

NATIONAL INSTITUTES OF HEALTH
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL PRIMATE RESEARCH CENTERS (NPRC) PROGRAM
DIVISION OF COMPARATIVE MEDICINE
NATIONAL CENTER FOR RESEARCH RESOURCES

2P51RR000167-45
NATIONAL PRIMATE RESEARCH CENTER SUPPORT

Final

UNIVERSITY OF WISCONSIN-MADISON

ANNUAL PROGRESS REPORT

Reporting From: 04/30/2005

Reporting To: 04/29/2006

66.500% AIDS Related

withheld



Patent or Copyright was not awarded this grant year.

PERSONNEL ROSTER

Core Doctoral Scientists

Name, Degree	Department	Non-Host Institution: State, Country
withheld		

Affiliated

Name, Degree	Department	Non-Host Institution: State, Country
withheld		Proprietary Info
		UNIVERSITY OF ALABAMA-BIRMINGHAM: AL, USA
		Proprietary Info
		Proprietary Info
		Proprietary Info

Affiliated

Name, Degree

Department

Non-Host Institution: State, Country

withheld

Proprietary Info

Proprietary Info

NENPRC & Proprietary Info

Proprietary Info

Proprietary Info

Proprietary Info

UNIVERSITY OF ILLINOIS, COLLEGE OF MEDICINE: IL, USA

Proprietary Info

U MASS. MEDICAL SCHOOL: MA, USA

WAYNE STATE UNIVERSITY: MI, USA

ONPRC: OR, USA

UNIVERSITY OF TEXAS AT AUSTIN: TX, USA

Proprietary Info

UNIVERSITY OF MINNESOTA: MN, USA

Proprietary Info

Proprietary Info

UNIVERSITY OF OKLAHOMA: OK, USA

UNIVERSITY OF SOUTH CAROLINA: SC, USA

Affiliated

Name, Degree	Department	Non-Host Institution: State, Country
withheld		UNIVERSITY OF WISCONSIN-MILWAUKEE: WI, USA
		Proprietary Info Proprietary Info
		ONPRC: OR, USA FELS INSTITUTE OF CANCER RESEARCH & TEMPLE U. SCH. OF MEDICINE, PHILADELPHIA: PA, USA UNIVERSITY OF NEW ORLEANS AND Proprietary Info LA, USA
		Proprietary Info
		CNPRC: CA, USA
		Proprietary Info
		OKLAHOMA HEALTH SCIENCES CENTER: OK, USA Proprietary Info
		ONPRC: OR, USA
		Proprietary Info
		Proprietary Info
		Proprietary Info
		OREGON HEALTH SCIENCES UNIVERSITY OF USA Proprietary Info
		WANPRC: WA, USA

Affiliated

Name, Degree	Department	Non-Host Institution: State, Country
withheld		UNIVERSITY OF CALIFORNIA-RIVERSIDE: CA, USA
		UNIVERSITY OF MINNESOTA: MN, USA
		UNIVERSITY OF CALIFORNIA-DAVIS: CA, USA
		Proprietary Info
		CALIFORNIA NATIONAL PRIMATE RESEARCH CENTER: CA, USA
		Proprietary Info
		Proprietary Info
		UNIVERSITY OF PITTSBURGH: PA, USA
	Proprietary Info	
	Proprietary Info	
	Proprietary Info	

SUBPROJECT DESCRIPTIONS

NPRC MANAGEMENT SUBPROJECTS

WNPRC DIRECTOR'S OFFICE (0184)

NPRC UNIT: ADMINISTRATIVE

%NPRC \$: 7.750% AIDS RELATED RESEARCH

INVESTIGATOR	DEGREES	STAFF	DEPARTMENT	NON-HOST INSTITUTION: STATE, COUNTRY
withheld		CODE		

SUBPROJECT DESCRIPTION

The Director's Office hosted two general staff meetings in FY2005-2006, five scientific seminars, three scientific retreats, monthly internal advisory board meetings, an external advisory board meeting, and a chancellor's visit. The chancellor's visit was also attended by the deans of the UW-Madison Graduate School and Medical Schools.

