Our residency training program remains robust. We had no citations from our latest ACGME survey and started to plant some of our graduating residents in WVU Medicine system hospitals and their respective communities. Our research program, anchored by four PhDs and two clinician scientists, has been extremely successful and continued to grow with significant external and federal funding. Construction began on a new pediatric hospital attached to J.W. Ruby Memorial Hospital, with a planned opening in 2021. A new outpatient clinic in Waynesburg, PA is up and running with several of our subspecialists seeing patients there. Currently, we see outpatients at five locations: University Town Centre (UTC), Physician Office Center (POC), Spine Center (attached to Healthworks), Fairmont Gateway Clinic, and the new Waynesburg Clinic.

This issue will again feature some highlights, updates, and data from 2019. As always, if you are in town, we would love to get together depending on the existing coronavirus rules and regulations!

My office is 304-293-1170 if you need anything. I hope you enjoy this edition of our annual report!

I can honestly say this year in review was very strong for the Department of Orthopaedics and WVU Medicine! Remember, however, we are reviewing 2019, pre COVID! Next year’s review for 2020 may not be as rosy; however, I am fairly confident that we will catch up with our clinical work by year’s end.

2019 for our orthopaedic department showed continued growth. Dr. John Taras joined us as an experienced, nationally known hand surgeon. Dr. Richard Harris also started in 2019 as our fourth podiatrist. Dr. Mary Louise Russell, a pediatric PM&R physician, joined us at the end of 2019 as we grow our Division of Physical Medicine and Rehabilitation.

We continue to be busy clinically, particularly in total joint surgery, spine, and hand. Certainly, the trauma volume has continued to increase and forever will!

Sanford E. Emery MD, MBA
Professor and Chairman
Department of Orthopaedics
Director of Surgical Services
West Virginia University

Sanford E. Emery MD
CONGRATULATIONS!

Congratulations to Dr. Scott Daffner and Dr. Matthew Dietz who received promotions on July 1, 2019. Dr. Daffner was promoted from Associate Professor to Professor, and Dr. Dietz was promoted from Assistant Professor to Associate Professor with Tenure.
WELCOME NEW FACULTY

Mary Louise Russell MD
Assistant Professor, Physical Medicine and Rehabilitation

Robert Santrock MD
Chief, Foot and Ankle; Associate Professor, Orthopaedics

Shafic Sraj MD
Assistant Professor, Orthopaedics, Hand and Upper Extremity

David Tager MD
Assistant Professor, Pediatric Orthopaedics

John Taras MD
Professor, Orthopaedics, Hand and Upper Extremity

Colleen Watkins MD
Associate Professor, Orthopaedics, Rheumatology/ Metabolic Bone

David Waxman MD
Associate Professor, Orthopaedics, Adult Reconstruction

Stephanie Ferimer MD
Assistant Professor, Physical Medicine and Rehabilitation

Justin Lockrem MD
Assistant Professor, Orthopaedics, Sports Medicine

N.M. Nuala Crotty MB
BCh BAO
Assistant Professor, Physical Medicine and Rehabilitation
In addition to our many faculty and residents, the WVU Department of Orthopaedics employed the services of 22 Advanced Practice Providers (APPs) in 2019.

Our APPs included 20 Physician Assistants and 2 Nurse Practitioners. We also have an additional two Nurse Practitioners and three Physician Assistants who are expected to start throughout the summer in 2020.

As our department keeps expanding, the role of our APPs has continued to evolve to help meet the changing needs of orthopaedic patient care. These APPs play a vital role in our clinic and operating room efficiencies. Their responsibilities include, but are not limited to, evaluating and treating patients in clinic, assisting with surgeries and clinical procedures, pre-operative examinations, patient communication, triage, follow-up, and data collection for ongoing research projects. Our APPs are involved in every subspecialty within our department as well as our Orthopaedic Medical Optimization Program (OMOP) and our inpatient service. In addition, several of our APPs participate in our satellite and outreach clinics across West Virginia and southwestern Pennsylvania. These providers travel with faculty to clinic locations in Fairmont, Parkersburg, Martinsburg, Wheeling, Summersville, and Waynesburg, PA. In collaboration with our faculty providers, our APPs continue to work diligently to provide high quality orthopaedic care to all of our patients at WVU Medicine.
ADULT RECONSTRUCTION
Alicia Cooper, PA-C
Kelsey Laughery, PA-C
Kristianna Ricchio, PA-C
Katie Seifried, PA-C
Stacy Skidmore, PA-C

ATHLETICS
Travis Randolph, PA-C

FOOT & ANKLE
Jessica Rhodes, PA-C

HAND & UPPER EXTREMITY
Colleen Allison, APRN
Kyria Gaydosh, PA-C
Jon Kline, PA-C
Nikolas Tasser, PA-C

