rpt. 109-143)

Item

Advancing clinical and translational sciences.—To capitalize on the revolutionary discoveries emerging from basic science, there is a pressing need to strengthen and accelerate the clinical research process, and to more efficiently transmit research findings to practitioners on the front lines of patient care. The Committee commends NIH for developing a proposal to overcome the challenges facing the translation of clinical research, which include: difficulty recruiting and retaining clinical researchers; increasing regulatory burden; fragmented training programs; and limitations/barriers due to NIH funding mechanisms, review and program structure. The Committee is supportive of NIH's efforts to help grantee institutions create the academic home and integrated resources needed to advance the new intellectual discipline of clinical and translational sciences, create a cadre of well-trained investigators, and transform basic discovery research into clinical practice. The Committee looks forward to hearing more about how this effort will integrate NIH's existing grants into more efficient awards, and how this will transform clinical and translational sciences. (p. 96)

Action taken or to be taken

In FY 2006, NCRR, on behalf of NIH, launched a new NIH Roadmap for Medical Research initiative—the Clinical and Translational Science Awards (CTSAs)—designed to speed the process by which biomedical discoveries are translated into effective medical care for patients. Developed with extensive input from the scientific community, the awards will help institutions nationwide create an academic home for clinical and translational research. CTSAs will provide an opportunity for institutions to develop critical resources and integrate clinical and translational science across multiple disciplines and academic departments, schools, clinical and research institutes, and hospitals. By lowering barriers between disciplines, and encouraging creative, innovative approaches to solve complex medical problems, the new CTSAs are expected to fundamentally transform the conduct of clinical and translational science in the United States and usher in a new decade of preemptive medical care.

To address the need for more integrated and focused institutional clinical and translational research support, the nationwide network of NCRR-funded General Clinical Research Centers (GCRCs) will gradually be transformed under the new CTSA program. The program will encourage the development of novel methods and approaches to clinical and translational research, enhance informatics and technology resources, and improve training and mentoring to ensure that new investigators can navigate the increasingly complex research system and pursue advanced degrees in clinical and translational research. The program will allow for local

flexibility so that each institution can determine whether to establish a center, department, or institute in clinical and translational science.

The CTSA program will build on existing programs by reconfiguring, and adding to, GCRC awards and several other NIH training and career development awards held by the applicant institution and its affiliates. While the initial set of 4 to 7 awards will be made in FY 2006, there will be annual opportunities for institutions to participate in the CTSA program. NCRR expects that many of the recipients of the one-time planning grants offered in FY 2006 will apply for a CTSA in FY 2007 and beyond. NCRR plans to fund approximately 10 more CTSAs in FY 2007 as part of the long-term plan to transform the clinical and translational research enterprise by 2012 with a total of 60 CTSAs implemented and integrated across the country.

Item
Clinical research curriculum award.—The clinical research curriculum award has been extremely effective in training successful clinical researchers. Funded programs report that over 60 percent of their graduates are active researchers who have already secured funding for their research. The Committee supports the NIH decision to increase the size of these awards from $200,000 to $300,000 and would support a decision by the NIH Director to increase funding from the various institutes and centers that support the program in order to expand the number of institutions receiving this important award. (p. 96)

Action taken or to be taken
The National Institutes of Health started the Clinical Research Curriculum Award (called K30) in FY 1999 by awarding 30 grants for $7 million. These awards provided support for institutions to develop programs designed to attract and train individuals to conduct clinical research. Through this initial program, 55 awards were granted. During FY 2004, the NIH leadership discussed the merits of the program and determined that it should be re-announced and that total annual costs for each award should be increased from $200,000 to $300,000. In addition, the program was re-structured to ensure all NIH Institutes and Centers participated in the funding. In FY 2005, this completely trans-NIH program supported awards to 49 institutions at a cost of $14,700,000. Because of the high quality of the application pool and a belief that the grant provided didactic infrastructure that could not be provided by other mechanisms, the NCRR individually funded 2 additional awards bringing to 51 the total number of Clinical Research Curriculum Awards in FY 2005.

