Participants

BRIAN J. BALIN, PHD: Chair Holder, Osteopathic Heritage Foundation Endowment for Aging Research, in Honor of Ruth Purdy, DO, George Faerber, DO and Peter Johnston, DO; Philadelphia College of Osteopathic Medicine.

JOHN A. BROSE, DO: Vice Provost, Health Affairs and interim Dean; Ohio University Heritage College of Osteopathic Medicine.

THOMAS A. CAVALIERI, DO, FACOI, FACP, AGSF: Chair Holder, Osteopathic Heritage Foundation Endowment for Primary Care Research in Aging, Dean; University of Medicine and Dentistry of New Jersey School of Osteopathic Medicine.

BRIAN C. CLARK, PHD: Professor of Physiology in the Department of Biomedical Sciences & Executive Director of the Ohio Musculoskeletal and Neurological Institute (OMNI); Ohio University Heritage College of Osteopathic Medicine.


JOHN C. LICCIARDONE, DO, MS, MBA: Chair Holder, Osteopathic Heritage Foundation Distinguished Chair, in Honor of David Richards, DO and Benjamin Cohen, DO; Executive Director, the Osteopathic Research Center; University of North Texas Health Science Center at Fort Worth, Texas College of Osteopathic Medicine.

J. JUSTIN MCCORMICK, PHD: Distinguished Professor; Michigan State University College of Osteopathic Medicine.

ROBERT G. NAGELE, PHD: Professor of Medicine, Adjunct Professor of Cell Biology; University of Medicine and Dentistry of New Jersey School of Osteopathic Medicine.
DONALD R. NOLL, DO: Principal Investigator, Multi-Center Osteopathic Pneumonia Study in the Elderly; University of Medicine and Dentistry of New Jersey School of Osteopathic Medicine.

MICHAEL M. PATTERSON, PHD: Conclave Facilitator; Nova Southeastern University College of Osteopathic Medicine –Retired.

FRANK SCHWARTZ, MD: Chair Holder, James O. Watson, DO Endowment and Director of the Diabetes Research Center; Ohio University Heritage College of Osteopathic Medicine.

MICHAEL A. SEFFINGER, DO, FAAP: Professor and Chair, Department of Neuromusculoskeletal Medicine/Osteopathic Manipulative Medicine; Western University of Health Sciences College of Osteopathic Medicine of the Pacific.

RICHARD J. SNOW, DO, MPH: Vice President of Clinical Effectiveness, OhioHealth.

UNABLE TO ATTEND THIS YEAR:

ANDREA AMALFITANO, DO, PHD: Chair Holder, Osteopathic Heritage Foundation Endowed Chair in Osteopathic Medicine; Michigan State University College of Osteopathic Medicine.

FRANCES DALY, PHD: Director, J. Richard Costin, DO Institute for Osteopathic Medical Educators; Midwestern University Chicago College of Osteopathic Medicine.

MICHAEL L. KUCHERA, DO, FAAO: Principal, Osteopathic Heritage Foundation Endowment for Aging Research; Philadelphia College of Osteopathic Medicine. (Note: Dr. Kuchera is currently the Chair of the Department of Osteopathic Manipulative Medicine; Marian University College of Osteopathic Medicine.)

OSTEOPATHIC HERITAGE FOUNDATION LEADERSHIP AND BOARD OF DIRECTORS:

RICHARD VINCENT, President/CEO
TERRI DONLIN HUESMAN, Director of Programs
RENÉE GIFFORD, Executive Assistant to the President
TOM ANDERSON, DO, Director
J. RICHARD COSTIN, DO, Director
JANE CUNNINGHAM, Director
JEFF HUTCHISON, DO, Director
REBECCA DEVILLERS, DO, Director
In Memoriam:

The recent passing of Leonard D. Kohn, MD on April 18, 2012 was noted. Dr. Kohn was the Distinguished Senior Research Scientist at the Edison Biotechnology Institute. He was the first Chair Holder of the James O. Watson, DO Endowment for Diabetes Research at the Ohio University Heritage College of Osteopathic Medicine and was instrumental in developing the highly successful diabetes research programs.

The Osteopathic Heritage Foundation 2012 Research and Education Conclave

Foundation President Rick Vincent convened the Osteopathic Heritage Foundation (OHF) 2012 Research and Education Conclave on Friday, July 27 at the Hilton Columbus at Easton. The Participants introduced themselves and their institutions. Mr. Vincent introduced the OHF Board Directors and guests who were present to further familiarize themselves with the activities and research of the funded participants. During the first afternoon, most of the participants gave presentations on their research and scholarly activities. On the second day, the remaining participants gave their presentations, and held open discussion on topics of interest and action items.

Osteopathic Heritage Foundation (OHF) Updates

Terri Donlin Huesman, Director of Programs, provided an update on the Foundation activities. The OHF continues its emphasis on community health, obesity and wellness education in central and southeast Ohio schools as well as support for osteopathic medicine, medical education and research. In addition it continues to urge local health authorities to provide school age children with oral health education and services. A brief update was provided on the significant grant and support for the Ohio University Heritage College of Osteopathic Medicine. The $105 million grant will be transformational for the Heritage College.