INPATIENT
Laura Dent, PA-C
Thomas Gocke, PA-C

METABOLIC BONE DISEASE
Ashley Wilson, APRN

MUSCULOSKELETAL ONCOLOGY
Morgan Neal, PA-C
Stacy Skidmore, PA-C

ORTHO MEDICAL OPTIMIZATION PROGRAM
Casey Mozingo, APRN

PEDIATRIC ORTHOPAEDICS
Holly Bonnell, PA-C
Brittney Dzugan, PA-C

PHYSICAL MEDICINE AND REHABILITATION
Gyl Cendana, PA-C
Meredith Liddle, PA-C

SPINE
Ronald Bewick, PA-C
Morgan Neal, PA-C
Alex Stahl, PA-C
Josee Zydonik, PA-C

SPORTS MEDICINE
Kristopher Smith, PA-C
Amy Stubblefield, PA-C

TRAUMA
Laura Stravrakis, PA-C

* Incoming 2020
Orthopaedic Clinics
We have three conveniently located clinics in Morgantown, Fairmont, and now Waynesburg, PA. The Morgantown location is in the Physician Office Center, attached to J.W. Ruby Memorial Hospital. The Fairmont location is housed in our WVU Medicine Outpatient Center, directly across from the I-79 Downtown Fairmont exit. The recently opened Waynesburg clinic, which features multiple specialties, is located off the I-79 Waynesburg exit.

University Town Centre
University Town Centre is the home for several of our Orthopaedic centers, including the Center for Joint Replacement, the WVU Sports Medicine Center, and the Orthopaedic Hand Clinic. WVU Medicine University Town Centre is conveniently located in the University Town Centre development just off I-79 in Granville. This spacious center offers patients access to their favorite primary care providers.

Center for Joint Replacement at WVU Medicine
The Center for Joint Replacement at WVU Medicine offers patients a comprehensive planned course of treatment. We believe our patients play a key role in ensuring a successful recovery. Our goal is to involve our patients in their treatment through each step of the program.

WVU Medicine Sports Medicine Center
WVU’s Sports Medicine Center cares for athletes of all levels. We work to get all patients back to their highest level of activity possible. Our physicians manage sports-related injuries and medical conditions that include muscle and joint pain, sprains, and concussions. The WVU Sports Medicine Center has access to specialists from multiple disciplines, including Orthopaedics and experts from the WVU Spine Center. Individuals with sports injuries have same-day access to our services, which are available around the clock, seven days a week.

WVU Spine Center
The WVU Spine Center brings specialists together with a multidisciplinary team approach to provide our patients with comprehensive spinal care. We use a full range of treatment options to ensure that patients with spine problems get the treatment they need quickly, efficiently, and easily. The Spine Center combines the expertise of WVU neurologists, orthopaedic specialists, neurosurgeons, pain management physicians, and rehabilitation services to target every patient’s particular problem and provide optimal treatment.
Orthopaedic surgeons at WVU Medicine are now offering a procedure for the treatment of full thickness cartilage defects of the knee.

Matrix-impregnated autologous chondrocyte implantation, known as MACI, provides surgeons with a technically improved way to rebuild damaged and missing cartilage. WVU Medicine J.W. Ruby Memorial Hospital is the only hospital in the state to offer this procedure.

“With this procedure, we are able to repair defects to the cartilage of the knee before they progress and develop into osteoarthritis, which is more difficult to treat,” Barry McDonough, MD, WVU Medicine orthopaedic surgeon, said.

In the two-stage procedure, surgeons perform a biopsy of healthy cartilage tissue from a non-weight bearing area of the knee to be sent to the Vericel lab, where chondrocytes, the building blocks of cartilage, are extracted and grown on a collagen matrix.

The prepared matrix is then sent to the surgeon, who implants it into the knee to completely fill the defect.

“In the past, procedures to repair damaged cartilage were lengthy and technically difficult,” Dr. McDonough said. “Surgeons were required to stitch a matrix in place and inject the cartilage-forming chondrocytes under it, which was time consuming. This procedure, however, uses improved tools that simplify the process and eliminate the need for stitches to hold the implant in place.”

This procedure is appropriate for patients ages 18 to 55 who have cartilage defects due to trauma and is not available as a treatment for arthritic knee pain.

Patients can expect to return to full weight bearing six-to-eight weeks after the procedure and may require a recovery period of nine months or longer before returning to high impact athletic activity.

“In the past, procedures to repair damaged cartilage were lengthy and technically difficult. This procedure uses improved tools that simplify the process and eliminate the need for stitches to hold the implant in place.”

