Dear Friends and Colleagues,

We have had an exciting year of growth and discovery in the Division of Rheumatology and Immunology at The Ohio State University College of Medicine and I’m delighted to share some of the highlights with you in this update.

Our exceptional faculty’s breadth and diversity of experience is the key driver for our great progress. Our division has grown to include 11 clinical faculty members, four rheumatology fellows and four researchers (both adjunct and fulltime), placing us among the largest of programs nationwide.

But more significant than our size is the contribution this outstanding group of colleagues is making to our specialty through innovative patient care, sought-after professional education and break-through research.

You’ll find updates about our work in lupus, osteoarthritis, fibromyalgia and musculoskeletal ultrasound in this publication, which represent just a portion of the pioneering initiatives going on through our division. In addition, here’s a snapshot of some of the many leadership activities and collaborative ventures we are engaged in:

- Our colleague, Joseph Flood, MD, FACR has been named president of the American College of Rheumatology. Dr. Flood is an adjunct associate professor in our division as well as a private practice rheumatologist here in Columbus. He is widely recognized for his distinguished career as a clinician, an educator and an advocate for our specialty and for patients with rheumatic disease. His leadership of the ACR will undoubtedly make a valuable contribution to our professional community.

- A very successful national conference on biomarkers in lupus held in Washington DC, which I led, focused on cutting-edge research and featured a dozen experts from around the country. We will repeat it in the fall of 2014.

- Our faculty is developing new curriculum as part of the Ohio State University College of Medicine’s roll out of “Lead. Serve. Inspire.” curriculum initiative designed to prepare tomorrow’s physicians to deliver the highest quality care to a diverse population of patients.

- Our impact is global, as demonstrated by a growing relationship with our colleagues in China. I was a visiting professor in November 2013 as a guest of Zhenbiao Wu, MD, PhD, Director of the Department of Clinical Immunology, Xijing Hospital, Fourth Military Medical University in Xi’an.

- The RISE Network is now in full swing after a successful pilot study. The Rheumatology Informatics System for Effectiveness Network, an initiative of the American College of Rheumatology, is led by Peter M. Embi, MD, MS, FACP, FACMI. The RISE Network provides a reliable and cost-effective means of connecting data from multiple electronic medical records across the country to enable quality improvement, reporting and research queries by the rheumatology community.

- Many faculty members are active in advocacy through organizations such as the Lupus Foundation and the Arthritis Foundation. Our involvement recognizes the need to support patients on every front. We recently spoke to patients at the Lupus Foundation’s summit and are collaborating to provide support groups and patient education programs.

Patient care remains at the heart of all that we do in our research endeavors, in training residents and fellows and in clinical practice. Thank you for the opportunity to share our progress. I’m proud of all that we are accomplishing and hope that you find it interesting and inspiring.

I welcome your comments and questions. Please feel free to contact me at Wael.Jarjour@osumc.edu.

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Welcome
Growing Lupus Clinic Seeks Better Answers for Patients

Ohio State’s Lupus Clinic, among the top-tier multidisciplinary centers of its kind, continues to expand in patient care, research and education capabilities.

Since the clinic was founded in 2010 by Wael N. Jarjour, MD, FACP, division director for Rheumatology and Immunology and Brad H. Rovin, MD, FACP, FASN, Division of Nephrology director, more than 2,500 visits with patients referred from throughout the United States have received access to multiple specialists and innovative treatments through clinical trials. The clinical team provides quick intervention for nephritis and evaluation for antiphospholipid syndrome, glomerulonephritis and vasculitis.

REGISTRY ADVANCES UNDERSTANDING
Ohio State’s Lupus Clinic received Institutional Review Board approval this year to implement a lupus registry. The Ohio State Lupus, Vasculitis and Glomerulonephritis Registry collects specimens from clinic patients over 18 years old with at least one of sixteen diagnoses. Stacy P. Ardoin, MD, MHS is the principal investigator for the registry, which creates a resource to follow patient populations over time to better understand their conditions and improve outcomes. An on-site laboratory facility enables the collection and processing of specimens, making them available for researchers involved in a variety of immunological studies. Clinical coordinators are also now on-site at the clinic, located at Ohio State’s CarePoint East, removing barriers to enrolling patients in clinical trials. To access a list of current Ohio State research studies seeking volunteers, visit www.studysearch.osumc.edu.