Highlights discussed at the retreats included a new Information Services initiative on bioinformatics and data sharing (see following section), meeting needs for specialized research resources, and updates in our current research program.

As part of the External Advisory Board meeting, five new scientific affiliates highlighted their work on movement disorders, aging and calorie restriction, kidney transplant survival, embryonic stem cell research, and genetics typing.

The director and colleagues visited China in August and September. Their visit began at the **Proprietary Info**

and ended at the **Proprietary Info**. A private foundation hopes to establish a network of research expertise and ability to include sufficient access to nonhuman primates, so that promising new therapies for Parkinson's disease can be tested with minimal delay. The team worked with Chinese researchers and animal care staff to set up a new training and breeding site, an IACUC, CDC animal transfer protocols, data pools and other advancements.

The director was appointed to the Council of the Institute for Laboratory Animal Research (ILAR) of the National Academies. (See the awards section of this annual progress report.) He was also appointed to the long-range planning committee for the General Clinical Research Center at UW-Madison and has been elected chair of the Biological Sciences Section for GSA.

The director presided over a successful AAALAC site visit, the grand opening of the new UW-Madison and WNPRC AIDS research lab, and the renaming of the Primate Center Library in honor of **withheld**. The director attended the following meetings off site in FY 2005-2006:

- Rosalind Franklin Comprehensive Diabetes Center at the Chicago Medical School for scientific collaboration on diabetes, July.
- NIDDK Special Emphasis Review Committee Panel, Washington, D.C., July.
- **Proprietary Info** July and November.
- 58th annual scientific meeting of the Gerontological Society of America (GSA), Orlando, November.

The Primate Center hired a new coordinator of Centralized Protocol Implementation. This position now reports to the Director; it previously reported to the Associate Director of Animal Services.

Training in the Director's Office included three training courses for the public information officer and outreach specialist—

two embryonic stem cell culturing methods laboratory courses and an animal handling course. The executive

assistant

to the director attended a Spanish in the Workplace class. The PIO and the executive assistant attended a training meeting on research communications strategies in Chicago.

Most of the Center's general progress in FY2005-2006 is readily available via materials produced by the Public Information Office, with support from Information Services. These materials—press releases, publication lists, newsletter

articles and more appear at www.primate.wisc.edu. Local, national and international scientific media interest in WNPRC

activities remained high, while animal rights related press coverage about the Primate Center and UW-Madison was mostly limited to one downtown tabloid and two campus newspapers.

WNPRC ANIMAL SERVICES DIVISION (0214)

NPRC UNIT: ANIMAL SERVICES

%NPRC S: 22.000% AIDS RELATED RESEARCH

INVESTIGATOR	DEGREES	STAFF CODE	DEPARTMENT	NON-HOST INSTITUTION: STATE, COUNTRY
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SUBPROJECT DESCRIPTION

The Division of Animal Services has undergone a major reorganization since a new Attending Veterinarian and Associate Director of Animal Services began on March 1, 2005. These changes include the creation of a new unit (Compliance and Training); the reorganization of the Colony Management unit; and the addition of several new key personnel. Currently, the division is responsible for the following duties:

1. Provision of veterinary care for the nonhuman primate colony.
2. Provision of animal husbandry for the nonhuman primate colony.
3. Provision of research support for the principal investigators performing animal research at the WNPRC.
4. Oversight of all regulatory compliance.
5. Training of all employees who may come in contact with live nonhuman primates or nonhuman primate tissues.

The Associate Director has formalized the regulatory component of Animal Services by hiring an experienced Compliance Coordinator and teaming her with the Animal Services Training Coordinator to ensure that the facilities, protocols, and personnel of the WNPRC are in compliance with all institutional, local, state, and federal laws, regulations, and guidelines.

Veterinary Services Unit

The Veterinary Services Unit is principally responsible for providing veterinary care to the nonhuman primate colonies of the WNPRC and for providing research support for the investigators who utilize the animals housed at the Center. Due to the continuing growth of the colony and the rapid growth in demand for research support, the unit hired two additional veterinary technicians and an additional surgery technician in 2005. Currently, four veterinarians, four veterinary technicians, one surgery technician, and one surgery technician staff the unit. The unit's animal health program consists of a rigorous program of preventative medicine (e.g., quarantine, semi-annual tuberculin skin testing, routine physical exams, timely dental prophylaxis, periodic viral survey), extensive diagnostic capabilities, and excellent clinical care.