Item
Cystic fibrosis (CF).—The Committee commends NCRR for its efforts to improve systems for efficient conduct of clinical trials. NCRR support for the CF clinical trials system continues to contribute to the development of data collection and analysis systems and data safety monitoring efforts that are critical elements of the CF system. The Committee encourages NCRR to strengthen its support for clinical trials systems, including CF work. (p. 96)

Action taken or to be taken
NCRR supports the Cystic Fibrosis Therapeutics Development Network (TDN) at the University of Washington General Clinical Research Center. This non-profit, national network comprises specialized clinical research centers, core laboratories, and interpretation centers. The TDN's

primary purpose is to facilitate development and conduct of early phase clinical trials to evaluate new therapeutic agents. These trials may involve investigational drugs, investigational devices, new biological agents, or approved agents not currently approved for use in cystic fibrosis. In addition, the TDN may conduct clinical studies to identify appropriate outcomes for future trials in cystic fibrosis. Each new TDN trial strives to improve study design and/or clinical outcome measures, accelerating the development process while continuing to protect patient safety and welfare.

Item

Clinical trials technology.—The Committee encourages NCRR to work with grantees in the Research Centers at Minority Institutions (RCMI) program and the General Clinical Research Centers (GCRC) program to upgrade their clinical trials data management capabilities. (p. 97)

Action taken or to be taken

A GCRC Informatics Working Group (IWG), supported by NCRR and comprised of informatics managers at GCRCs, has been established to develop and maintain GCRC management software, including tools for clinical studies and trials management. This group recently released the beta version of a web-based GCRC management software application, which will replace an outdated system used by the majority of GCRCs. The IWG was also instrumental in implementing NCRR's system to system transfer of GCRC annual progress reports. In addition, the recent Request for Applications for Clinical and Translational Science Awards, released by NCRR on behalf of the NIH Roadmap, encourages institutions to incorporate strong clinical informatics programs to effectively manage clinical studies and trials. This new institution based program will also encourage cooperation and collaboration among the informatics programs at the funded institutions and with national healthcare informatics efforts, as well as those of government agencies and the private sector. NCRR staff will work with the RCMI grantee community to ensure that the clinical trials data management capabilities of the RCMI Clinical Research Centers are upgraded in line with the upgrades planned for all NCRR clinical grantees.

Item

Islet cell resource (ICRs) centers.—The Committee applauds the goal of the ICRs to provide human islets for transplantation and basic scientific research. The Committee encourages the NCRR to ensure that the ICRs continue to improve the quality and consistency of islet isolation. The NCRR is also urged to maximize the data collection and analysis potential of the Administrative and Bioinformatics Coordinating Center, the coordinating center for the ICR consortium. (p. 97)

Action taken or to be taken

With co-funding from the Office of the Secretary, DHHS, NCRR supports 7 Islet Cell Resource Centers (ICRs) that optimize the isolation, characterization and shipping of human pancreatic islets, both for transplantation into patients with severe, uncontrolled Type 1 diabetes and for basic research throughout the country at no charge to the investigators.

To ensure quality, outside auditors inspected and certified each ICR's ability to produce islets according to Good Manufacturing Practice (GMP) specifications. A Steering Committee

composed of ICR directors, outside experts, NIH staff, and Juvenile Diabetes Research Foundation (JDRF) staff provides oversight of this cooperative agreement.

The Administrative and Bioinformatics Coordinating Center (ABCC), located at the Beckman Research Center at the City of Hope, Duarte, CA, has established a database to acquire the pancreas and islet processing data generated by the ICRs. The ABCC also developed agreements with and web-based software for interfacing with the NIDDK- and United Network for Organ Sharing (UNOS)-sponsored clinical and donor registries so investigators can share data without having to enter the same data more than once. The ABCC biostatisticians will correlate information from these 3 sources to develop formulae that predict the likelihood that transplantation of specific batches of islets will yield clinical success. The ABCC is working to integrate the database of the Medicare islet transplantation demonstration project into the ICR network and achieve even greater synergy among these NIH programs.

FY 2006 Senate Appropriations Committee Report Language (S. Rpt. 109-103)

Item

Clinical Research Curriculum Award.—The Clinical Research Curriculum Awards or K30, has been extremely effective in training successful clinical investigators. Funded programs report that over 60 percent of their graduates are active researchers who have already secured funding for their research. The Committee supports the NIH decision to increase the size of these awards from $200,000 to $300,000 but is concerned that this was accomplished by reducing the number of funded institutions. The Committee would encourage increased support in order to expand rather than reduce the number of institutions receiving this important award. (p. 151)

Action taken or to be taken

Please refer to page NCRR-30 of this document for NCRR's response to this significant item regarding Clinical Research Curriculum Awards.