INTERACTIVE TOOLS EMPOWER PATIENTS
Soon the inner waiting rooms of the Lupus Clinic will be converted to interactive areas supplied with technology such as iPads, giving patients the opportunity to learn about their condition and about the clinical trials and new drugs that may be available to them. This innovative design will empower patients to take an active role in their care and work in partnership with their providers, which has been demonstrated to improve outcomes for rheumatology and nephrology patients. According to Dr. Jarjour, “The ultimate goal with this project is to provide patients an innovative way to update how they are doing and give them opportunities to explore studies that are open to them.”

SPEEDING ACCESS TO INNOVATIVE TREATMENT
With many clinical trials, participants are only eligible to participate if they have not started standard treatment. To improve access to the innovative treatments available at the Lupus Clinic, the physicians fast track local patient referrals. For newly diagnosed patients who live in the Columbus area, the clinic team will see referrals with immune-mediated disease or new complications within 24 hours. The patient then has access to the broadest range of clinical trials without any delay in treatment.

For patients at a distance, the clinical team coordinates closely with their local rheumatologist or nephrologist to enable access to the innovative care opportunities at Ohio State and other locations. Ohio State’s very active kidney pathology lab works closely with nephrologists throughout the country to provide multidisciplinary nephro-pathology lab results along with the opportunity to have academic discussions about treatment options.

FELLOWSHIP EXPANDS EXPERTISE
A third-year fellowship in immune-mediated diseases has been added this year. Open to either a nephrologist or rheumatologist, the fellowship combines clinical time in the Lupus Clinic with research focus. The fellowship equips physicians to pursue research in an academic environment or participate in clinical trials in other practice settings.

Ohio State’s Lupus Clinic is advancing the care and understanding of these life-limiting conditions. Consultation and referrals can be arranged by calling 614-293-4837.
Research

Exploring the Link between Lupus, Inflammation and Congestive Heart Failure

While the increased risk for congestive heart failure (CHF) in people with lupus is well established, the causal link between lupus and CHF remains unexplained. In a collaboration between rheumatology and cardiology, Stacy P. Ardoin, MD, MHS, and Subha Raman, MD, MSEE, FACC, are investigating the relationship between cardiac inflammation and the development of congestive heart failure in lupus patients.

Dr. Ardoin is board-certified in both adult and pediatric rheumatology and an assistant professor in Ohio State’s Division of Rheumatology and Immunology, seeing adult patients at our Lupus Clinic and children with rheumatic diseases at Nationwide Children’s Hospital in Columbus. Her research spans both adult and childhood lupus, focusing on optimal treatment and long-term outcomes for both populations. She teamed with Dr. Raman, a cardiologist and professor of cardiovascular medicine, biomedical informatics and radiology in Ohio State’s College of Medicine with a special interest in cardiovascular imaging. They expect to find that inflammation of the heart contributes to the development of CHF in patients with lupus over time.

Their study uses a novel T-2 mapping technique with a specialized MRI to image the hearts of lupus patients during a flare-up, looking for inflammation. T-2 mapping involves pulse sequences to precisely measure cardiac edema. The initial phase of the study creates a baseline over three months, and they plan to follow the patients over time. Drs. Ardoin and Raman are currently analyzing the data and expect to publish the results of the study in early 2014. The preliminary results indicate a significant number of patients studied have cardiac inflammation.

Filling the gap in knowledge between lupus and congestive heart failure is an essential step in effectively managing this risk factor for lupus patients.

Bench to Bedside Path Creates Synergy for Osteoarthritis Research

Working across departmental lines, an Ohio State team combining basic science with translational knowledge may have the keys to unlock answers to understanding osteoarthritis.

