



# National Center for Research Resources

**A Catalyst  
for Discovery**

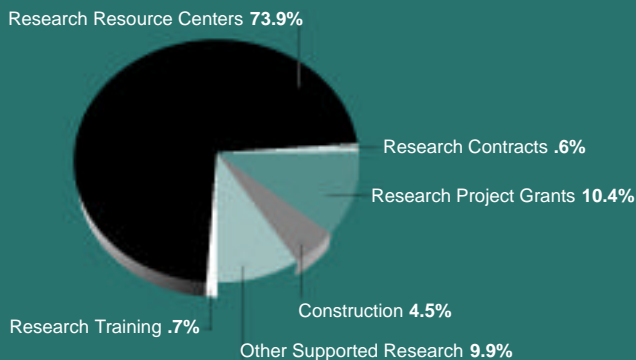


National Institutes of Health

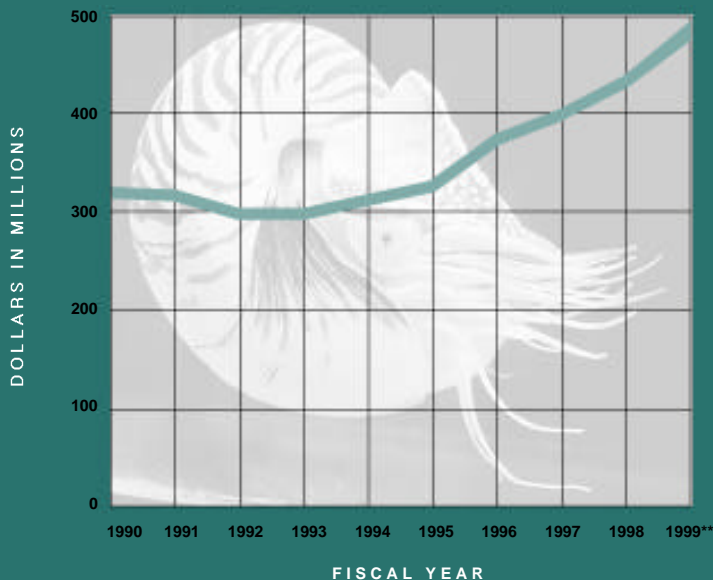
# The National Center for Research Resources

## NCRR-Funded Categories

FISCAL YEAR 1998



## NCRR Appropriations\*



\* Excludes research management and support funds

\*\* President's Budget

## The National Center for Research Resources

(NCRR) is part of the National Institutes of Health (NIH), one of the world's foremost biomedical research organizations. Among the institutes, centers, and divisions of the NIH, NCRR has a unique role. Rather than supporting studies of a specific disease or disorder, NCRR supports research and resource projects that enable NIH-wide collaborations important to discoveries in many areas of health. The diversity of NCRR support helps biomedical investigators and institutions develop and access specialized technologies, instrumentation, facilities, animal models (mammalian and nonmammalian), genetic stocks, and materials such as cell lines, tissues, and organs. In parallel with specific research needs of NIH-supported investigators, NCRR's support is concentrated in four areas: Clinical Research, Comparative Medicine, Biomedical Technology, and Research Infrastructure. NCRR complements the mission of the NIH to seek scientific knowledge that will lead to better health and reduced illness and disability for our nation's citizens.

## THE BENEFITS OF SHARED RESOURCES

NCRR is the nation's leading supporter of biomedical research resources that are often one of a kind, scarce, or expensive. When numerous researchers have access to a given resource, the effectiveness of that resource is maximized relative to its cost. These shared resources allow scientists to react rapidly and effectively to emerging health problems and unexpected research opportunities. Collaborative research opportunities also evolve. Formal and informal interactions among multidisciplinary users of shared resources often lead to new ideas, perspectives, and scientific concepts, serving to integrate diverse research efforts.



## Biomedical Technology

NCRR's Biomedical Technology area supports research and resource projects at the forefront of biomedical research. This area of NCRR assures that today's investigators have access to cutting-edge technologies, tools, techniques, and instrumentation essential for tomorrow's discoveries. At approximately 60 Biomedical Technology Resource Centers located at research institutions across the country, NCRR funding stimulates the creation, research, and development of a wide range of complex technological capabilities. These capabilities, generally unavailable through other sources, are needed by the biomedical research community to solve research problems involving particular technological challenges. Collaborative projects between the resource centers' multidisciplinary teams of scientists and engineers and the resource users lead

to new ways of applying the centers' technologies, techniques, and methods.

NCRR's Shared Instrumentation Grants (SIG) program helps researchers purchase sophisticated instrumentation often too expensive to be obtained through individual research grants. This grant mechanism provides awards to institutions with a high concentration of NIH-supported biomedical investigators to buy commercially available instruments that cost at least \$100,000. There is no upper limit on the cost of an instrument, but the maximum SIG award is \$400,000. Instruments funded by SIGs include high-resolution and high-throughput DNA sequencers, high-field NMR spectrometers, laser scanning confocal microscopes, and high-performance computers. The shared use of these instruments by a number of investigators optimizes federal research dollars. A recent survey of a 10-year period demonstrated that more than 16,000 scientists had used 1,352 instruments purchased through SIG awards.