E. Barry McDonough, MD
Associate Professor, Orthopaedics, Sports Medicine
On September 1, 2019, Sherri Sisson was out enjoying a motorcycle ride when her life suddenly changed. She was involved in a severe accident in which she sustained multiple life and limb threatening injuries. After being emergently transferred to J.W. Ruby Memorial Hospital, Sherri was taken directly to the operating room. Through the swift and skilled work of the general surgery trauma team and the orthopaedic trauma team, she was cared for successfully and taken to the intensive care unit to stabilize. Over the next few days, Sherri had multiple operative procedures by both general surgery and orthopaedic surgery.

Sherri’s injuries included a splenic laceration requiring a splenectomy, pneumothorax, rib fractures, intracranial hemorrhage, and multiple orthopaedic injuries. More specifically, she had an open left forearm fracture of both bones, a severely comminuted open left distal femur fracture with knee arthrotomy, and multiple traumatic wounds. Dr. David Hubbard and several orthopaedic residents were involved in her care on the night she presented at WVU. He was able to irrigate and debride her open fractures, internally fix her forearm, and temporarily stabilize her femur and knee. A few days later, Dr. Michelle Bramer and the orthopaedic trauma team successfully debrided and treated her femur fracture with internal fixation.

Unfortunately, Sherri’s hospital course and postoperative rehabilitation were significantly more difficult due to a stroke she suffered during her recovery period. However, her “no quit” attitude allowed her to focus intensely on her rehabilitation. And, although her course was complicated by an infection in her leg, she always remained positive and upbeat. A supportive network of family and friends who always had her best interests at heart helped.

It was a pleasure for the WVU orthopaedic trauma team to care for Sherri. We are extremely proud of the progress she has made in her recovery and happy to see she is doing so well. At her last visit, only six months from her injury, she had near full use of her arm and leg and was able to walk without pain. As always, she had a smile on her face and the most determined attitude to continue to make gains in her recovery.
Most people think that bunions are caused by an ill-fitted shoe; however, this isn’t the case. Bunions are a deviation of the great toe caused by an unstable joint in the midfoot. It is an inherited condition that affects up to approximately 30% of the U.S. population. Unfortunately, there are no effective conservative treatments for bunions, and surgeries have had a poor reputation for success as well. However, a “revolution” in bunion surgery is underway… and it began right here at West Virginia University.

WVU Medicine now offers patients a new bunion procedure with a much improved recovery time and better outcomes compared to previous bunion surgeries. Lapiplasty® is an outpatient surgery that three-dimensionally addresses the pathology in the midfoot that leads to the bunion deformity. Patients are back on their feet the same day, allowing them to walk in a boot immediately. WVU Medicine orthopaedic surgeon Robert Santrock, MD, helped develop this revolutionary new technique.

Traditional bunion surgery is a ‘cut and shift’ approach that addresses the bunion’s symptoms, but not the root cause. The bunion is significantly more likely to return to some degree following traditional surgery up to 30%-70% of the time!

Developed by four surgeons across the United States, including Dr. Santrock, the Lapiplasty® System is a patented technique, tool set, and specially designed instrumentation. This system is used to rotate the bone back into its normal anatomical position, thereby straightening the toe and removing the bump at the same time.

This procedure precisely corrects the entire bone, addresses the root cause of the bunion, and is a 3D solution for a 3D problem. The recovery time for this procedure is strikingly better than previous surgeries for bunions. Where traditional surgery requires the patient to be non-weight bearing for 3 months post-procedure, patients who undergo Lapiplasty® can bear weight on the treated foot (in a boot) immediately following the procedure.

As of today, more than 15,000 Lapiplasty® cases have been performed around the country. Dr. Santrock and his surgical colleagues have trained over 2,000 surgeons on the technique, and have more than ten peer-reviewed publications. Their goal is that this modern understanding of the 3D aspects of the hallux valgus deformity and its pathological contributions from the abnormal midfoot joint may “revolutionize” patient and surgeon options for sustained corrections and cosmetically pleasing results.

Lapiplasty® is only available through trained specialists. If you or a patient has tried other therapies like wide shoes but are still experiencing pain – talk with your healthcare provider about a referral for Lapiplasty®. To make an appointment, call 855-WVU-CARE.
Clinical Growth and Changes
The Division of Musculoskeletal Oncology continues to experience growth. In 2019, our tumor service handled over 350 new referrals for bone and soft tissue tumors, with the expectation that we will exceed those numbers in 2020. To accommodate this increase, our service hired another advanced practice provider, Morgan Neal, PA-C, who will start in July 2020. Her workload will be divided between our spine and tumor services in clinical and operating needs. In addition, to make delivering patient care more efficient, our seasoned RN, Jennifer Burns, handles new tumor referrals. She triages urgent referrals directly with Dr. Brock Lindsey. This process has improved both patient and referring provider satisfaction. Our PA-C, Stacy Skidmore, has handled the load of the orthopaedic oncology service along with Dr. Lindsey, and continued to provide tremendous care for our patients.