Ms. Donlin Huesman encouraged participants to update their biographies and make sure the Foundation has current information on their research and scholarly activities.
The individual presentations from participants are briefly summarized here

OHIO UNIVERSITY HERITAGE COLLEGE OF OSTEOPATHIC MEDICINE OVERVIEW

JACK A. BROSE, DO, Dean of the Ohio University Heritage College of Osteopathic Medicine. (Dr. Brose recently retired as dean and will become the university’s Vice Provost for Health Affairs and Special Assistant to the Executive Vice-President and Provost.) Dr. Brose outlined the Vision 2020 plan for the Heritage College. The Vision 2020 plan contains three major priorities: 1). Redesigning primary care medical education with a focus on Ohio; 2). Establishing a new model of patient-centered interdisciplinary care and education, 3). Becoming a national leader in developing physician scientists, inventors, and educators.

Dr. Brose stated that the recent OHF grant to the Heritage College was the fourth largest gift to any medical school in the US. It will allow a branch osteopathic medical school to be built in central Ohio slated to open in 2014. Land and buildings have been purchased and remodeling will soon begin. Recently, the Cleveland Clinic proposed an extension campus of the Heritage College of Osteopathic Medicine at one of its Cleveland campuses. Planning for that campus has begun and it is scheduled to open in 2015. This is significant for the profession and the Heritage College will be working collaboratively with the Cleveland Clinic Lerner College of Medicine. The college is expanding its already busy research facilities and adding additional foci. He outlined the major research themes of the college, which spans all levels of biological organization from molecular to environmental. The OHF grant has already helped strengthen the research efforts by allowing for technician and faculty hires. Student research opportunities are being expanded. The diabetes research effort is gaining strength and will build a new clinical and research facility in 2016. The Ohio Musculoskeletal and Neurological Institute (OMNI) will also expand into a new research facility in 2018. The college’s outreach efforts in Ecuador have resulted in a much-needed overhaul of the blood supply system in that country. The college has developed a DO/PhD track and wants at least half its graduates to have both DO and an additional degree, either a Masters or PhD. Dr. Brose introduced the Consortium of Academic Institutions in Appalachia as an effort to collaborate with various academic institutions in the region. He also discussed the Ohio University Health Sciences Center, a University effort to promote all the institution’s health science entities to collaborate in research, education, and clinical practice. Dr. Brose emphasized that collaboration is the key for research enhancement at the Heritage College and its expanding campus system.
MICHIGAN STATE UNIVERSITY COLLEGE OF OSTEOPATHIC MEDICINE (MSUCOM)

J. JUSTIN MCCORMICK, PHD, gave a presentation on activities at MSU, focusing on three major areas of research and their DO/PhD program. He pointed out there are 47,000 students on the MSU campus, with 2075 medical students, including MD, DO and 400 veterinary students. The MSU campus supports an open system with extensive collaboration among faculty members and a wide variety of research programs.

The first area discussed was the Systems Science Center for Musculoskeletal Research. One of the projects in this area involves a robotic test stand on which a patient can be seated. The robot moves the patient in various directions and up-and-down motions and measures their ability to right themselves. Preliminary data suggests that patients with low back pain may not be able to right themselves as quickly as those without back pain, but with osteopathic manipulative therapy appeared to do better. The robot was purchased with university funds, allowing a substantial NIH grant to be obtained.

The second area discussed was the Parkinson's Disease Project. This project is supported by a five year $1.1 million National Institute of Neurological Disorders and Stroke grant. The aims of this grant are to evaluate genes mediating recovery of dopamine neurons from injury and to use animal models of Parkinson's disease to screen potential compounds for the ability to slow or prevent cell degeneration or dysfunction. The Parkin gene is one that appears to aid in the recovery of dopamine neurons from injury and increases in cells at recovery. Researchers are also involved in a number of multisite clinical research trials funded by the National Institute of Neurological Disorders and Stroke on various aspects of the Parkinson's disease.

Dr. McCormick also described the Seahorse Extracellular Flux Analyzer. This device noninvasively profiles metabolic activity of cells to assess mitochondrial dysfunction and is used in the Parkinson's studies.

A third area of study is the HIV/AIDS Translational Consortium program in which Andrea Amalfitano, DO, PhD is involved. This program has three aims: 1). to establish an MSU-HIV patient registry to identify cohorts of HIV patients that have specific characteristics; 2). to determine whether dendritic cell functions are suppressed by cannabinoids in “immune discordant” HIV-positive patients, and 3). to determine if specific genes are responsible for patients being prone to becoming “immune discordant” HIV-positive patients. This 1.5 year program is funded by a $75,000 grant from MSUCOM.
The DO/PhD program currently has 26 students and has had 33 graduates since 1979. It is a very selective program with approximately 50 inquiries per year with five or six being selected. Of the graduates, three are employed at MSUCOM and many others are at MD medical colleges.

Dr. McCormick pointed out that in order to move osteopathic research forward three very important things must occur: 1) Invest in training osteopathic physicians to conduct research. The MSUCOM DO/PhD program costs approximately $750,000 annually; 2) Invest in pilot studies. The HIV/AIDS project is an example of this; 3) Invest in scientific instruments. The unstable seat robot cost $.5 million and the Seahorse apparatus, $150,000, are examples. This year MSU also purchased Magnetic Resonance Imaging equipment for small animal research for $2 million.

In discussion that followed it was pointed out a significant yearly expenditure for new instrumentation, pilot studies, and funds for bridging funding between external grants are essential for successful research. Grant funding from organizations such as the American Osteopathic Association (AOA) is essential.

PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE (PCOM) CENTER FOR CHRONIC DISORDERS OF AGING

BRIAN J. BALIN, PHD, gave a report on PCOMs Center for Chronic Disorders of Aging (CCDA) and the associated research on Alzheimer's neurodegeneration. Planning for the CCDA was begun in 2002 with the funding received from the OHF in 2006. Shortly after, funding of pilot studies from the OHF endowment was initiated. These pilot grants range from $7500 to $10,000. In 2007 Dr. Balin and Michael Kuchera, DO, co-chaired the American Osteopathic Association research conference entitled "Chronic Disorders of Aging in the 21st century: New Insights and Approaches." Thus far the CCDA has sponsored 50 intramural grants, 26 symposia and lectureships, 17 extramural grant proposals (many of which have been funded) and 66 peer reviewed publications, among other activities. In 2012, 11 intramural CCDA awards were made.

The CCDA has a number of basic, clinical and translational research projects underway including: Alzheimer's and Parkinson's, multiple sclerosis, cardiovascular disease, transplantation and wound recovery, stem cell research, bone and cartilage research, osteoarthritis and rheumatoid arthritis, osteopenia/osteoporosis, diabetes, gingivitis, hormone dysfunction, and quality-of-life issues. In other activities at PCOM, there is a
new chief science officer, Ken Slavik, PhD. His duties are to consolidate research efforts and to make the case for increasing research space and intramural and extramural funding. The DO/PhD program will be underway this fall and the physician scientist training program (PSTP) has been developed. This program introduces minority ninth and 10th grade students to scientific activity in a medical school environment.

Dr. Balin pointed out that chronic disease is significant with one in four Americans having multiple chronic conditions. Age is a significant risk factor in chronic disease. The average 75-year-old suffers from at least three chronic conditions and takes five prescription medications. People with chronic conditions account for 83% of all healthcare spending. By the year 2030, one half of the US population will have one or more chronic illnesses. Alzheimer’s disease is a growing problem among the elderly population and 98% of Alzheimer’s disease cases are caused by something other than familial autosomal gene mutations. 90% of Alzheimer’s brain biopsies have been positive for Chlamydia pneumoniae (Cp). Dr. Balin has proposed that Cp may well be a cause of sporadic late-onset Alzheimer’s disease. Cp can enter the body mainly through the respiratory tract. Following exposure, infection of the olfactory system and uptake by monocytes in the lungs may allow for the organism to enter the brain. He has proposed that attempts to treat Cp may in fact drive Cp into a persistent state where it is difficult to eradicate. Dr. Balin has a number of recent publications on his research and the link between Cp and Alzheimer’s disease.

UNIVERSITY OF MEDICINE AND DENTISTRY NEW JERSEY SCHOOL OF OSTEOPATHIC MEDICINE (UMDNJ SOM)

THOMAS A. CAVALIERI, DO, FACOI, FACP, AGSF, provided an overview of the University of Medicine and Dentistry New Jersey. Dr. Cavalieri first discussed the pending organizational move of the school. Under the state’s Higher Education Act, UMDNJ is to be split with the DO school going under the Rowan University umbrella and the others going to Rutgers. Cooper Medical School and the osteopathic school will be together in South New Jersey. Initially the American Osteopathic Association, the New Jersey Osteopathic Association and the school thought this was not advantageous. However, it is now seen as quite advantageous for the school’s development and the mission of the school will not change.

Dr. Cavalieri then described the school’s mission as providing excellence in medical education, research and health care for New Jersey and the nation. An emphasis on
primary health care and community health services reflects the school’s osteopathic philosophy, with specialty care and centers of excellence demonstrating commitment to innovation and quality in all endeavors. The school seeks to develop clinically skillful, compassionate and culturally competent physicians from diverse backgrounds, who are prepared to become leaders in their communities.

The school received its OHF endowment to develop a research culture and increase research activities among its faculty and physicians-in-training, especially in the areas of aging and Osteopathic Manipulative Medicine/Osteopathic Principles and Practice. The enterprise was developed to provide research infrastructure, including statistician, program development, specialist/grant writer and a research assistant. The program provides intramural funding opportunities, including seed money for faculty, resident and medical student research with a faculty mentor. Over the past year the school has increased activity in osteopathic manipulative medicine research, provided new focus on delirium in the elderly including interdisciplinary and translational research and continued evolution of the development of biomarkers for neurodegenerative diseases.

One of the osteopathic manipulative medicine research projects is conducted by Gilbert Siu, DO, PhD, on the efficacy of osteopathic manipulative treatment after bilateral total knee arthroplasty. Dr. Siu is a DO/PhD graduate who is pursuing a clinical research career. Another successful researcher at the school is Martin Forsberg M.D. Dr. Forsberg attended the Costin Institute training in Chicago. Dr. Forsberg is conducting research on the effects of anesthesia and transient blood brain barrier breakdown in postsurgical delirium. The third researcher mentioned is Robert Nagele, PhD. Dr. Nagele’s research focuses on biomarkers especially in early stage Alzheimer’s disease. Dr. Nagele has trained a number of medical students and DO/PhD students in his laboratories. Dr. Nagele’s report follows. All of these researchers have benefited from OHF program funding.