Rebecca D. Jackson, MD, is director of The Ohio State University Center for Clinical and Translational Science (CCTS) and principal investigator for the Osteoarthritis Initiative (OAI). The OAI is a longitudinal, prospective observational study of knee osteoarthritis (OA) to help identify biochemical, genetic and imaging biomarkers for the development and progression of OA.

Matthew Husa, MD, is an assistant professor in the Division of Rheumatology and Immunology and a tenure-track investigator with focused experience using mouse models.

Ohio State is designated as one of four sites for the Osteoarthritis Initiative, which now has almost nine years of data available as a resource for further discovery, including blood samples and imaging studies collected from participants over time.

Using the knowledge from the OAI, Drs. Jackson and Husa can further explore questions about the patho-physiology of OA, isolating factors that can be studied in the uniform population of mice, then validated in the human population. The back and forth inquiry between the animal and human populations creates a synergy to more rapidly increase understanding of what factors contribute to the progression of OA and the potential to personalize therapy for more effective treatments.

Osteoarthritis is the most common form of arthritis, affecting an estimated 27 million Americans. OA is one of the most frequent causes of pain, loss of function and disability. The prevalence of OA is on the rise, along with the healthcare costs associated with treating the condition, creating an urgency to better understand this disease and develop treatment options.

“We think, but don’t yet know, that the progression of OA is related to systemic immune involvement related to aging, not just a wear-and-tear joint problem. As we correlate the steps in the lab with the knowledge of the human data, we can better understand the mechanisms of the disease,” says Dr. Husa. That understanding could lead to the ability to treat the disease beyond pain control and joint replacement.

According to Dr. Jackson, “Osteoarthritis is such a significant disease, ubiquitous with advancing age. We’re just starting to apply scientific inquiry to OA like we have rheumatoid arthritis and lupus. Our animal studies provide a powerful tool enabling us to better understand the interplay of biologic markers and environmental factors in the progression of OA.”
Research

Research Collaborations May Yield Breakthroughs

Ohio State’s Division of Rheumatology and Immunology director Wael Jarjour, MD, FACP, and other Ohio State researchers are involved with an exciting collaboration with Navidea Biopharmaceuticals using novel technologies to target macrophages and exploit their role in the development of rheumatoid arthritis and lupus, both diagnostically and therapeutically. By examining abnormalities in macrophages and the inflammatory process, the progression of RA and SLE can be tracked. Further, this innovative approach has the potential to identify patients who are in the very earliest phase for RA or SLE, which could cause a paradigm shift in the diagnosis and management of these diseases from limiting tissue injury to prevention. To follow the progress of this research, visit http://www.nature.com/nature/outlook/medical-imaging/pdf/navidea-white-paper.pdf.

In another promising area of research, Nicholas Young, PhD, and Wael Jarjour, MD, co-authored a study that examines the intricate interactions between abnormal release of tissue antigens and regulatory T cells in the development of myositis. This research study was highlighted in Nature Rheumatology and the study will appear in the December issue of Arthritis and Rheumatism.

Both of these efforts have great potential for a better understanding, diagnosis and treatment of rheumatologic diseases.

Promising Research on Rapid Fibromyalgia Blood Test

The availability of a low-cost rapid screening tool for fibromyalgia syndrome using only a few drops of blood may become a reality through the work of Kevin V. Hackshaw, MD, associate professor in The Ohio State University College of Medicine Division of Rheumatology and Immunology and the Department of Molecular and Cellular Biochemistry.

Dr. Hackshaw is the lead author of a pilot study published in the August 21, 2013 issue of the journal that reliably identified biomarkers for fibromyalgia syndrome using infrared microspectroscopy. The paper, entitled “A bloodspot-based diagnostic test for fibromyalgia syndrome and related disorders,” shared the investigation into a finger-stick blood test that could take five years off the wait for a diagnosis of the syndrome. The highly specialized microscope was able to distinguish molecular patterns between blood samples from patients known to have fibromyalgia syndrome, osteoarthritis or rheumatoid arthritis. By “training” the equipment to recognize the molecular pattern of fibromyalgia, the study demonstrated that the test could tell the difference between the “biochemical fingerprint” of fibromyalgia from other types of disorders that share similar symptoms.