Item

Clinical and Translational Science Awards [CTSA].—In September 2003, NIH launched the NIH Roadmap for Medical Research, a set of trans-NIH research initiatives designed to accelerate the pace of discovery and improve the translation of research findings into medical and health interventions for public benefit. A critical component of the Roadmap is the theme of re-engineering the clinical research enterprise. The Committee has encouraged the Director to utilize the NCRR-funded General Clinical Research Centers as the foundation of NIH Roadmap activities related to clinical research. NIH is now poised to capitalize on the revolutionary discoveries emerging from basic science, and has developed an innovative proposal to address the current difficulty recruiting and retaining clinical researchers; the increasing regulatory burden; fragmented training programs; and limitations and barriers due to NIH funding mechanisms, review and programs structures. The Committee supports NIH's efforts to integrate NIH's General Clinical Research Centers [GCRCs] and other relevant clinical mechanisms into a new and more efficient single application that results in awards that combine clinical science support with clinical career development and training. This will transform clinical and translational sciences for the future. The Committee has a longstanding and abiding

interest in the health of the clinical research system supported under this appropriation, and therefore requests that NIH submit a report by February 6, 2006. The report should describe NIH's new award for clinical and translational sciences, which NIH expects to fund in fiscal year 2006, describe the expected costs in fiscal year 2006 and fiscal year 2007, and indicate the specific components of the program and plans for transition from the current funding mechanisms to the new awards. The Committee expects that the new award will support the full spectrum of clinical research activities, from early translation between the laboratory and the patient to epidemiological studies and health services research. The report should describe how this will be accomplished. The Committee has included $327,000,000 for clinical research supported by the GCRCs and the CTSAs combined. The Committee expects the total number of awards for this combined program to remain at 79 in fiscal year 2006. (p. 151)

Action taken or to be taken
As requested, a Congressional Appropriations Committee Report (CACR) will be submitted to the Senate Appropriations Committee. Please also refer to page NCRR-29 of this document for NCRR's response to the House Appropriations Committee report language regarding advancing clinical and translational sciences.

Item
Clinical Trials Technology.—The Committee encourages NCRR to work with grantees in the Research Centers at Minority Institutions [RCMI] program and the General Clinical Research Centers [GCRC] program to upgrade their clinical trials data management capabilities. (p. 152)

Action taken or to be taken
Please refer to page NCRR-31 of this document for NCRR's response to this significant item regarding Clinical Trials Technology.

Item
Extramural Facilities Construction at Minority Institutions.—The Committee encourages NCRR to give priority consideration to supporting extramural facilities construction projects at historically minority institutions which have developed a comprehensive plan to address the disproportionate impact of cancer in minority communities, and those which have developed plans for enhancing their library facilities. (p. 152)

Action taken or to be taken
In FY 2004, construction awards were made to Meharry Medical College, Morehouse School of Medicine, and Howard University School of Pharmacy, which are historical black colleges that are conducting cancer research projects. The awards will provide support for the following projects: 1) consolidation of research on health issues that disproportionately affect women of color, conducted by investigators in the departments of obstetrics and gynecology, and psychiatry; the studies focus on breast cancer, reproductive health, and socio-behavioral dimensions of HIV/AIDS (Meharry); 2) upgrades to an animal care and use program that will benefit breast cancer and cardiovascular disease research in African Americans (Morehouse); and 3) construction of a state-of-the-art research laboratory facility that will house the Center for Drug Research and Development which will benefit prostate and breast cancer research projects (Howard).

In FY 2005, a construction award was made to Meharry Medical College, a historical black college that is conducting research in breast cancer biology, AIDS, cardiovascular disease and diabetes, and neurobiology and neurotoxicology.

Item
Extramural Construction.—The Committee has included bill language identifying $30,000,000 for extramural biomedical facility renovation and construction. This amount is the same as the fiscal year 2005 appropriation. The fiscal year 2006 budget proposed to eliminate funding for the program. These funds are to be awarded competitively, consistent with the requirements of section 481A of the Public Health Service Act, which allocates 25 percent of the total funding to institutions of emerging excellence. (p. 152)

Action taken or to be taken
No funds were appropriated for this program in FY 2006.

In FY 2005, institutions of emerging excellence received 26.3 percent ($8 million from total awards of $30.4 million) of total funds appropriated for the Extramural Research Facilities Improvement Program. The total number of awards made to institutions of emerging excellence was 2 out of 11 awards in FY 2005.