UNIVERSITY OF MEDICINE AND DENTISTRY NEW JERSEY SCHOOL OF OSTEOPATHIC MEDICINE (UMDNJ SOM), BIOMARKER RESEARCH PROJECT

ROBERT G. NAGELE, PHD, gave a report on the progress of his research investigating biomarkers that can be used for early diagnosis of Alzheimer’s disease. Alzheimer’s disease is currently diagnosed by psychiatric tests and brain imaging, but these are of limited value to diagnosing Alzheimer’s in its early stages. Many laboratories around
the world are attempting to find a reliable diagnostic test for early-stage Alzheimer’s. Such a test must be accurate, specific, reliable and reproducible, noninvasive or minimally invasive, simple to perform, and affordable. Having such a test to diagnose early-stage Alzheimer’s would allow early treatment of patients as well as facilitate research on drugs for early treatment. It is possible that many drug trials of potential treatments for Alzheimer’s have failed because they have been performed on late-stage Alzheimer’s patients after a positive diagnosis has been made and too much brain devastation has set in.

Dr. Nagele had noted in his earlier research that, in all Alzheimer’s brains examined thus far, many neurons in brain regions showing pathology have antibodies bound to their surfaces. Western blot analysis has revealed that numerous brain-reactive autoantibodies are present in the blood of these patients. Many of these brain reactive autoantibodies may well be linked to the pathology of Alzheimer’s. He has recently demonstrated that autoantibodies are both abundant and ubiquitous in the blood of all individuals, regardless of age, gender or the presence or absence of disease. Further, he has hypothesized that the function of these autoantibodies is in the clearance of cell and tissue debris generated day to day by our bodies. If so, there should be an increase in disease-specific debris released from dying cells in the brain during Alzheimer’s and a corresponding increase in disease-specific debris-clearing autoantibodies in the blood that can be detected and used as diagnostic biomarkers. In his research, Dr. Nagele found that there were approximately 450 autoantibodies that were specifically related to Alzheimer’s disease. From these, he selected the top 10 that were best able to distinguish serum from Alzheimer’s patients from age-matched controls. Using only these 10 biomarkers, Alzheimer’s disease sera could be distinguished from control sera with a sensitivity of 96% and specificity of 92.5%. Using autoantibodies as biomarkers and the same diagnostic strategy, he is developing early diagnostic tests for Parkinson’s disease, multiple sclerosis and stage one breast cancer. The results in pilot work on these diseases have yielded similar, very promising results. The Michael J. Fox Foundation is currently funding a larger study that is testing the use of the autoantibody biomarkers in diagnosing Parkinson’s disease.

Taken together, these studies show that this unique biomarker system has great promise for the early detection of many diseases, for determining the progress of treatment, and in confirming that these diseases are present in patients enrolling in clinical trials for newly developed drugs. One of the goals of this research is to seek
FDA approval for an Alzheimer’s diagnostic test using human protein microarrays. Since only 10 to 20 autoantibodies are needed for each diagnostic test, and at present a test slide can hold 23,000 protein targets, there is plenty of room for hundreds of diagnostic tests on a single microarray. The worldwide market for an early diagnostic test for Alzheimer’s disease is estimated to be approximately $3 billion annually. Thus, the race is on to perfect these early detection tests. There is only one other group in the world attempting to use autoantibodies as a test for Alzheimer’s disease biomarkers. Dr. Nagele believes his group has the end of the race in sight.

In discussion of this presentation, the participants felt that this research was extremely important and exciting, worthy of funding consideration. It was pointed out that this technology could possibly be used to identify true chronic pain patients and to follow their course during OMT.

UNIVERSITY OF MEDICINE AND DENTISTRY NEW JERSEY SCHOOL OF OSTEOPATHIC MEDICINE (UMDNJ SOM) AND THE NEW JERSEY INSTITUTE FOR SUCCESSFUL AGING, RESEARCH REPORT

DONALD R. NOLL, DO, FACOI, presented an update on the MOPSE study (Multicenter Osteopathic Pneumonia Study in the Elderly). This study looked at the effects of osteopathic manipulative treatment (OMT) on hospital stays and other indices in elderly patients. Immobility is a significant risk factor in pneumonia patients and OMT can potentially reverse many of the effects of immobility. He pointed out that 20 years ago the average pneumonia patient was hospitalized for 14 days but now the average hospital stay is 4.5 days. Thus, an adjunctive treatment, such as OMT, must be reasonably powerful to show a statistically significant effect on length of stay. He reported that to date two papers have been published from the study. The first was a protocol paper published in the Journal of the American Osteopathic Association (JAOA) in September 2008. The second was the primary outcomes paper published in the Osteopathic Medicine and Primary Care journal in March 2010. The primary outcomes were also presented at the Osteopathic Medical Conference & Exposition conference in 2010. In the MOPSE study 407 subjects completed the study and 306 of these had community-acquired pneumonia. In those patients between 50 and 74 years of age, OMT reduced the length of stay. In those over 74 years of age, OMT reduced mortality. The future goals of this project are to publish several technique papers on the palpation and OMT techniques utilized as well as subgroup analysis of the study population. In addition, a paper on the somatic dysfunction data that were collected at
the Kirksville site will be prepared, and an additional paper on complete blood count and other outcomes data will be published. Future research could include mechanism studies in animals and a larger pragmatic trial protocol, which might study the efficacy of osteopathic manipulation in the long-term care setting.

In discussion, Dr. Seffinger pointed out that the study also showed that OMT was safe for patients on blood thinners.