Very recently, we said goodbye to our one and only, Ruth Davis – our surgical scheduler and administrative assistant for the tumor team since its inception nine years ago. She retired to enjoy spending time with her new grandchild and is dearly missed by patients, providers, and staff. We continue to have a very active multidisciplinary tumor board headed by Sandra Malone of the WVU Cancer Institute. Members of this board include providers from all specialties: Dr. Patrick Tomboc (Pediatric Hematology-Oncology), Dr. Miklos Auber and Dr. Maria Hafez (Adult Hematology-Oncology), Dr. Todd Tenenholz (Radiation Oncology), Dr. Patrick Bacaj (Pathology), as well as orthopaedic oncology providers. We also have a multi-institutional sarcoma board that meets several times a month with providers from Marshall University, the Allegheny Health Network, and Louisville, KY. In addition, our division is in the process of recruiting another physician scientist and beginning a national search.

Translational Research Program
Our division has been intimately involved in translational research for years. We recently gained funding through an external grant from the Musculoskeletal Tumor Society and Sarcoma Strong Foundation. Through our Grateful Patient Program, we received a wonderful gift of $50,000 from a patient whom we cannot thank enough for their support. We currently have several other grants pending. Our primary research focuses are immunotherapy for sarcoma and immunodiagnostics for treatment. We have made large strides this year in our study endeavors and we will be presenting our work at the Musculoskeletal Tumor Society meeting in Portland, Oregon in February 2020 and locally at the Pittsburgh Sarcoma Research Collaborative (PSaRC). Our tumor team has become involved as a charity group with Pittsburgh Cure Sarcoma to help raise awareness and funds for research support in sarcoma.

Additionally, we have strengthened our platform for a nanotechnology delivery system for immune therapy and continued to work on the immune diagnostics components. This work is being done simultaneously while creating several partnerships with other institutions such as the University of Virginia, the University of Pittsburgh Medical Center, and more recently, Astrolabe Diagnostics in New Jersey. In collaboration with West Virginia University, we have exciting news that our research program in the Division of Musculoskeletal Oncology will be creating a spinoff company in this area of research that will be based here in West Virginia. These are exciting times for our program!
Moore’s Law states that the number of transistors in a circuit doubles approximately every two years, a concept that was generated through observation and projection. It has been consistent over half a century. As such, the amount of data and information generated is logarithmically expanding. To address the growing need for management of healthcare data, the role of clinical informatics has been expanding in the WVU Department of Orthopaedics.

Clinical informatics is defined as the management of healthcare data and information through technology. More realistically, it is applying information to generate knowledge within a domain. Here in our department, there is a strong emphasis on data measurement, collection, and analysis. In conjunction with the Business Intelligence team, a detailed analysis of quality measures and outcomes is generated. This information allows clinicians the ability to focus their time and energy on the most important issues. The knowledge obtained by these insights has become valuable in research, quality improvement, and patient outcomes.

As seen with COVID-19, the need to deploy rapid technology for patient care is a critical part of the future healthcare landscape.

Telemedicine has been implemented and integrated across our department for continued patient care and monitoring. Our Division of Pediatric Orthopaedics was at the forefront utilizing this technology before the pandemic and was well positioned to help support their patients.

In addition to telemedicine, there are multiple informatics projects currently in development. Our Center for Joint Replacement has been working to implement perioperative education and guidance through a mobile health platform. Additionally, the Division of Spine is currently utilizing clinical informatics and analytics through a multi-departmental dashboard and data repository. Our Patient Reported Outcome Measures (PROMs) have been integrated from the data warehouse into the electronic health record for improved access by our clinicians. The Orthopaedic Medical Optimization Program (OMOP) has utilized clinical informatics to look at process re-engineering and workflow analysis. As such, there have been multiple changes to workflow to improve efficiencies. Moving forward, there will be opportunities for artificial intelligence, machine learning, and predictive analysis to support the ongoing efforts of our clinical staff for patient care.