Item
General Clinical Research Centers.—The Committee is concerned about the growing gap between the GCRC budgets approved by the NCRR Advisory Council and the actual budgets awarded. The Committee requests a report comparing the Advisory Council-approved budgets and the actual funds awarded to each GCRC for fiscal years 2003, 2004, and 2005. The Committee requests this same information as soon as possible. (p. 152)

Action taken or to be taken
As requested, a Congressional Appropriations Committee Report (CACR) will be submitted to the Senate Appropriations Committee.

Item
National Primate Research Centers.—The Committee values the critical role played by the eight National Primate Research Centers [NPRCs]. These Centers conduct specialized basic and applied biomedical research and offer essential and valuable services to other researchers. Primates are increasingly important to the Nation's public health priorities in areas such as biodefense, heart disease, cancer, diabetes, AIDS, kidney disease, Alzheimer's, Parkinson's and emerging infectious diseases. In fiscal year 2004, the Committee urged the NIH to fully commit to the NPRCs' Five Year Federal Advancement Initiative in order to address the upgrades and program expansions required to meet the demanding research needs of the Nation. Nevertheless, NIH has taken only incremental steps to increase the NPRCs' base grant funding. The Committee strongly urges the NIH to place a higher priority on funding these centers adequately. (p. 153)

Action taken or to be taken

The National Primate Research Centers (NPRCs), in combination with other primate resources funded by NCRR, continue to play a major role in supplying the animals, physical infrastructure and expertise needed to facilitate the use of non-human primates by the biomedical research community. The NPRCs participate in translational research involving, among others, AIDS, neurobiology, including Alzheimer's and Huntington disease, transplantation, gene therapy, aging and analysis of complex diseases such as diabetes. The NPRCs also continue to be major centers for the advancement of non-human primate husbandry practices and welfare.

The NCRR recognizes the need to expand and upgrade the capabilities and facilities of the NPRCs. Accordingly, funding for the NPRCs totaled $75.8 million in fiscal year 2005, a 5 percent increase over funding in fiscal year 2004. This compares with a decrease in the NCRR budget of 8 percent and an estimated 2 percent increase in the total NIH budget during this period. Additionally, the NIH Office of AIDS Research provided $6.0 million (as a supplement) and the National Institute on Aging provided $627,000 to enhance the capabilities of these Centers. Funding from NCRR for construction and renovation of animal facilities at the NPRCs totaled $6.8 million in FY 2005. Funding support to the NPRCs for specific pathogen free monkey colonies, of particular use for AIDS research, totaled $15.0 million. Significantly, the number of animals in these colonies increased 20 percent in fiscal year 2005. Finally, NCRR also funded a number of resource and research grants both to NPRC core scientists and investigators at non-NPRC sites conducting research at the NPRCs. These grants include breeding facilities for various monkey species, programs that focus on non-human primate models for AIDS research, and development of new genetic tools for non-human primates, among others. These grants totaled approximately $31 million in fiscal year 2005.

In general, increases in base grant and related funding allowed the NPRCs to continue to be major contributors to translational research involving non-human primates. In addition, the following specific projects were begun or enhanced at specific NPRCs in fiscal year 2005: a) Upgraded perimeter fencing and other security measures; b) Enhanced informatics technology capabilities and collaborations; c) Linkage of complex primate brain imaging data to the NCRR-funded Biomedical Informatics Research Network; d) Development and dissemination to the research community of new genetics and genomics tools; and d) Increased capabilities for obtaining rhesus monkeys from foreign sources and training of foreign veterinarians and primatologists at the NPRCs.

Finally, Hurricane Katrina damaged the Tulane NPRC in Covington, Louisiana, north of New Orleans. Animals and staff were not injured, but perimeter fencing and corrals (from which animals were removed before the storm) were damaged. The Center was without power and operated using emergency generators for many days. The Office of the Director, NIH, and the NCRR aided the Tulane NPRC during this crisis by locating and purchasing an emergency generator and facilitating the delivery of diesel fuel.

Item

PET.—The Committee continues to urge NCRR to support research resource centers for the development and refinement of positron emission tomography [PET] as a unique imaging technology to diagnose and stage diseases of the brain, including Alzheimer's disease. (p. 155)

Action taken or to be taken

In FY 2005, NCRR provided funds to acquire PET scanners at Washington University in St. Louis and Sloan Kettering Institute for Cancer Research in New York. The PET scanners at these resources support research on optimization of PET for technical assessment of response to therapy, gene expression, malignant transformation, cerebral plasticity, forebrain development, antipsychotic drug mechanisms of action, cerebral neurotransmitter interactions, and hallucination drugs.