A.T. STILL UNIVERSITY OF HEALTH SCIENCES, KIRKSVILLE COLLEGE OF Osteopathic Medicine, AND THE A.T. STILL RESEARCH INSTITUTE

BRIAN F. DEGENHARDT, DO, C-SPOMM, C-OFP & OMT, presented the report from his research efforts. The primary goal of the Institute is to support research investigating the reliability of osteopathic palpatory tests, establishing means to determine the validity and accuracy of palpatory diagnosis and evaluate the clinical relevance of palpatory tests and manipulative treatments. During the 2010/2011 academic year four grants were funded to the Institute and two new pilot studies were begun with funding support from the OHF Endowment. Ongoing studies include assessing the reliability of palpatory diagnostic tests, assessing the accuracy of palpatory diagnostic tests and translating research findings into training programs. One specific study is investigating objective functional characteristics to differentiate subgroups in women with chronic low back pain. This multicenter observational study taking place in Kirksville and Mesa Arizona utilizes surface EMG and the Neurocom force platform. Sixty-two subjects have completed the study with a final goal of 120 subjects.

Another ongoing study seeks to evaluate the use and effectiveness of osteopathic manipulative medicine in the clinical setting. This study has involved establishing a practice-based research network, the DO-Touch.Net. Another study seeks to evaluate the reliability, validity and accuracy of palpatory tests, while another study is seeking to advance the clinical identification and quantification of musculoskeletal pain. In this latter study, data suggested that the force used to elicit deep-tissue pain by manual palpation had poor agreement with the force used for pressure algometry. In contrast intra-examiner reliability for determining pressure pain thresholds was very high for both palpation and algometry, but inter-examiner reliability and agreement between palpation and algometry was only fair. Studies are underway examining the reliability of the AC-201 for determining tissue texture abnormalities. If the machine proves reliable it will be used to compare normal to abnormal tissues. (AC-201, using
alternating current, is the identifier for the equipment used for measurement of Tissue Hysteresis.) In another study, the group is working with laboratories in England and France using plethysmography and laser doppler flowmetry evaluating the relationships between blood flow and manipulative techniques. Another area of study is assessing the ability of palpatory tests to determine physical asymmetries in patients. A great quantity of data has been collected by faculty and student groups in evaluating pelvic landmark asymmetries, and is currently being analyzed. The data from this area of study suggests that palpation for symmetry of two paired structures is not an accurate way to assess somatic dysfunction. In this study both human subjects and mechanical models were used.

Dr. Degenhardt pointed out that in 1910, over 900 hours of palpatory training was given to osteopathic medical students. By 1980, only 460 hours was given and in 2010 an average of 200 hours of such training was given to U.S osteopathic medical students. He discussed the complexity of the palpatory examination and that vast quantities of sensory input must be processed by the examiner. He explained that students are the tools used to diagnose somatic dysfunction. By not giving the students sufficient experience, objective feedback and training in palpation, we cannot be sure of the accuracy of their skills. Thus a program entitled Advancing Skills in Osteopathy has been developed in Kirksville to provide advanced training in osteopathic skills for practitioners, which involves state-of-the-art instruments to provide objective feedback on palpatory skills.

In discussion, Dr. Seffinger indicated that funded studies are needed to find some measures that can be used as feedback for training students. The group discussed the possibility of having some sort of testing for potential osteopathic students to assess their innate palpatory skills, with poorly performing students not admitted. No consensus was reached.

OHIO UNIVERSITY HERITAGE COLLEGE OF OSTEOPATHIC MEDICINE AND THE OHIO MUSCULOSKELETAL AND NEUROLOGICAL INSTITUTE

BRIAN C. CLARK, PHD, indicated the mission of the Institute is to improve the diagnosis, treatment, and prevention of musculoskeletal and neurological disorders. He reported that musculoskeletal disorders have the highest prevalence of any primary medical condition in United States adults, with about 48 in 100 adults reporting such a condition. Emotional disorders ranks second with about 35 in 100. Likewise musculoskeletal
disorders account for almost twice as much self-reported impairment in activities of daily living than any other medical condition. Annual direct and indirect costs related to musculoskeletal disorders are about $849 billion, which is 7.7% of the United States gross domestic product. The Ohio University Board of Trustees approved the Institute in 1979. In the 1980s and 1990s the primary research foci included exercise physiology, skeletal muscle biology, and the biology of manual therapies. Its highest priority research programs include: 1) low back and chronic pain disorders; 2) sarcopenia and dynapenia; 3) exercise physiology and rehabilitation medicine, 4) the biology of manual therapies, and 5) bone, connective tissue, and cutaneous biology.

The Institute consists of 8300 square-foot of facilities. It provides an optimal setting for conducting controlled studies in both basic and clinical settings. The core facilities include two patient examination rooms, an overnight stay room, a metabolic kitchen, a clinical trials management suite, an exercise physiology laboratory, and a bioanalytics laboratory. The Institute has more than 25 affiliated scientists from four colleges and eight departments. Seven of these affiliated scientists are designated as institute principal investigators. The principal investigator laboratories include those focused on neuromuscular physiology, autonomic function, cutaneous biology, motor control, integrative muscle biology, psychophysiology of pain, endocrine and bone biology, muscle morphology, electroencephalogram, balance and postural control.