NEXT STEPS UNDERWAY TO VERIFY TEST’S EFFECTIVENESS

Dr. Hackshaw has a long history of research in neuropathic pain, starting with animal models and evolving to clinical translational work. He serves as a full member and reviewer with the National Institutes of Health in the Somatosensory and Chemosensory Study Section through 2018. Since completion of the bloodspot test pilot study, he is currently leading several clinical studies at Ohio State to further verify that the process can:

- Be used as a tool to detect fibromyalgia
- Distinguish fibromyalgia from similar neuropathic pain disorders
- Provide effective large-scale screenings

Results of the current expanded clinical trials will then yield information about the sensitivity, specificity and reliability of the test. Once the test’s effectiveness is well established, physicians will be able to turn to it as a diagnostic test for fibromyalgia syndrome. To date, the results have been similar in effectiveness to the pilot study.

FASTER DIAGNOSIS BRINGS RELIEF

Patients with fibromyalgia are often desperate by the time they receive treatment because of the lengthy process required to make a diagnosis. The main symptoms, persistent pain and fatigue, mimic many other conditions, so physicians tend to rule out other potential causes before diagnosing fibromyalgia. Additional symptoms include disrupted sleep and memory or thought problems. An estimated five million American adults have the disorder.

According to Dr. Hackshaw, “The importance of producing a faster diagnosis cannot be overstated because patients experience tremendous stress during the diagnostic process. Just getting the diagnosis actually makes patients feel better and lowers costs because of reductions in anxiety.”
Rheumatologists across the United States recognize musculoskeletal ultrasound (MSK) as an effective and versatile tool in diagnosing and treating patients with inflammatory arthritis. Its use in the practice of rheumatology is expected to grow substantially.

MSK offers an easy, relatively inexpensive, radiation-free way to look at joints. It can be performed in real-time during a patient appointment to provide immediate feedback. Unlike CT scan and traditional X-ray, MSK allows a dynamic assessment with the ability to view the joint in motion. This technology enables us to more accurately diagnose inflammatory arthritis and soft tissue pathology when there is no obvious joint inflammation or other diagnostic indications with a physical exam. Further, it helps monitor response to biologic therapies and assists in aspiration and injection of joints. While fluoroscopy has been the primary option used in the past, MSK spares the patient from having to go to a separate center to undergo the procedure and from radiation exposure.

Nicole Bundy, MD, MPH, a board-certified rheumatologist and assistant professor in the Division of Rheumatology and Immunology is one of a handful of physicians spearheading Ohio State’s musculoskeletal ultrasound initiatives in patient care and physician training and is widely recognized for her expertise in the subject.

She says, “This is an exciting and fairly new field with great potential to improve outcomes for our patients. We are using ultrasound to greatly benefit our patients and to continually expand training opportunities for physicians.”

Dr. Bundy oversees Ohio State’s Musculoskeletal Ultrasound Clinic. The clinic now has dedicated hours for performing ultrasound for patients combined with an opportunity for observation and training for rheumatology fellows. MSK has become a formal part of the fellowship program, which has been enthusiastically welcomed by the physicians in the program who understand the value of ultrasound expertise in their practice.

A typical patient for an ultrasound-guided steroid injection might have arthritis in the hip joint that is not getting adequate relief through medication or physical therapy. Ultrasound imaging guides the physician to inject the patient’s joint more quickly and easily, with less pain and more accuracy. MSK can also be effective in injecting difficult joints such as ankles, wrists and very arthritic knees.

2014 DATE SET FOR SIXTH ANNUAL MSK NATIONAL CONFERENCE

August 2-3, 2014, is the date for the continuing medical education annual conference on the clinical applications of musculoskeletal ultrasound led by Dr. Bundy. Rheumatologists from throughout the United States have participated in this intensive, two-day workshop, now in its sixth year. Participants in past conferences have consistently rated the format and content as excellent and particularly appreciate the small group approach.