PET scans of the brain are also being performed in several General Clinical Research Centers (GCRCs) with NCRR support to study, for example, Alzheimer's disease, depression, alcohol dependence, sleep, stroke rehabilitation, compulsive behavior, schizophrenia, post-traumatic stress disorder, trauma, and deafness.

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Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2006 Amount Authorized	FY 2006 Appropriation	2007 Amount Authorized	FY 2007 Budget Estimate
Research and Investigation	Section 301	42§241	Indefinite	$1,093,706,000	Indefinite	$1,092,847,000
National Center for Research Resources	Section 41B	42§285b	Indefinite		Indefinite	
National Research Service Awards	Section 487(d)	42§288	a/	5,395,000		5,395,000
Total, Budget Authority				1,099,101,000		1,098,242,000

a/ Amounts authorized by Section 301 and Title IV of the Public Health Act.

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Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation 1/
1998	333,868,000 2/	436,961,000	455,805,000	453,883,000
1999	421,721,000 2/ 3/	513,948,000	554,819,000	554,819,000
Rescission				(373,000)
2000	469,684,000 2/	642,311,000	625,988,000	680,176,000
Rescission				(3,619,000)
2001	602,728,000 2/	832,027,000	775,212,000	817,475,000
Rescission				(52,000)
2002	974,038,000	966,541,000	1,014,044,000	1,012,627,000
Rescission				(89,000)
2003	1,090,217,000	1,090,217,000	1,161,272,000	1,146,272,000
Rescission				(7,451,000)
2004	1,053,926,000	1,053,926,000	1,186,483,000	1,186,183,000
Rescission				(7,125,000)
2005	1,094,141,000	1,094,141,000	1,213,400,000	1,124,141,000
Rescission				(9,051,000)
2006	1,100,203,000	1,100,203,000	1,188,079,000	1,110,203,000
Rescission				(11,102,000)
2007	1,098,242,000			

1/ Reflects enacted supplementals, rescissions, and reappropriations.
2/ Excludes funds for HIV/AIDS research activities consolidated in the NIH Office of AIDS Research
3/ Reflects a decrease of $1,274,000 for the budget amendment for Bioterrorism

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Detail of Full-Time Equivalent Employment (FTEs)

OFFICE/DIVISION	FY 2005 Actual	FY 2006 Appropriation	FY 2007 Estimate
Office of the Director	8	8	8
Office of Extramural Activities	25	27	27
Office of Administrative Management	15	14	14
Office of Science Policy & Public Liaison	9	9	9
Division for Clinical Research Resources	8	9	10
Division for Biomedical Technology Research and Research Resources	8	9	9
Division of Comparative Medicine	6	6	6
Division of Research Infrastructure	12	12	12
Total	91	94	95
Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research			
FTEs supported by funds from Cooperative Research and Development Agreements	(0)	(0)	(0)

FISCAL YEAR	Average GM/GS Grade
2003	11.4
2004	11.7
2005	12.9
2006	13.0
2007	13.0

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Detail of Positions

GRADE	FY 2005 Actual	FY 2006 Appropriation	FY 2007 Estimate
Total - ES Positions	3	3	3
Total - ES Salary	$452,086	$470,169	$470,169
GM/GS-15	12	12	12
GM/GS-14	29	32	33
GM/GS-13	12	12	12
GS-12	15	15	15
GS-11	7	7	7
GS-10	2	2	2
GS-9	2	2	2
GS-8	1	1	1
GS-7	1	1	1
GS-6	1	1	1
GS-5	0	0	0
GS-4	0	0	0
GS-3	0	0	0
GS-2	0	0	0
GS-1	0	0	0
Subtotal	82	85	86
Grades established by Act of July 1, 1944 (42 U.S.C. 207):			
Assistant Surgeon General			
Director Grade	0	1	1
Senior Grade			
Full Grade			
Senior Assistant Grade			
Assistant Grade			
Subtotal	0	1	1
Ungraded	22	22	22
Total permanent positions	86	89	90
Total positions, end of year	107	111	112
Total full-time equivalent (FTE) employment,end of year	91	94	95
Average ES salary	$150,695	$156,723	$159,309
Average GM/GS grade	12.9	13.0	13.0
Average GM/GS salary	$89,686	$92,771	$94,301

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research

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New Positions Requested

	FY 2007		
	Grade	Number	Annual Salary
Medical Officer	GS-14	1	$101,478
Total Requested		1	