The low back and chronic pain disorders research program is seeking to determine the predictors of the transition from acute to chronic pain states. Fear avoidance behavior is one such factor that has been investigated recently, and the data suggest that high levels of fear avoidance maps to alteration in motor behavior and the development of future low back pain episodes. James Thomas and Chris France, both institute principal investigators, currently hold, or recently held NIH R01 level funding in the scope of this research program. The sarcopenia and dynapenia research program is also a NIH funded program and is seeking to determine the causes of muscle strength weakness in the elderly. Scientific dogma holds that muscle weakness with advancing age is due to muscle wasting, and while muscle wasting is certainly one factor, it is now clearly apparent that it only explains a modest portion of weakness. Institute scientists are working to identify the other factors that are mechanistically responsible for this weakness. Recent findings suggested that reduction in cortical excitability in the brain, as well as impaired skeletal muscle calcium handling, may be two such mechanisms.

In the Biology of Manual Therapies program, institute scientists have published a
number of recent papers that suggest manual therapies down-regulate the gain of the muscle spindles and/or various sites of the 1a reflex pathway that ultimately leads to reductions in resting muscle activity. Thus, it is speculated that manipulative therapies work by breaking the “pain-spasm-pain cycle”. This research program is currently funded by grants from the American Osteopathic Association, and we are pursuing funding for this line of work from the NIH. Other institute activities include the Junior Scholars Program, investing in infrastructure and instrumentation, and funding of various pilot studies.

OHIO UNIVERSITY HERITAGE COLLEGE OF OSTEOPATHIC MEDICINE (HCOM) DIABETES RESEARCH PROGRAM
FRANK SCHWARTZ, MD, reported this is an active program as there are several funded grants, including a $3.2 million NIH R22 grant to look at diabetes mellitus and depression. This grant is shared with Indiana University, West Virginia University and the Heritage College. Other grants include an $800,000 Sanofi-Aventis grant for the use of insulin first in treating type II diabetes; three grants to develop artificial intelligence monitoring for type II diabetes, including a $350,000 National Science Foundation grant for glucose prediction; a $150,000 Medtronic grant for smart phone application development; and, $50,000 from the Watson Endowment funded by OHF. In addition, work is ongoing with a multi-site Medtronic study testing an automatic pump shut off for use with hypoglycemia.

Dr. Schwartz pointed out that obesity and diabetes are extremely prevalent in the Appalachian region. People with type II diabetes are quite likely to suffer from depression while conversely people with depression are more likely to suffer from type II diabetes. Depressed type II diabetes patients are less compliant, more poorly controlled, and have higher morbidity and mortality. Research at HCOM is comparing interventions of supervised exercise versus talk therapy versus a combination of both for improved diabetes control and depression scores. A study by Jay Shubrook, DO, is comparing the use of insulin-first treatment in new onset type II diabetes patients versus conventional therapy. In this collaborative study with Western University, patients are treated for three months with intensive insulin therapy followed by rapid tapering and observation. Initial data suggests that the legacy effects of this intensive insulin therapy can last for two years with no other treatment.

The diabetes research group is also developing support software for diabetes
management. 4DSS is the case based reasoning software for the management of type II diabetes. This software is being developed to predict glycemic variability to assess the risk for long-term complications. It is being developed to predict the occurrence of hyper- and hypoglycemia to potentially prevent occurrence. Patient sensors detect glucose from tissues and a prediction software program determines potential risk. The data are sent from the patient to the central computer via an iPhone and data are then analyzed. The prototype system has been developed and is currently being expanded as a smart phone application to upload the data, process it and send messages back to change insulin pump settings.

Glucose variability is now recognized as a risk factor in diabetes because it activates oxidative stress, which complicates diabetes treatment. The ability to predict glycemic variability is especially important in diabetic patients. For example, severe hypoglycemic reactions include cognitive disorders, seizures, coma, and irreversible brain damage or death. Most diabetic patients can become severely hypoglycemic before they sense it or even before glucose sensors detect it. The group is incorporating support vector regression algorithms in the prediction software for hypoglycemia. It is possible that in the future this prediction software could be used as one of the algorithms running a controller in an artificial pancreas. The group is one of the participants in the Artificial Pancreas Project sponsored by the Juvenile Diabetes Research Foundation.

UNIVERSITY OF NORTH TEXAS HEALTH SCIENCE CENTER OSTEOPATHIC RESEARCH CENTER (ORC)

JOHN. C. LICCIARDONE, DO, MS, MBA, reported that the ORC is dedicated to osteopathic research in three areas: basic science research on mechanisms of action of osteopathic manual medicine; clinical trials of osteopathic manual treatment; and, health services research to inform health policy, regulatory, and reimbursement issues. Dr. Licciardone updated the group on the recent ORC sponsored International Research conference titled “Using Manual and Conventional Therapies to Enhance Musculoskeletal Health.” It was a successful conference that included a keynote address by Josephine Briggs, MD, director of the National Center for Complementary and Alternative Medicine, a presentation of the Murray Goldstein, DO, lecture award to Dennis Turk, PhD, and the first presentation of the OSTEOPATHIC Trial results. Four articles from the conference will be published in the September issue of the Journal of the American Osteopathic Association and two to three more will be published at a later date.
Dr. Licciardone then described the ORC sponsored Consortium for Collaborative Osteopathic Research Development – Practice-Based Research Network (CONCORD-PBRN), a network based on a hub and spoke model. DO researchers will be trained in the affiliated patient-centered research fellowship program at the ORC and establish their own centers, subsequently recruiting other researchers to participate. The center training involves a three-year commitment and has included 14 fellows to date. Year one is the didactic phase, while years two and three are the practicum phase. There is no cost to fellows for participation in the program. The cost of approximately $8000 per fellow is entirely underwritten by grants to the ORC and by University of North Texas Health Science Center in-kind contributions. An observational card study will begin this year with the 14 fellows to collect data on practice demographics and diagnostic characteristics, prevalence of osteopathic palpatory findings, and use of specific OMT techniques. It is hoped there will be a total of about 1500 patient encounters in the study.

