

## 2015 Research Annual Report

# Orthopaedics

### RESEARCH AND TRAINING DETAILS



[Click to view members](#)

Faculty	15
Research Fellows	2
Research Students	5
Support Personnel	7
Direct Annual Grant Support	\$87,950
Direct Annual Industry Support	\$21,961
Peer Reviewed Publications	40

### CLINICAL ACTIVITIES AND TRAINING

Clinical Staff	6
Clinical Fellows	4
Other Students	28
Inpatient Encounters	2,173
Outpatient Encounters	42,240

## Research Highlights

### Donita Bylski-Austrow, PhD; Eric Wall, MD; Viral Jain, MD; and Alvin Crawford, MD - Translational spine surgery research shows both safety and proof-of-concept in scoliosis patients in FDA IDE clinical study at two year follow-up

A novel spine implant designed and developed in the department has been shown to modify spine growth in early adolescent scoliosis patients. The safety study was conducted under an investigational device exemption (IDE) granted by the US FDA, as well as partially funded by a grant from the FDA. Two-year results showed variable radiographic outcomes, but included proof-of-concept of curve correction by asymmetric spine growth modification. Improvements in procedures and enhancements to the implant have been submitted in preparation for the second phase of the translational research, which has been approved by the FDA.

### Roger Cornwall, MD – Neonatal brachial plexus injury and neuromuscular contractures

Cerebral palsy and neonatal brachial plexus palsy both lead to functionally disabling contractures that limit joint flexibility. Existing therapies cannot cure these contractures because the cause of the contractures is unknown. [Dr. Cornwall's](#) research, using basic science, computational modeling, and clinical imaging approaches, has demonstrated that impaired growth of denervated muscle is sufficient to produce the contractures and bony deformity seen in the shoulder following neonatal brachial plexus injury. Furthermore, with motion analysis and the first ever clinical use of a novel needle microendoscope to nondestructively measure muscle sarcomeres, the intracellular building blocks of muscle, Dr. Cornwall's research is discovering paradigm-changing similarities between contractures in neonatal brachial plexus injury and cerebral palsy. This year, Dr. Cornwall also founded the [Neuromuscular Development Group](#) at Cincinnati Children's, bringing together principal investigators and laboratories from five divisions within Cincinnati Children's to accelerate collaborative investigation of basic biological processes involved in a variety of clinical problems, such as amyotrophic lateral sclerosis (ALS), muscular dystrophy, spinal cord injury, muscular pain and childhood paralysis.

### Kevin Little, MD - Unexpected returns to outpatient hand clinics

The aim of this Quality Improvement (QI) project was to decrease the number of children who were returning to clinics unexpectedly during their treatment. The goal was to reduce the burden for the family for urgent medical care related to their orthopedic treatment by improving the quality of care they received. The main reasons that children were returning to clinics were for cast issues or for issues related to education regarding the normal course of their injury or illness. Over the course of the project, the rate of unexpected returns to the clinic were decreased from approximately two per 100 patient visits to 0.6 per 100 patient visits; which was more than the 50% target goal. The number of these unexpected return patients was decreased by offering alternative treatments to casting that are equally effective, and also eliminate the need for some additional follow-up appointments. This additionally saved families the direct and indirect costs associated with medical appointments. The project also standardized the education given to patients by incorporating EPIC .dot phrases and smart text functions into a patient's after visit summary as well as creating Knowing notes for many of the common injuries we see that frequently lead to unexpected returns to clinic. Overall, this project led to a substantial cost savings to patients and their families, while improving the efficiency of orthopedic care in clinics by reducing the number of patients who had to be fit into the already busy clinic schedules due to unexpected issues.

### Eric J. Wall, MD - OsteoChondritis of The Knee

[Dr. Eric J. Wall](#) and the Research in OsteoChondritis of the Knee ([ROCK](#)) Group published their first [multicenter publication](#). The ROCK group is a consortium of sports physicians at [13 Children's Hospitals](#) whose aim is to cure Osteocondritis Dissecans (OCD). OCD is a rare condition of the joint surface that can lead to cartilage loss in the knee of young athletes, and is often refractory to non-surgical and surgical treatment. In its worst form, OCD can cause early onset degenerative arthritis. This study tests the rater reliability to agree on the classification of several radiographic features of

OCD that may be predictive of outcome with surgical and non-surgical treatment. Each reliable feature may now be worked into an algorithm to guide the best treatment of this rare and vexing disease.

## Creating a safer environment in the Operating Room

The department has dedicated resources to ensuring we are providing the safest operating environment possible to all of our surgical patients. A simulation training program has been implemented which serves to let the entire operating team practice urgent scenarios that can occur unexpectedly (e.g. neuromonitoring alert events, hemorrhage, etc.). These trainings strengthen protocol compliance, and technical and non-technical skills including teamwork and communication based on Composite Risk Management principles. In addition to the simulation training program, pre-brief team meetings and morning-of-surgery huddles have been implemented for every patient.

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## Significant Publications

**Bylski-Austrow DI**, Glos DL, Bonifas AC, Carvalho MF, Coombs MT, **Sturm PF**. Flexible growing rods: a pilot study to determine if polymer rod constructs may provide stability to skeletally immature spines. *Scoliosis*. 2015 Feb 11;10(Suppl 2):S16.