NCRR-supported resources provide biomedical researchers access to technologies that are among the most advanced in the world. Here, a scientist and postdoctoral students explore the attributes of macromolecules using MDScope, an integrated set of computational tools that functions as an interactive visual environment for the simulation and study of biomolecular assemblies. *(Photo courtesy of the NIH Resource for Concurrent Biological Computing, Beckman Institute)*

## Clinical Research

NCRR's Clinical Research area translates scientific knowledge into effective patient care through a network of approximately six dozen General Clinical Research Centers (GCRCs). These centers, typically discrete units within university-based hospitals, bring together patients of all ages and physician-scientists from all medical specialties. GCRCs are equipped with sophisticated laboratories, metabolic kitchens, and specialized support staff—such as nurses, dietitians, statisticians, and computer systems analysts—who are knowledgeable and skilled in biomedical research processes. GCRCs are accessible to clinical investigators who receive their primary research support from NIH, other federal agencies, or private organizations. Each year an estimated 8,500 investigators pursue a broad range of research projects at the GCRCs. In addition, GCRCs provide a rich environment for the training and career development of clinical investigators.

Solid research infrastructure is vital to any biomedical investigation. With NCRR support, a Human Leukocyte Antigen Laboratory was established at Howard University College of Medicine in Washington, DC. This laboratory has enabled researchers to define tissue antigens in African Americans. It also has been critical for tissue typing in human organ transplantation and has expanded the institution's capacity to study genetic diseases in minority populations. (Photo by Jeffrey John Fearing, Howard University College of Medicine)



NCRR's Clinical Research area also has a key role in the promising new field of gene therapy. In 1995, NCRR and several NIH institutes launched the National Gene Vector Laboratories program. Laboratories supported under this program will enable research scientists to obtain clinical-grade gene vectors needed for therapeutic protocols to treat both rare and common diseases.

To ensure a source for a variety of human tissues and organs for biomedical research, NCRR supports the National Disease Research Interchange. This center procures and distributes human tissues tailored to the individual researcher's scientific protocol.



**Anational network of NCRR-supported clinical research centers provides the research infrastructure clinical investigators need to test new medical treatments, drugs, or prevention strategies. These General Clinical Research Centers, with inpatient and outpatient facilities, are equipped to respond to changing scientific and economic environments and to unforeseen research challenges.** (Photo by Linda Goings, University of Michigan)

## Research Infrastructure

NCRR's Research Infrastructure area expands the nation's capability to conduct biomedical and behavioral research by developing the research infrastructure at minority institutions. Through its Research Centers in Minority Institutions program, NCRR assists predominately minority academic institutions that have graduate programs in the health sciences to become more competitive in obtaining research support. Through other grant awards, NCRR helps academic minority institutions affiliated with medical schools develop the appropriate infrastructure needed to expand their clinical research. NCRR's merit-based, peer-reviewed institutional development awards assist academic institutions in eligible states with historically low success in obtaining NIH grant funding in expanding their capacities to conduct health-science research.

NCRR also supports science education. This support encourages biomedical investigators to partner with educators and community organizations on projects that improve student and public understanding of health sciences.

NCRR's efforts to build a strong research infrastructure would not be possible without supporting construction of new facilities or modernization of outdated ones. NCRR provides matching federal funds to renovate or construct research laboratories, upgrade animal facilities, and improve animal-care programs.

## Comparative Medicine

Animals are essential in linking basic biomedical research, clinical studies, and, ultimately, effective treatments for human disease. Through research projects and resources supported by NCRR's Comparative Medicine area, biomedical investigators develop and access a wide range of high-quality, disease-free animals as models for human health problems. Models include nonhuman primates and other mammalian species, nonmammalian models, and biological materials.

Seven Regional Primate Research Centers are among the unique and valuable animal resources supported by NCRR. These centers, located at major academic institutions across the United States, provide appropriate environments and technological expertise to support the biomedical research of core faculty and collaborative and affiliated scientists. Studies range from fundamental research in primate biology and behavior to the molecular biology of viral diseases



Having the right animal model is often the key to important health discoveries. To meet investigators' needs for AIDS-related research and vaccine development, NCRR supports the first national effort to establish a stable population of specific-pathogen-free macaque monkeys, bred to be free of specific retrovirus pathogens that can compromise AIDS research efforts.

that affect humans, such as AIDS. To meet researchers' needs, NCRR sponsored the first stable supply of chimpanzees and specific-pathogen-free macaque monkeys for AIDS investigations supported by the U.S. Public Health Service. NCRR also sponsors initiatives to improve the health and care of laboratory animals.