The results of the OSTEOPATHIC Trial indicated that: 1). OMT provides moderate to substantial low back pain improvement; 2). OMT patients less often used prescription drugs for low back pain; 3). OMT patients were more likely to be very satisfied with their back care; 4). OMT did not improve back specific function, general health, or work disability; 5). OMT was safe, parsimonious, and well accepted by patients. There were 455 patients included in the study that covered a 12 week period for each patient. The study was shown to be parsimonious as there were six treatments in 12 weeks for the osteopathic patients whereas chiropractic guidelines recommend up to 36 treatments in 12 weeks. A manuscript published in the Journal of the American Osteopathic Association in July provided data on baseline somatic dysfunction in the study patients. A grant application has been submitted to the National Institutes of Health proposing a follow-up five year study involving 576 subjects. The 52-week protocol is aimed at determining efficacy and cost-effectiveness of OMT. The grant request is $3.5 million.

In discussion, Dr. Seffinger pointed out a study conducted by Dr. Jacek Cholewicki; he had looked at specific tests for somatic dysfunction, whereas Dr. Licciardone looked at global identification of somatic dysfunction, a very important difference. Dr. Schwartz asked about the effect of patient state of mind on response to treatment. Dr. Licciardone said there was some relationship between depression and response to treatment. Dr. Clark mentioned there were major differences in the results of Dr. Cholewicki's study and Dr. Licciardone's study that have to do with the way diagnoses are made, a major issue. Dr. Clark commented we must find diagnostic tests that are
valid and reliable for palpation. We need to question the reliability of palpation and determine how to perform good research in this area.

**OMED 2012 OSTEOPATHIC RESEARCH CONFERENCE PLANNING**

BRIAN DEGENHARDT, DO, C-NMM, provided an update on the upcoming Research Conference at OMED 2012 which he is co-chairing with Paul Standley, PhD. The program is entitled “Highlighting this Century’s Premier OMM Relevant Research and Charting a Collaborative Way Forward.” It is designed to support the strategic planning process to shape the direction of osteopathic research for the next decade, disseminating and highlighting the most rigorous and promising OMM research and to facilitate an update of the 2003 Osteopathic Research Taskforce Synergy White Paper. There will be 6 1/2 day sessions starting with clinical manual medicine research, then basic science manual medicine research followed by a session highlighting physician-in-training research. Session 4 will be the customary poster session while session 5 will look at the evidence base of diagnostic and therapeutic palpation. Session 6 will discuss establishing and confronting evidence.

Prior to the conference there will have been completed three phases of the strategic planning process that began in January 2012 and will end in September. These phases began with an analysis of previous strategic plans. The second phase focused on specific areas of the previous strategic plan and the third phase on writing and preliminary dissemination and feedback of the strategic plan. Thus far all goals have been achieved and on September 8-9 2012 a special session of the AOA Council on Research will be held to review the strategic planning. By September 30, a public draft of the strategic plan should be completed and will be reviewed at the OMED meetings. In February 2013 the final proposal will be submitted to the AOA board for review. In the spring of 2013, it is anticipated that the plan will be published and implementation will begin.

Dr. Degenhardt reviewed challenges facing the osteopathic profession in the research arena: funding and resource challenges; research activity challenges; research training; research infrastructure; health policy; and, leadership challenges. He noted a review of the peer-reviewed articles on osteopathic manipulative medicine over the last 75 years. From 1945-1970, less than 20 articles were published per decade. From 1970 -2000, just under 30 articles were published per decade. This increase was
attributed to the addition of state funded colleges of osteopathic medicine. In the first decade of this century, 85 articles were published, essentially a three-fold increase. Basic science articles related to the osteopathic profession were unable to be reliably tracked due to publication in basic science journals without means of identifying them. He reviewed the types of research articles published and where they had been published. He predicted that in the next 10 years the osteopathic profession will exceed its publication record for the entire last 75 years and that we will have accumulated a reasonable evidence-base for osteopathic manipulative medicine. In addition he predicted that osteopathic research could become a global phenomenon.

General Discussion

Dr. Degenhardt reported on the April 2012 AOA Council on Research (COR) meeting. He stated the COR will have a special meeting in September 2012 to review the draft of the new strategic plan. The AOA Board will review the plan in February 2013. The AOA has recognized the need for additional funding for research. It also recognizes that funds have been spent for other than intended use from the Osteopathic Research Development Fund (ORDF) and the AOA Board is considering ways to increase funding. However the AOA may not be ready to add a check off box to membership dues for the ORDF.

Mr. Vincent discussed the historical context of the ORDF. Dr. Seffinger discussed the Foundation for Osteopathic Research and Continuous Education (FORCE) that has been established by the American Academy of Osteopathy. Dr. Degenhardt wondered whether the AOA is looking at FORCE as an alternative funding source to the ORDF for research, which it is not. It is a partner in research. FORCE was developed to help researchers develop their research ideas and find investment partners to fund research proposals.