With data being processed at record amounts, the WVU Department of Orthopaedics is well positioned to handle the challenges and opportunities that are generated from such vast amounts of information through progressive implementation of clinical informatics within the department.
WVU Medicine has greatly expanded in the last ten years and created a true health system. Currently there are twelve hospitals in predominately north central West Virginia and southeast Pennsylvania that are either owned or affiliated with WVU Medicine. There are six other hospitals across West Virginia, Pennsylvania, and Ohio that are under management agreements. Some of the larger communities include Parkersburg, Clarksburg, Martinsburg, Wheeling, Summersville, Uniontown, PA, and Oakland, MD.

The Department of Orthopaedics has started to play a role in helping to develop the orthopaedic service line in some of these communities. Camden Clark Memorial Hospital in Parkersburg has been our most prominent success story. Dr. Jeff McElroy and Dr. George Herriott, who is an alum of our orthopaedic residency, have had a long-standing orthopaedic practice in the Parkersburg and Marietta, OH area for many years. In 2019, they joined our WVU Health System. We arranged to have some of our senior residents visit a few of our satellite hospitals (“roadtrips!”) to get a feel for these communities, their hospitals, and their orthopaedic needs. Lo and behold, two of our senior residents, Dr. Lunden Ryan and Dr. Alex Conti signed on to join Drs. McElroy and Herriott at Camden Clark. This created a critical mass for an orthopaedic group that is already beginning to flourish and serve the people of that community.

One of our goals as a residency training program is to help fill the need for orthopedic surgeons in the state of West Virginia, particularly at our satellite facilities. This ambition has the benefit of helping keep patients local, raising the quality of orthopaedic care in the state, and maintaining a relationship with our former residents for tertiary care referrals if needed. We are beginning to work with other hospitals to help with recruitment and establishment of best practices for their orthopaedic service lines, which is a win-win for our academic group and the WVU Health System.

Keep an eye out for further news of growth in the near future!

WVU Orthopaedic Clinic Locations

MORGANTOWN
Physician Office Center

MORGANTOWN
WVU Spine Center

MORGANTOWN
WVU Medicine Sports Medicine Center

MORGANTOWN
Center for Joint Replacement at WVU Medicine

FAIRMONT
WVU Medicine Outpatient Center: Fairmont

WAYNESBURG
WVU Medicine Outpatient Center: Waynesburg
Member System Hospitals
1. BRIDGEPORT
United Hospital Center
2. BUCKHANNON
St. Joseph’s Hospital
3. FAIRMONT
Fairmont Medical Center
A CAMPUS OF J.W. RUBY MEMORIAL HOSPITAL
4. GASSAWAY
Braxton County Memorial Hospital
5. GLEN DALE
Reynolds Memorial Hospital
6. KEYSER
Potomac Valley Hospital
7. MARTINSBURG
Berkeley Medical Center
8. MORGANTOWN
J.W. Ruby Memorial Hospital and WVU Medicine Children’s Hospital
9. NEW MARTINSVILLE
Wetzel County Hospital
10. PARKERSBURG
Camden Clark Medical Center
11. RANSON
Jefferson Medical Center
12. RIPLEY
Jackson General Hospital
13. SUMMERSVILLE
Summersville Regional Medical Center
Managed Hospitals
14. CLARKSBURG
Highland-Clarksburg Hospital
15. WHEELING
Wheeling Hospital
16. OAKLAND, MARYLAND
Garrett Regional Medical Center
17. BARNESVILLE, OHIO
Barnesville Hospital
18. CADIZ, OHIO
Harrison Community Hospital
19. UNIONTOWN, PENNSYLVANIA
Uniontown Hospital
Affiliate Hospitals
20. ELKINS
Davis Health System
21. PHILIPPI
Broaddus Hospital
22. WEIRTON
Weirton Medical Center

West Virginia University Health System
- Hospital
- West Virginia Clinic
- Out-of-state Clinic
- Orthopaedic Clinic
The WVU Orthopaedic Surgery Residency had another successful academic year in 2019-2020. The residents continued to receive excellent training in each of the orthopaedic subspecialties at J.W. Ruby Memorial Hospital.

We welcomed four new interns this year, and their training started with an orthopaedic skills month that emphasized fundamentals in splinting, casting, x-ray interpretation, orthopaedic emergencies, and basic surgical skills. Residents continued to enjoy multiple educational opportunities at our top-notch facilities including our cadaver dissection lab and arthroscopy lab. In addition to education and training, the residents were productive with research efforts, presenting their work at multiple national and regional conferences. Additionally, the residents continue to mentor other medical professionals through casting and splinting workshops, medical student lectures, and anatomy labs.

Residents enjoyed multiple faculty-sponsored gatherings including various golf and dinner outings with Dr. Taras, Dr. Emery’s “Intern Welcome Party,” and football tailgate parties hosted by Dr. Santrock. The residency program at WVU continues to be family-friendly, with one engagement and two families welcoming babies this year.

