

1995 Research Update

Enhancing Interdisciplinary Collaboration

by Deborah Vetter and Mark Willis

Research at Wright State University School of Medicine continues to experience dynamic growth. The School of Medicine's external research funding has increased 75 percent since 1990, among the highest growth rates in the state. The scope of Wright State scholarship has broadened to include biomedical, clinical, behavioral, educational, and health services and policy research. Another growth measure, crucial to sustaining future medical research, is the creative interactions of Wright State researchers.

"Faculty face a changing environment in research," explains Robert A. Weisman, Ph.D., associate dean for biomedical sciences. "The ever-increasing complexity of biomedical research and the federal funding shift away from single investigators to research teams require new interactions among disciplines. These may involve basic scientists, clinicians, or teams of both working together to answer basic science questions and solve clinical problems. Each team member contributes expertise and technical skills. One may have access to sophisticated laboratory instrumentation, and another may have access to patient data or research subjects."

New Strategies

Dr. Weisman formed the Clinical/Basic Research Interaction Committee (CBRIC) to encourage research interactions among School of Medicine faculty. Committee members represent new and experienced faculty and administrators from clinical and basic science departments. Their recommendations have led to the following strategies for strengthening communication links and creating an interactive climate:

· Telecommunication: Computer networks with Internet capabilities and electronic mail (e-mail) links offer researchers easy access to grant information and other data. They facilitate communications with colleagues who are geographically dispersed throughout the School of Medicine's community-based system and around the world.

· Research publications: A quarterly newsletter, *The Investigator*, informs faculty and staff

about scholarly activities and research opportunities. It includes a works-in-progress section that outlines an individual's or a unit's need for collaborators. The 1994 Report of Scholarly Activities is a 168-page book documenting School of Medicine research. It highlights each academic department's scholarly activities and lists fully affiliated faculty names, research interests, technical expertise, available equipment, and extramural grant awards. The report's indices and format enable researchers to identify colleagues with similar interests.

· Central research forums: The School of Medicine has held three central research forums to bring together faculty to discuss common interests. The forums include brief presentations and opportunities for participants to interact in both a professional and a social atmosphere. A forum held last February featured 60 research posters displayed by faculty from many departments. Upcoming research forums are scheduled tentatively for January and April 1996. (More information: Dr. Robert Weisman, 513/873-2611; or Deborah K. Vetter, 513/873-3806)

A Model of Collaboration

Researchers at the Institute for Rehabilitation Research and Medicine (IRRM) have conducted pioneering research in the use of computer-controlled functional electrical stimulation (FES) to exercise the paralyzed muscles of people with disabilities. The research has had long-term funding from the Department of Veterans Affairs, among other sources, and it has become a model of collaboration between basic science and clinical researchers.

A recent example involves Roger Glaser, Ph.D., IRRM director, and Hjalmar Pompe van Meerdervoort, M.D., professor and chair of orthopedic surgery. They have tested the effectiveness of FES techniques in reducing blood clots in patients undergoing hip and knee replacement surgery at Miami Valley Hospital. Thrombosis is a potential complication of this surgery, particularly in elderly patients, and it can lead to pulmonary embolism. Using the FES technique to stimulate the patient's leg muscles during surgery increases blood flow from the legs back to the heart, reducing the likelihood of thrombosis. The FES technique increases return blood flow by 20 percent compared to mechanical devices currently used in surgery. The researchers are also studying FES applications for severely injured patients to prevent muscle deterioration during bed rest. (More information: Dr. Glaser, 513/259-1326; Dr. Pompe van Meerdervoort, 513/208-2127).

Technology Transfer

Clinical research led by Sidney F. Miller, M.D., professor of surgery and director of the Regional Adult Burn Center at Miami Valley Hospital, is exploring collaborative opportunities with the U.S. Air Force and private industry. Dr. Miller and his colleagues are working with Wright-Patterson Air Force Base and Fidelity Orthopedics in Dayton to test the effectiveness of computer-aided design and manufacturing (CAD/CAM) technology for treating patients with severe facial burns. The CAD/CAM technology was engineered first at Wright-Patterson's Armstrong Aerospace Medicine Laboratories to make custom-fitted helmets and face masks for fighter pilots.

Pressure masks can prevent hypertrophic scarring in patients with serious facial burns, who may wear them for a year after hospitalization. The conventional method for making pressure masks in the hospital -- molding a plaster cast of the face -- requires the patient to remain still for more than an hour. The CAD/CAM method takes less than 20 seconds to scan the face, and the results are accurate to within one millimeter.

The future is bright for similar technology transfers with the private sector, according to Dr. Miller. "A lot of businesses in our region have needs for biomedical research, from basic laboratory studies to product development and clinical trials," he says. "We believe that many more collaborative research opportunities exist here." (More information: Dr. Miller, 513/208-2177)