Other mammalian models supported by NCRR include transgenic and "knockout" mice, which have advanced studies of normal cell functions and pathological conditions related to human diseases. NCRR also supports the development and maintenance of nonmammalian models—lower vertebrates and invertebrates—with which to study human diseases and better understand biological processes. Nonanimal models, such as mathematical and computer models, are also supported by NCRR, as are bacterial cultures, viruses, cell systems, cell lines, and other critical materials.



**NCRR supports laboratory animal models that serve the biomedical research community. The zebrafish, *Danio rerio*, has become an important developmental model of vertebrates because it is easy to breed, has a transparent embryo, and can be genetically manipulated so that only the genes of one parent are expressed. Several thousand mutant strains are now available with the fish equivalents of human disorders such as thalassemia, porphyria, and cancer. The most important contributions of the zebrafish, however, will be in studies of vertebrate development, and possibly the prediction and treatment of genetic diseases before birth.** (Photo courtesy of the University of Oregon)

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**THE POWER OF PARTNERSHIPS** Partnerships among federal agencies, academia, and private industry become more critical as competing public needs vie for limited federal funding. To help leverage the public's tax dollars, NCRR works hand-in-hand with every institute of the National Institutes of Health and also collaborates with the National Science Foundation, Department of Energy, and National Aeronautics and Space Administration to name a few.

## NCRR Research Resource Opportunities\*



### Description of grant mechanisms

### For More Information, Contact:

#### Type of Awards: *Institutional*

- General Clinical Research Centers: Support highly specialized research environments for NIH-supported clinical investigators and other federally supported researchers to conduct controlled inpatient and outpatient studies. Career development opportunities, administered by each center, exist in clinical research training for physicians/dentists.
- Regional Primate Research Centers: Support specialized facilities, personnel, equipment, breeding colonies of nonhuman primates, and other resources needed by qualified investigators to conduct independent and collaborative multicategorical research.
- Support special colonies of laboratory animals, including nonhuman primates, induced mutants, and other resources, such as cultures and genetic stocks, that serve the biomedical research community.
- Biomedical Technology Resource Centers: Support highly specialized centers for technological research and development of complex, new technologies or instruments with broad biomedical research applications. Technologies are accessible to the biomedical research community, with training and service provided by center researchers.
- Shared Instrumentation Grants: Support the purchase of commercially available, state-of-the-art instruments for use in biomedical research. Instruments must cost at least \$100,000. Need must be based on shared use by a minimum of three NIH-supported researchers.
- Research Centers in Minority Institutions (RCMI): Support capabilities of predominately minority colleges and universities that offer doctorates in health or health-related sciences to conduct biomedical and behavioral research.
- RCMI Clinical Research Infrastructure Initiative: Support capabilities of RCMI grantees affiliated with medical schools to conduct clinical research.
- Support to encourage biomedical research investigators to partner with educators and community organizations to increase student and public understanding of health science.
- Matching funds for new construction of research laboratories and remodeling of existing health-related research laboratories.

#### Type of Awards: *Investigator Initiated*

- Support innovative, developmental, exploratory research projects, that may be high risk, for new or improved technologies or models for biomedical research applications. Projects may translate a scientific concept into the basis for a future model or technology that would significantly change research approaches and may lead to the development of a shared research resource.

*Clinical Research*  
301-435-0790  
email: CRADIR@ep.ncrr.nih.gov

*Comparative Medicine*  
301-435-0744  
email: CMADIR@ep.ncrr.nih.gov

Same as above.

*Biomedical Technology*  
301-435-0755  
email: BTADIR@ep.ncrr.nih.gov

*Biomedical Technology*  
301-435-0755  
email: SIG@ep.ncrr.nih.gov

*Research Infrastructure*  
301-435-0788  
email: RIADIR@ep.ncrr.nih.gov

Same as above.

Same as above.

Same as above.

*Biomedical Technology*  
301-435-0755  
email: BTADIR@ep.ncrr.nih.gov

OR  
*Comparative Medicine*  
301-435-0744  
email: CMADIR@ep.ncrr.nih.gov

### Mission

The National Center for Research Resources advances biomedical research and improves human health through grant awards for research projects and shared research resources that create, develop, and provide a comprehensive range of human, animal, technological and other resources.

### For additional information, contact:

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NCRRHome Page:  
<http://www.ncrr.nih.gov>

### Available NCRR Publications:

*Clinical Research Resources* directory

Fact Sheet:  
Clinical Research

*Biomedical Technology Resources* directory

Fact Sheet:  
Biomedical Technology

*Comparative Medicine Resources* directory

Fact Sheet: Comparative  
Medicine

Fact Sheet:  
Research Infrastructure

NCRRHighlights magazine

NCRRReporter magazine

\* This partial list describes NCRR's major grant mechanisms. Program announcements contain the requirements of each mechanism and are available through the NCRR Home Page: <http://www.ncrr.nih.gov> as they are issued. The NCRR Web site also provides information on resources that are supported by NCRR through cooperative agreements with other organizations and can be accessed by the biomedical research community.