The chief resident class all attained competitive fellowships this year – Phillip Bostian (Indiana University – Adult Reconstruction), Mark Plumby (University of Cincinnati – Sports), and Richard Wardell (University of New Mexico - Sports). We are proud of our chief class and wish them the best of luck as they begin fellowship and start their practice in orthopaedic surgery.

As we say good-bye to the outgoing chiefs, we welcome a new intern class. The class of 2025-2026 includes Edwin Chaharbakhsh (Loyola University), Michael Quinet (Medical College of Georgia at Augusta University), Kenneth Sabacinski (Florida Atlantic University), and Nathaniel Williams (Pennsylvania State University).

The 2019-2020 academic year has been a successful one for the WVU Department of Orthopaedics. As WVU continues to train competent and conscientious orthopaedic surgeons, we look forward to what the 2020-2021 academic year has in store.
RESIDENCY PROGRAM

Phillip Bostian MD
SOM: East Carolina University
Fellowship: Indiana University, Adult Reconstruction

Mark Plumby MD
SOM: West Virginia University
Fellowship: Beacon Orthopedics and Sports Medicine, Cincinnati, OH

Richard Wardell MD
SOM: University of Central Florida
Fellowship: University of New Mexico, Sports Medicine

Alex Conti MD
SOM: West Virginia University
Fellowship: Swedish Medical Center Trauma Fellowship

Brian Grisez MD
SOM: West Virginia University
Fellowship: Holy Cross Orthopaedic Institute Adult Reconstruction Fellowship

Danny Liechti MD
SOM: University of Illinois, Peoria
Fellowship: Fairview/Minneapolis Orthopaedic Trauma Fellowship

Lunden Ryan MD
SOM: West Virginia University
Fellowship: Beacon Orthopedics and Sports Medicine Institute

Daniel Shubert MD
SOM: Tufts University
Fellowship: University of Missouri Orthopaedic Sports Medicine Fellowship

Will Brooks MD
SOM: East Tennessee State University

Julie Glener MD
SOM: University of Central Florida

Jason Kinney MD
SOM: Augusta University

Justin Ray MD
SOM: East Carolina University
GRADUATES AND CURRENT RESIDENTS

Justin Vaida MD
SOM: University of Massachusetts
2023

Patrick Luchini MD
SOM: West Virginia University
2023

Eric Neumann MD
SOM: West Virginia University
2023

Joshua Reside MD
SOM: University of Florida
2023

Taylor Shackleford MD
SOM: University of Kentucky
2024

Keenan Atwood MD
SOM: Medical College of Wisconsin
2024

Michael Booth MD
SOM: SUNY Upstate Medical University
2024

Michael Niemann MD
SOM: West Virginia University
2024

Benjamin Giertych MD
SOM: University of Wisconsin
2025

Michael Quinet MD
SOM: Medical College of Georgia at Augusta University
2025

Kenneth Sabacinski MD
SOM: Charles E. Schmidt College of Medicine at Florida Atlantic University
2025

Nathaniel Williams MD
SOM: Pennsylvania State University College of Medicine
2025

Edwin Chaharbakhshi MD
SOM: Loyola University Chicago Stritch School of Medicine
2026
At West Virginia University, the Accreditation Council for Graduate Medical Education offers an accredited orthopaedic surgery research position each year. This position is a six-year track, compared to the traditional five-year categorical track. It is completed between the residents’ first and second years.

During this time, residents have no hospital-based duties or call responsibilities, which provides them with the autonomy to establish and conduct their own research projects. They also have the opportunity to participate in ongoing studies alongside several faculty research members. The residents are expected to prepare grant submissions, oversee and manage studies, present poster and podium presentations, and submit peer-reviewed manuscripts.

Brock Lindsey, MD, (Chief, Adult Reconstruction and Musculoskeletal Oncology), is the Director of the WVU Department of Orthopaedics Research Laboratory and advises lab residents during their research year. He, along with Matthew Dietz, MD, (Adult Reconstruction), Ming Pei, MD, PhD, Bingyun Li, PhD, and Jonathan Boyd, PhD, conduct the majority of the Department’s basic science research with main focuses on

- nanotechnology,
- immunotherapy,
- tissue regeneration,
- oncology,
- infection (biofilm), and
- toxicology.

The Department also has an active clinical research focus with ongoing projects in every orthopaedic subspecialty.

The WVU Orthopaedic Research Laboratory is located on the fifth floor of the WVU Health Sciences Center adjacent to the main hospital campus. The 4,000-square-foot lab space contains state-of-the-art amenities capable of conducting basic science research with emphasis on tissue engineering, nanotechnology, and cadaver and pre-clinical model studies.