Colony Management Unit

This pivotal unit of Animal Services is responsible for an array of tasks including animal husbandry, the colony records system, and environmental enrichment. Under the leadership of the Associate Director of Animal Services, this unit has undergone extensive reorganization. To standardize the provision of animal care, the two-colony manager system was eliminated and one colony manager now oversees the entire unit. After an extensive national search, a candidate with extensive experience in nonhuman primate colony management was offered the Colony Manager position and is expected to begin employment at the WNPRC on April 15, 2006. Additionally, two new animal care supervisors with extensive nonhuman primate experience have been added to the unit to help oversee the 24 animal research technicians who provide daily husbandry for the nonhuman primate colony. In addition to performing all daily husbandry duties, the animal research technicians also check the health of each individual member of the nonhuman primate colony on a daily basis, report all evidence of morbidity to the veterinary staff, assist with the implementation of the environmental enrichment program, and provide research support (e.g., sample collection, data collection, medication administration, etc.) to the scientists performing research at the Center.

Colony Records

One **EFFO** and one **EFFO** assistant staff this subunit of Colony Management. The subunit is responsible for maintaining and updating all data on clinical procedures, animal location transfers, treatments, research procedures, surgical procedures, sample collections, and observations. The subunit is appropriately situated in the Colony Management unit to foster frequent communication among personnel performing the work being documented. The unit works closely with the Information Services Division of the WNPRC to continuously improve the Internet-based version of the Colony Records Database to facilitate and simplify the data entry and retrieval process.

Environmental Enrichment

Under this Colony Management subunit's coordinator, the environmental enrichment program of the WNPRC is vibrant and growing. Currently the program utilizes social companionship, manipulanda, structural enrichment, edible enrichment, and positive human-nonhuman primate interaction to improve the psychological well being of the nonhuman primate colony. The enrichment program also focuses increased effort on improving the well being of those colony members that exhibit stereotypical or self-injurious behavior. Over the last year, the coordinator of the subunit has hired an assistant and a part-time student to facilitate implementation of the more rigorous components of the enrichment program.

Compliance and Training

This unit was established in 2005 to unify the compliance and training initiatives of the WNPRC. The compliance arm of this unit is led by the newly hired compliance coordinator and the training arm is led by the new training coordinator who work to ensure that the facilities, personnel, and IACUC protocols of the WNPRC comply with all institutional, local, state, and federal laws, regulations, and guidelines pertaining to animal research. The Compliance and Training unit serves as a resource for any/all WNPRC personnel working with nonhuman primates to provide a safe work environment for the humans and animals through detailed education and intense hands-on experience.

DEVELOPMENT OF METHODS TO IMPROVE ISOLATED PANCREATIC ISLET FUNCTION (0396)

NPRC UNIT: IMMUNOLOGY

%NPRC \$: 0.500%

INVESTIGATOR

DEGREES STAFF DEPARTMENT

NON-HOST INSTITUTION: STATE,
COUNTRY

withheld

SUBPROJECT DESCRIPTION

UNIT ALSO AGING AND METABOLIC DISEASE

To develop new methods for the isolation and evaluation of isolated pancreatic islets for the purpose of transplantation into patients with type I diabetes.

The results obtained using non-human primate tissue will aid in the development of methodologies for the isolation and assessment of human islets. Methods include; 1) characterization of the physiological response to glucose as a rapid potency indicator of the quality of the islet preparation prior to transplantation, 2) determination of the effects of hypoxia on islet viability and function after isolation, 3) determination of the sensitivity of islets to cytokine induced apoptosis. Determination of viability and apoptosis will be performed using a novel approach in which islets can be analyzed intact, preserving their complete architecture using Complex Object Parametric Analyzer and Sorter (COPAS) flow cytometry. We will also evaluate the ability of COPAS viability and apoptosis measurements to provide predictive data on islet function after transplantation using a marginal mass model of human islet transplant in streptozotocin-induced diabetic immunodeficient mice. In addition, the development of rapid, accurate, and predictive tests of islet viability and function post isolation will contribute to significant improvements in post transplant success. This research used WNPRC Research Services.