The workshop features:

- Experts in musculoskeletal ultrasound from academic medical centers across the country
- Presentations on ultrasound scanning techniques, normal extremity anatomy and common pathology in inflammatory arthritis
- More than 10 hours of hands-on training in small groups including learning ultrasound-guided injections on cadavers
- The latest thinking about incorporating the role and use of musculoskeletal ultrasound in the care of patients with inflammatory arthritis
- Training to recognize on ultrasound the common pathologies of the musculoskeletal system

Registration will open in early 2014. For information or to register, please visit cme.osu.edu or contact mikeloeiker@osumc.edu. You can also visit our website at internalmedicine.osu.edu/rheumatology.
Faculty Members Active in Patient Care, Education and Research

While this update focuses on a few select initiatives, here’s a brief glimpse of the involvement of other members of our division:

**Zhanna Mikulik, MD**, leads our division’s medical student education along with her clinical practice.

**Linda Gray, MD**, is Infusion Center director, overseeing intravenous infusion care for patients with arthritis, osteoporosis, gastrointestinal, dermatologic and pulmonary conditions.

**Kevin Hackshaw, MD**, is our Fellowship Program director, in addition to his exciting research in fibromyalgia testing featured in this publication.

**Ronald Whisler, MD**, has been part of our division for more than 35 years and remains very active in clinical practice.

**Clark Anderson, MD**, continues his research to fill scientific knowledge gaps critical to advancing the understanding of immune mechanism with major implication for rheumatology and immunology fields.

**Ing Ming Chiu, PhD**, carries on his prolific basic research and concurrent appointment with our division and National Chung Hsing University in Taichung, Taiwan.

**Lai-Chu Wu, DPhil**, collaborates with multiple departments at Ohio State and across the globe in a variety of promising research studies.

**Sudha Agarwal, PhD**, an established basic scientist who is an auxiliary faculty member in our division as well as a Professor in Ohio State’s College of Dentistry, continues her exciting research to delineate the mechanisms by which exercise modulates the immune response.

New Core Liaison for Rheumatology Brings Experience and Perspective

**Ali Ajam, MBBS**, joined Ohio State’s Division of Rheumatology and Immunology in 2013 as assistant professor of medicine. His clinical practice background as the sole rheumatologist in a busy Veterans Administration (VA) hospital, combined with his teaching experience with residents and research interests, make him a valuable addition to our faculty.

Dr. Ajam is board certified in both internal medicine and rheumatology. He completed a fellowship in rheumatology at the University of Arkansas. His clinical interests are myopathy/myositis and scleroderma with research interests in myopathy and gout.

While at the VA in Dayton, Ohio, he oversaw medicine and dermatology residents rotating in the rheumatology clinic while managing patients with a variety of rheumatologic disorders. He was active in teaching conferences to residents. His understanding of the day-to-day challenges of clinical practice helps equip our residents to provide outstanding patient care in his role as Core Liaison for Rheumatology.

**Kevin V. Hackshaw, MD**, provides academic and clinical leadership for our Rheumatology Fellowship Program. Back: (left to right) Kevin V. Hackshaw, MD, Brian LaMereaux, MD, Irving Rosenberg, MD

Front: (left to right) Alexa Meara, MD, Hareth Madhoun, DO
A selection of journal articles from the impressive list of publications authored or co-authored by our faculty:


**Embí, P.J., Hebert, C., Gordillo, G., Kelleher, K., Payne, P. (2013). Knowledge management and informatics considerations for comparative effectiveness research: a case-driven exploration. Med Care, 51(8 Suppl 3), S38-44.**

**Embí, P.J., Payne, P. (2013). Evidence generating medicine: redefining the research-practice relationship to complete the evidence cycle. Med Care, 51(8 Suppl 3), S87-91.**


**Young, N., Sharma, R., Friedman, A.K., Kaffenberger, B.H., Bolon, B., Jarjour, W.N. Aberrant Muscle Antigen Expression Is Sufficient to Cause Myositis in a Regulatory T Cell-Deficient Mice. Epub Arthritis and Rheumatism 2013.**