The Research Resident also participates in daily resident education conferences, performs monthly cadaver dissection for anatomy conference, and occasionally provides lectures to students in the School of Medicine. The opportunities and experiences generated from this year are meant to serve as a foundation for a career as a clinician scientist.

**Interested in learning more?**

Please contact:

**Taylor Shackleford** MD
at Taylor.Shackleford@hsc.wvu.edu

**Brock Lindsey** MD
at blindsey@hsc.wvu.edu

**Current Research Resident**

**OR**

**Orthopaedics Research Laboratory Director**
Justin Ray MD  2022


- **Presentation:** Vaida J, Conti AD, Ray JJ, Bravin DA, and Bramer MA. “Evaluating the Efficacy of Vancomycin Powder in Treating Open Fractures.”

  **Presented at:** Orthopaedic Trauma Association Annual Meeting. (Denver, CO, 2019).

- **Presentation:** Ray JJ, Koay J, Dayton PD, Hatch DJ, Smith WB, and Santrock RD. “Multicenter Early Radiographic Outcomes of Triplanar Tarsometatarsal (TMT) Arthrodesis with Early Weightbearing.”

  **Presented at:** The 8th Annual Extremity Summit at Greenbrier Medical Institute (White Sulphur Springs, WV, 2019).

- **Poster:** Ray JJ, Lubicky JP, Lancaster J, and Grant DR. “Pain Medication Disposal Rates after Pediatric Surgery.”

  **Presented at:** The American Orthopaedic Association Annual Leadership Meeting. (San Diego, CA, 2019).


Daniel Shubert MD  2020


- **Presentation:** Shubert D, Shubert S. “Patient reported outcomes after shoulder surgery in a community orthopaedic practice: a 5-year Quality Improvement project using the QuickDASH questionnaire.”

  **Presented at:** 50th Annual Meeting of the Eastern Orthopedic Association (Palm Beach, FL, 2019).
Welcome to the West Virginia University Orthopaedic Research Laboratory. In the lab, you will find research and educational opportunities in the areas of tissue/cartilage engineering and adult stem cell research, nanotechnology/nanomedicine, toxicology, adult reconstruction, spine, sports medicine, trauma and hand and upper extremity.

The laboratory conducts in vivo and in vitro research in a modern environment. The laboratory faculty and staff are multidisciplinary and include faculty from Orthopaedics, Microbiology and Immunology, Pathology, Chemistry, and Statistics. Graduate students from the university’s Health Sciences Center collaborate with orthopaedic surgeons and bioengineers on MS and PhD research topics. The lab is situated within the Department of Orthopaedics at WVU and provides support to orthopaedic residents in research projects, both basic science and clinical. The lab is well equipped and encourages multidisciplinary musculoskeletal research between various departments in the Health Sciences Center.
In collaboration with the National Aeronautics and Space Administration (NASA), the United States Army Center for Environmental Health Research (USACEHR), and the Walter Reed Army Institute of Research (WRAIR), Dr. Jonathan Boyd is taking WVU Orthopaedics to outer space!

In 2019, Dr. Boyd collaborated with NASA and partners to write standard operating procedures for the proposed studies at the International Space Station (ISS). These included methods for husbandry, surgery, and necropsy of the models. These procedures were approved in early 2020. Additionally, he experimentally measured inflammation markers in tissues from models in the control group.

This mission has been in the works for several years; slated for 2021, the proposed models on the ISS will undergo femur fracture and fixation and will be allowed to heal for six weeks. Along with several controls on Earth and in space, Dr. Boyd will perform inflammasome and proteomic analyses on complete lower extremities. Simultaneously, the USACEHR and WRAIR will investigate the genomic and metabolomic changes to allow the team to develop a complete biomolecular understanding of the impacts of injuries and wound healing in a space environment. In the future, it is expected that injuries will occur on space missions and this early work will be used to inform additional planned studies. These studies will include treatment strategies to enhance recovery and rehabilitation.

These study efforts were made possible through a Cooperative Research and Development Agreement (CRADA) between Dr. Boyd and USACEHR.
Dr. Lee attended college at Georgetown University in Washington, DC; he went to medical school at West Virginia University. After graduating, he completed an internship in general surgery at George Washington University Hospital followed by orthopedic surgery residency at the same university. He was a visiting fellow at the National Institutes of Health and completed a hand fellowship at Columbia-Presbyterian Medical Center in New York, NY. Since completing fellowship, Dr. Lee has worked at the University of Alabama at Birmingham before joining Vanderbilt University as a full professor in 2005. He has extensive committee experience and is a reviewer for several journals. He has a strong interest in research and has published in many different areas of the upper extremity.
2019 ACTIVE GRANTS: FACULTY

