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National Center for Research Resources

INTRODUCTION

The National Center for Research Resources (NCRR) develops and supports critical research technologies and shared resources that underpin research to maintain and improve the health of the Nation's citizens. NCRR supports the development and use of (1) sophisticated instrumentation and technology, (2) animal models for studies of human disease, and (3) clinical research environments, as well as the enhancement of research capacity for underrepresented groups.

International cooperation provides opportunities to achieve a wide range of research and resource objectives and offers access to biological resources available only in foreign countries. Through cooperation and collaboration with national and international organizations, NCRR plans biomedical research programs that support activities of the National Institutes of Health.

NCRR sponsors international activities through four extramural divisions: Biomedical Technology, Clinical Research, Comparative Medicine, and Research Infrastructure.

SUMMARY OF INTERNATIONAL PROGRAMS AND ACTIVITIES

Activities With International and Multinational Organizations

International Registries

The International Fanconi Anemia Registry is a repository for clinical, hematologic, and genetic information on patients with Fanconi anemia, a rare disease. The registry was established at Rockefeller University, New York City, New York, in 1982, to collect this information and to make it available to researchers. Patients with Fanconi anemia are seen at the Rockefeller University General Clinical Research Center (GCRC), New York City, where the registry is maintained. Active collaborative efforts continue with investigators at several centers in the United States, as well as the Hospital St. Louis, Paris,

France; the University of Heidelberg, Germany; and the University of Parma, Italy.

In addition, NCRR provides support for specimen collection and biostatistics for the International Skeletal Dysplasia Registry through its GCRC at Harbor-UCLA (University of California, Los Angeles) Medical Center. Skeletal dysplasias are a heterogeneous group of disorders resulting in disproportionate short stature, skeletal deformities, or both. The data from this registry are from multidisciplinary investigations of the clinical, genetic, morphological, biochemical, and molecular characteristics of the skeletal dysplasias.

Melatonin and Sleep Studies in Children With Developmental Disabilities

The University of Colorado GCRC, Denver, is participating in a study to document melatonin profiles in patients aged 3–21 years who have fragile X syndrome. The study includes control subjects with mental retardation (e.g., Angelman's syndrome, velocardiofacial syndrome, and Smith-Magenis syndrome) in addition to healthy control subjects, including normal siblings. The melatonin profiles will be determined by using saliva samples. Participants are enrolled from centers in Australia, France, and Colorado. During a 3-year period, this study also will evaluate the efficacy of melatonin compared with placebo in the treatment of sleep disturbances in patients with fragile X syndrome or other causes of mental retardation.

Extramural Programs

Australia

The EPR (electron paramagnetic resonance) Center for the Study of Viable Systems, Dartmouth Medical School, Hanover, New Hampshire, is working with Queensland University of Technology, using its unique capability to provide well-resolved EPR spectroscopy to study fully living systems. The investigators have developed new and

useful nitroxides for oximetry in vivo EPR and potentially for other biomedical applications.

Belgium

The Laboratory of Medicinal Chemistry and Radiopharmacy, Catholic University of Louvain, is providing new materials for EPR oximetry probes. These materials will facilitate the early and effective development of the use of in vivo EPR to improve clinical care. The measurements of oxygen could be used to optimize the type, amount, and timing of delivery of anticancer agents and thus might improve the efficacy of cancer therapy.

Canada

Researchers at the Rockefeller University GCRC, New York City, are participating in a molecular genetics study of human obesity. Obesity is the most prevalent nutrition-related problem in societies in industrial countries. In the United States, approximately one-third of adults and one-fifth of children are obese. Findings in adoption and segregation studies of twins show clear evidence of a substantial genetic basis for susceptibility to obesity, but the specific genes involved remain unknown. This project examines the role of human homologues of genes that produce obesity in rodents, as well as other candidate genes, by use of linkage mapping, mutation analysis, and direct measurement of the protein products of these genes. More than 15,000 affected persons and family members will be recruited to these studies, from 13 populations, including blacks, whites, Hispanics, and American Indians, in Canada and the United States.

Indonesia

The Washington Regional Primate Research Center (RPRC), Seattle, continues to support international research, training, and the breeding of nonhuman primates in collaboration with the Primate Research Center at

Bogor Agricultural University, which is Indonesia's only primate center. This program has successfully established and maintains a breeding colony of *Macaca fascicularis* that is free of specific pathogens. In the forests of the 600-hectare Tinjil Island, approximately 1,800 *M. fascicularis* range freely and provide progeny for research on acquired immunodeficiency syndrome (AIDS), at the Washington RPRC and other research facilities supported by the National Institutes of Health. Additionally, the program has established and maintains a breeding colony of 130 *Macaca nemestrina* at Bogor Agricultural University, which provides primates free of simian retrovirus for use in AIDS-related research. The Virology Laboratory at Bogor, an integral component of the collaboration, provides support facilities for all simian retrovirus screening procedures necessary for the colony. As part of the research and training mission of the program, more than 10 researchers from Bogor Agricultural University have come to the Washington RPRC as Visiting Scientists to receive specialized training in a variety of research areas.

Personnel from the Washington RPRC travel to Indonesia on a regular basis to en-

gage in ongoing research projects and to conduct annual training courses in the field. These 1-month courses, which accommodate both Indonesian and U.S. students, are conducted on Tinjil Island and at the Tangkoko Nature Reserve, in North Sulawesi. As part of the expanding collaboration with the Primate Research Center in Bogor, the Washington RPRC scientists are assisting with projects that help to promote primate conservation throughout Indonesia, such as the Orangutan Reintroduction Project at Wanariset Station, East Kalimantan, Borneo. The Indonesian program continues to serve as an excellent model of international collaboration in the development of primate resources and also serves as a prototype of natural habitat breeding facilities for future primate resources from other countries.

Japan

NCRR's Biomedical Technology resource, the National Center for Microscopy and Imaging, University of California, San Diego, supports a collaborative study with the National Institute for Physiological Science, Okasaki. The researchers are developing methods of electron tomography combined with high-resolution light microscopy for studies of

dendritic spines, to determine optimal methods for visualizing and measuring these important structures. Dendritic spines are small protuberances emanating from the dendrites of certain types of neurons that are the major site of excitatory synapse in the central nervous system.

In a second joint study, investigators at the EPR Center for the Study of Viable Systems, Dartmouth Medical School, Hanover, New Hampshire, and the Department of Oral and Maxillofacial Surgery, Kagawa Medical University, have demonstrated an important new capability in which in vivo EPR measurements of teeth can be used to determine rapidly and accurately whether an individual has been exposed to a life-threatening dose of radiation.

Russia

The Washington RPRC continues to maintain a collaborative program with the Institute of Medical Primatology near Sochi, in southern Russia. This program has provided Russian-bred *M. nemestrina* for research and new sources of *Papio anubis cynocephalus* for the research needs of the Washington RPRC.