SUBPROJECT PROGRESS

Accurate quantification of total islet yield is an essential step prior to transplantation and for research. The standard method of manually determining an islets equivalent (IEQ) count is subjective and prone to error. We evaluated COPAS large particle flow cytometry for the determination of islet equivalent counts and purities of islet preparations. Initial validation of the sensitivity and accuracy of the COPAS flow cytometer was performed by analysis and sorting of uniform polystyrene microspheres with sizes similar to islets. Human and Rhesus monkey islets were stained with the zinc-specific fluorescent dye Newport Green to discriminate islet from non-islet tissue. Islet sizes were extrapolated from standard curves obtained using microspheres from which individual islet volumes were calculated. IEQ counts on six islet preparations were performed by the standard manual method and compared with results obtained by automated COPAS flow cytometry. The COPAS flow cytometer was highly accurate in the detection and measurement of both polystyrene microspheres and islets. IEQ counts determined by COPAS flow cytometry were consistent with manual counts although subject to error when assessing preparations with significant numbers of islets embedded within acinar tissue. Size specific islet sorting with retention of morphology and dithizone staining was also shown using the COPAS flow cytometer.

WNPRC INFORMATION SERVICES (0383)

NPRC UNIT: LIBRARY

%NPRC S: 0.500% AIDS RELATED RESEARCH

INVESTIGATOR	DEGREES CODE	STAFF CODE	DEPARTMENT	NON-HOST INSTITUTION: STATE, COUNTRY
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SUBPROJECT DESCRIPTION

The Information Services Division, established in January 2006, supports the research and outreach missions of the National Primate Research Center, University of Wisconsin Madison. The Division consists of two existing units, the Jacobsen Library and the Data Management & Digital Imaging Unit (IT), and the newly established, yet-to-be populated, Informatics Unit. All three Units will work closely together to provide a continuum of information services and resources to the Wisconsin Center.

Beginning in January 2005, the Wisconsin National Primate Research Center embarked on an informatics strategic planning process. The Center hired an outside consultant to aid the staff in the process and to document the outcome. The Wisconsin Center, recognizing the importance of collaboration and data sharing, has invested both time and local funds to develop an understanding of what needs to be done to make this a reality. The Informatics Strategy takes the idea of sharing information and data to the next level, the creation of a systems environment to optimally support primate research activities collaboratively across the primate research community through the sharing of information, tools, and best practices. Each of the three units, under the auspices of the Information Services Division, while continuing to provide services and resources to the Wisconsin Center, will play a key role in furthering the WNPRC's Informatics Strategy.

Staff Member Training/Conferences (all units):

- Medical Library Association Annual Meeting, May 15-19, 2006, San Antonio, TX.
- A Field Guide to GenBank and NCBI Molecular Biology Resources, NIH/NCBI/NLM, July 20, 2005, Sponsored by the Jacobsen Library and the Ebling Health Sciences Library, University of Wisconsin-Madison.
- Annual Meeting of the American Society of Primatologists, Aug. 17-20, 2005, Portland, OR.
- WILSWorld July 19-20, 2005, Madison, WI
- Apple World Wide Developers Conference, June 6-10, 2005, San Francisco, CA.
- Lockdown 2005 – Computer Security Conference, July 14-15, 2005, Madison, WI.
- Rapid Requirement Analysis: Capturing Your Customer's Real Needs, Jan. 31–Feb.1, 2006, Madison, WI.
- Using OSX (Mac), DoIT Professional Technical Education, Dec. 13, 2005, Madison, WI.
- 5th Annual Wisconsin State Training Conference, Wisconsin State Training Council, March 1, 2006, Madison, WI.
- Effective Technical Documentation, DoIT Professional Technical Education, March 21-22, 2006, Madison, WI.