**ACTION STEP:** Dr. Degenhardt will again bring up the issue of increased funding by AOA membership at the next COR meeting.

Dr. Degenhardt asked how we could better engage the osteopathic profession in research and research activities.

Dr. Seffinger pointed out there is an evidence base in the profession. This base has
been building for many years and we have come a long way. Indeed the process of building this evidence base is escalating and is such that many MDs are encouraging the use of OMT and its reimbursement. However, much more evidence is needed.

Dr. Licciardone questioned whether the participants felt that research followed practice or vice versa. He stated that approximately 70% of OMT is done for low back pain and guidelines for low back pain treatment support the use of OMT. Now we must provide evidence that will allow guidelines to be developed that support the use of OMT in other areas of medicine.

Dr. Clark supported the idea that the development of an evidence base is a process. To speed the process, the profession must get more federal dollars to support the cost of clinical research. He urged the use of the profession's political clout to access more federal research dollars. He also pointed out that we must use the evidence base currently available to its fullest extent.

Dr. Schwartz pointed out that we need to emphasize in our public message such things as the fact that we are treating chronic pain with no or less medications.

Dr. Seffinger emphasized the need for more outcomes research in the profession.

Dr. Degenhardt emphasized that cost-effectiveness is a very critical issue that must be addressed.

Dr. Licciardone mentioned that cost-effectiveness must also look at dose-response effects and that real world studies, such as the card study he is about to begin, is needed to address these issues.

Dr. Degenhardt mentioned the obvious fact that our research quality is not yet up to what is truly needed. Hopefully the new strategic plan will begin to address this issue.

**ACTION ITEM:** Dr. Degenhardt will disseminate the new white paper on Wikispace.

**ACTION ITEM:** Dr. McCormick will call together key researchers at MSU to look at the new white paper when it becomes available.
Dr. Cavalieri suggested that all OMT department chairs review the paper. Dr. Seffinger mentioned that the Educational Council on Osteopathic Principles should receive and review the paper.

**ACTION ITEM:** Each conclave participant will review and discuss the paper with their respective school researchers.

Discussion turned to research training for residents. Dr. Licciardone suggested that residents could do the first year of research training in his program. Dr. Seffinger asked if the Costin Institute could set up a research training course for residents.

Dr. Cavalieri mentioned that Dr. Steve Shannon of the American Association of Colleges of Osteopathic Medicine (AACOM) will help with communication of the white paper via the “higher logic” communication system.

Discussion turned to events ongoing at the Journal of the American Osteopathic Association. Drs. Patterson and Seffinger, associate editors of the journal, led this discussion. The journal is adding more sections to make it of more interest to the profession and it is decreasing its submission-to-publication time radically. Many submissions can now be published within three months of submission, depending on how many revisions are necessary. Several new staff members have been or will be added to the journal’s staff, and within two months, an electronic submission and tracking system will be in place. The journal is readying applications to obtain an ‘impact factor,’ but this must be done carefully as many strict guidelines must be followed. Dr. Patterson emphasized that the impact factor that can be expected for the JAOA will be about 2.0. He had discussed impact factors at length with William L Lanier, MD, editor-in-chief of the Mayo Clinic Proceedings, a world-renowned journal. This journal’s impact factor is approximately 5.7. Many variables affect the impact factor, such as articles that are published, but practically never cited, such as letters to the editor, editorials and comments. Some journals go so far as to have the rating agency omit such articles from impact factor calculations. Other journals simply refuse to publish these low-cited articles. Also, experience shows that as the impact factor increases, rejection rates for articles also increases. Since the JAOA is a general journal, publishing all types of articles, letters, comments etc., its impact factor will never be terribly high. However, its impact within the profession does not necessarily
correlate with the calculated general impact factor. Indeed many important specialty journals have low impact factors but high impact in their respective fields.

Dr. Licciardone questioned if we could promote the JAOA outside the profession. He suggested considering alternative names for the journal. The group discussed the wisdom of having a year of content continually behind a reader firewall. Such a policy is intended to provide a benefit for AOA members but makes it difficult for non-AOA members to access current content.

**ACTION ITEM:** Drs. Patterson and Seffinger will discuss these ideas with the editorial staff of the JAOA.

It was the group consensus that another OHF Conclave be held at about the same time next year — 2013. OHF staff will find an appropriate time and announce it to the group.

*Facilitator’s note: The tentative dates for the 2013 Conclave are July 26 and 27.*

The meeting was adjourned at approximately noon on July 28.

**Summary of Action Items**

**FACILITATORS NOTE:** all of the action items recommended at the last meeting were addressed during various aspects of this meeting.

**ACTION ITEM:** Justin McCormick will collect the CVs of people involved in the musculoskeletal project at MSUCOM.

**ACTION ITEM:** Dr. Degenhardt will surface the issue of increased research funding by AOA membership at the next COR meeting.

**ACTION ITEM:** Dr. Degenhardt will disseminate the new research white paper on Wikispace.

**ACTION ITEM:** Dr. McCormick will call together key researchers at MSU to look at the white paper when it becomes available.
ACTION ITEM: Each conclave participant will review and discuss the paper with their respective school researchers.

ACTION ITEM: Drs. Patterson and Seffinger will discuss journal ideas with the editorial staff of the JAOA.