Jonathan Boyd PhD
- Title: Neuroinflammation-related Phosphoprotein Signaling Pathways as Potential Therapeutic Targets for GWI using an Established Model
  Source: US DoD – Defense Health Agency
- Title: Future Fieldable Mass Spectrometry for Stress Biomarkers
  Source: Zeteo Tech, LLC

Scott D. Daffner MD
- Title: A Phase 2b, Randomized, Double-Blind, Placebo-Controlled Study to Evaluate the Safety and Efficacy of Staphylococcus Aureus 4-Antigen Vaccine (SA4Ag) in Adults Undergoing Elective Posterior Instrumented Spinal Fusion Procedures
  Source: Pfizer Pharmaceutical
- Title: A Prospective Study of OsteoAMP in Posterolateral Spinal Fusion: Patient Outcomes and Use in Clinical Practice
  Source: Bioventus, LLC
- Title: M6-C Artificial Cervical Disc IDE Pivotal Study
  Source: Spinal Kinetics

Matthew J. Dietz MD
- Title: Relationship of Biomarkers and Fluorescence in Prosthetic Knee Infections
  Source: US DHHS-NIH-National Institute of Arthritis, Musculoskeletal & Skin Diseases
- Title: Preclinical Assessment of an Active Antibiotic Spacer
  Source: West Virginia Clinical and Translational Science Institute
- Title: WVCTSI Research Scholar Program
  Source: West Virginia Clinical and Translational Science Institute

John C. France MD
- Title: Thoracolumbar Burst Fractures (AOspine A3, A4) in Neurologically Intact Patients: An Observational, Multicenter Cohort Study Comparing Surgical Versus Non-Surgical Treatment
  Source: AO Research Foundation

Benjamin M. Frye MD
- Title: Fellowship in Adult Reconstruction
  Source: OMeGA Medical Grants Association

David F. Hubbard MD
- Title: Fixation Using Alternative Implants for the Treatment of Hip Fractures
  Source: McMaster University
- Title: A Prospective, Randomized, Multicenter Controlled Trial of CERAMENT™G as Part of Surgical Repair of Open Diaphyseal Tibial Fractures
  Source: BONE SUPPORT AB

Dina Jones PT, PhD
- Title: A Randomized Controlled Trial of a Community-Based Chronic Pain Self-Management Program in West Virginia (PRC-SIP 17-001)
  Source: US DHHS – CDC - National Center for Chronic Disease Prevention and Health Promotion
- Title: Use of Tele-Exercise as an Alternative Delivery Channel for Translating an Evidence-Based Fall-Prevention Program into Practice for Older Adults in West Virginia
  Source: CDC National Center for Injury Prevention and Control

Bingyun Li PhD
- Title: Unique Nanotechnology Converts Carbon Dioxide to Valuable Products
  Source: US DoE – Department of Energy
- Title: Innovative Nano-Hybrids with Controlled Drug Release for Bone Regeneration
  Source: US DoD – Defense Health Agency
- Title: Innovative Implant Nanocoatings with Controlled Dual Drug Release for Bone Regeneration
  Source: US DoD – Secretary of Defense
- Title: 3D Printed Nanoclay Enhanced Calcium Phosphate Ceramic Composite
  Source: University of California at San Francisco
- Title: Targeting Intracellular Bacteria of Chronic Infections
  Source: WVU PSCoR – West Virginia University

Brock A. Lindsey MD
- Title: A Prospective, Post-Market, Multi-Center Study of Tritanium Acetabular Shell
  Source: Stryker
- Title: A Longitudinal Multicenter Study of Robotic-Arm Assisted THA: Acetabular Cup Placement Accuracy and Clinical Outcomes
  Source: Stryker
- Title: Delineating Mechanisms of Checkpoint Blockade Failure While Manipulating MDSC’s as a Treatment to this Conundrum
  Source: Musculoskeletal Tumor Society / Sarcoma Strong Foundation
- Title: Comparative Effectiveness of Pulmonary Embolism Prevention after Hip and Knee Replacement (PEPPER): Balancing Safety and Effectiveness
  Source: Dartmouth College/Medical University of South Carolina

Ming Pei MD, PhD
- Title: Decellularized Matrix and Cartilage Regeneration
  Source: US DHHS – NIH – National Institute of Arthritis, Musculoskeletal, and Skin Disease
- Title: Allogeneic Matrix Mediated Cartilage Reconstruction
  Source: Musculoskeletal Transplant Foundation


Members of Dr. Ming Pei’s graduate research group
PMID: 31864016

PMID: 31669348

PMID: 3175397

PMID: 30947553

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