

Ochsner Research Update, 2013-2014

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The Ochsner research enterprise continued to progress during the 2013-2014 academic year, thanks to the efforts of dedicated personnel working in all segments of the Ochsner Health System. As has been the case since its inception, Ochsner research has focused on applying novel insights and technologies to enhance the understanding of the causes of and potential therapies for patient diseases. To this end, investigative activities are centered in the areas of translational, clinical, and health services research. Increasingly, research activities are being championed not only by physicians, but also by nurses, pharmacists, and those in other medical disciplines. This participation has expanded the breadth of the enterprise in a most productive way.

Considerable progress has been made in the area of translational research during the current academic year. An example is the innovative studies of potential markers for vulnerability in carotid artery plaques being conducted by researchers in vascular surgery. Vulnerable plaques frequently rupture, causing arterial blockage and stroke. Understanding the biology of these plaques is therefore of great importance in designing therapies to stabilize them and thereby prevent stroke. The Ochsner effort focuses on understanding how microRNA (miRNA) molecules regulate the enzymes and processes that produce plaque vulnerability. Moreover, this group has shown how small circular RNAs can regulate an miRNA of interest. This work takes the field a long way toward understanding—and eventually intervening in—the process of plaque rupture.

In a related vein, Ochsner nephrologists have focused on the cellular and molecular mechanisms responsible for the loss of kidney cells in diabetes. Diabetic renal disease is a leading cause of renal failure, sometimes necessitating dialysis, and its incidence is increasing. The nephrology research group is studying the possibility that properly engineered tissue progenitor cells can replace damaged kidney cells in diabetes and thereby restore renal function. The success of these ideas in preliminary animal studies is exciting and suggests that in time, novel cell-based therapies for diabetic renal disease will be forthcoming.

In addition to these 2 programs, Ochsner clinicians and scientists continue to make progress in

understanding the nature of cancer stem cells that lead to the recurrence of various cancers after therapy, and Ochsner neurosurgeons continued their innovative work in developing the means to repair nerve injuries so function can be restored.

Clinical research at Ochsner, as always, is broad based, occurring in virtually every clinical department. Researchers in cardiology are looking into the factors that increase risk in patients who have sustained heart damage secondary to heart attack and other disorders. This group has discovered the obesity paradox: in certain patient groups, somewhat higher weight is associated with a better prognosis than in leaner patients. This concept has become topical and is undergoing considerable refinement to better understand its implications for clinical care. In addition, Ochsner cardiologists are investigating the way that subtle abnormalities in the electrocardiogram can predict arrhythmia and death in patients at high risk for those morbid events. This work holds the promise of defining which patients might benefit from therapeutic interventions such as the implantation of defibrillators.

In another example of clinical research, the collaborative study between Ochsner rheumatologists and the Translational Research Institute aims to identify cells that stimulate the production of harmful antibodies in lupus erythematosus and rheumatoid arthritis. This bed-to-bench collaboration is designed to potentially define new therapeutic options for these patients.

Many other examples of ongoing research—ranging from the study of novel treatments for high blood pressure to investigating ways to optimize the therapy of hepatitis C—could be provided in this annual update. The clinical research effort is growing and making excellent progress.

Similarly, health services research is making great strides. Studies in nursing and pharmacy are growing rapidly and are providing new insights into the optimization of the care of patients suffering from a variety of disorders. For example, the Ochsner stroke program, a federally funded effort, is an amalgamation of clinical and health service research. An innovative regional network for the care of stroke patients using technologies such as telemedicine has been established. The program aims to assess the

effectiveness of the innovations it introduces to optimize the care of patients. This effort represents an excellent example of a modern health system caring for an entire population. Many other examples of health services research could be given, such as studies designed to optimize the care of patients with septic shock and of women in childbirth.

Several enhancements to the administrative support of research were put in place during the academic year. These enhancements include the establishment of a physician-led systemwide research council; initiation of seed grant funding opportunities for Ochsner investigators; enhanced research collaboration with regional institutions, The University of Queensland, and industry partners; and improved contract/budget review and approval processes. Collectively, these changes are designed to facilitate research innovation throughout the organization.

Finally, Research Day, an event that has grown each year, was enjoyed by the entire community. The

2014 research theme was Neurosciences, and the keynote address was delivered by Ann McKee, MD, Professor of Neurology and Pathology, Director of the Neuropathology Core, Alzheimer's Disease Center, Boston University. Dr McKee's lecture described her forefront research in defining the pathogenesis of chronic traumatic encephalopathy and other neurodegenerative disorders. Her work has both biological and public health implications. Also as part of the Research Day activities, posters and video abstracts were presented following a series of selected podium research presentations. Professor Murray Mitchell of The University of Queensland's Centre for Clinical Research, a unit heavily involved in innovative translational research, was in attendance, and during Research Day and his week-long visit, he interacted productively with many Ochsner clinicians/scientists. Overall, Research Day was once again characterized both by a spirit of collegiality and by the establishment of new collaborative activities.