Early onset scoliosis (EOS), a spinal deformity diagnosed in children younger than five years of age, has high rates of morbidity and mortality due to reduced spine, chest, and lung growth. In severe cases, surgical treatment is required using instrumentation that distracts the spine to allow for growth. These “growing rods” save lives, but have many complications. Expected adverse events include fusion of vertebrae, rod fractures, loss of fixation, and junctional failure above the instrumentation, some of which are due to the high stiffness of the metal rods. With the long-term goal of improving growing rod implants to reduce complications due to biomechanical causes, the purpose of this pilot study was to determine the feasibility of using a more flexible, polymeric, rod material. Biomechanical tests were conducted using porcine thoracic spines. Results indicated that, with a two-rod spinal construct, polymer rods would likely provide sufficient stability to correct the curve while allowing for more spine motion, which may be expected to reduce the frequency of biomechanical complications in young children with EOS. This study received the Sevastik Award in the “Best Treatment” category at the 2014 biannual meeting of the International Research Society for Spinal Deformities in Sapporo, Japan.

Cheng W, **Cornwall R**, Crouch DL, Li Z, Saul KR. Contributions of muscle imbalance and impaired growth to postural and osseous shoulder deformity following brachial plexus birth palsy: a computational simulation analysis. *J Hand Surg Am*. 2015 40(6): 1170-76.

Eismann EA, **Little KJ**, Laor T, **Cornwall R**. Glenohumeral abduction contracture in children with unresolved neonatal brachial plexus palsy. *J Bone Joint Surg Am*. 2015 Jan 21;97(2):112-8.

Neonatal brachial plexus injury (NBPI) is the most common cause of upper extremity paralysis in children, and the most common injury sustained at birth. Even though the nerve injury typically recovers at least partially, affected children are often left with disabling stiffness of the affected joints, termed contractures. These contractures cannot be cured by existing therapies because the cause of these contractures is unknown. Through development of a mouse model of NBPI we discovered that contractures are caused by impaired longitudinal muscle growth, resulting from loss of normal nerve input during a critical neonatal window of muscle development.

Recently, we translated these findings to the human shoulder in two studies using complimentary approaches. First, we used magnetic resonance imaging to study a previously unexplained contracture of the shoulder.

The abduction contracture, where the shoulder cannot be brought fully against the body, is the chief complaint for many patients yet has no effective treatments, largely because it has never been reliably assessed and its cause is unknown.

Using magnetic resonance imaging of affected shoulders, we developed a method to measure the abduction contracture and correlate it to muscle atrophy. Our findings support the conclusion from the laboratory that joint contractures following NBPI are due to shortening of paralyzed muscles. Next, using computer modeling of human shoulder movement and forces, we found that simulating impaired growth of muscles affected by the nerve injury is sufficient to cause the shoulder contractures and deformities seen clinically.

This study validates our findings from the mouse model and changes the paradigm of thinking about how these contractures form, opening the door to novel and potentially curative treatments. More importantly, novel treatments developed in the laboratory using the mouse model can be translated first to humans using computer modeling to determine the effect of improved muscle growth on human shoulder function.

Eismann EA, Stephan ZA, **Mehlman CT**, Denning J, Mehlman T, **Parikh SN**, Tamai J, Zbojnowicz A. **Pediatric Triplane Ankle Fractures: Impact of Radiographs and Computed Tomography on Fracture Classification and Treatment Planning**. *J Bone Joint Surg Am*. 2015 Jun 17;97(12):995-1002.

Triplane ankle fractures are among the most complicated of all growth plate injuries. Proper treatment is predicated upon proper fracture classification. Our study showed that computed tomography (CT scans) had an important positive impact on fracture classification and treatment planning. This was the first study to ever evaluate the reliability of the six category classification system (Rapariz classification) of pediatric triplane ankle fractures.

Masnovi ME, **Mehlman CT**, Eismann EA, Matey DA. **Pediatric refracture rates after angulated and completely displaced clavicle shaft fractures**. *J Orthop Trauma*. 2014 Nov;28(11):648-52.

Clavicle fractures are frequent sports injuries and the most common fracture about the shoulder in children. We studied over 150 children with clavicle fractures and found that those kids with an incomplete fracture (angulation only) had an almost 20% risk of re-fracturing the same collarbone in the future. This information allows us to better counsel patients and families about future risks following return to sports activities.

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## Division Publications

1. Abdelnasser MK, Klenke FM, Whitlock P, Khalil AM, Khalifa YE, Ali HM, Siebenrock KA. **Management of pelvic discontinuity in revision total hip arthroplasty: a review of the literature**. *Hip Int*. 2015; 25:120-6.
2. Bekmez S, Demirkiran G, Dede O, Sturm P, Yazici M. **Paper #34: Choosing Distal Instrumentation Level in Growing Rod Surgery—Where to Stop?**. *Spine Deformity*. 2014; 2:511-512.
3. Bylski-Austrow DI, Glos DL, Bonifas AC, Carvalho MF, Coombs MT, Sturm PF. **Flexible growing rods: a pilot study to determine if polymer rod constructs may provide stability to skeletally immature spines**. *Scoliosis*. 2015; 10:S16.
4. Bylski-Austrow DI, Glos DL, Carvalho MF, Bonifas AC, Coombs MT, Sturm PF. **Paper #43: Flexible Growing Rods: Polymer Rods Provide Stability to Skeletally Immature Spines**. *Spine Deformity*. 2014; 2:516.
5. Cheng W, Cornwall R, Crouch DL, Li Z, Saul KR. **Contributions of muscle imbalance and impaired growth to postural and osseous shoulder deformity following brachial plexus birth palsy: a computational simulation analysis**. *J Hand Surg Am*. 2015; 40:1170-6.
6. Crawford AH, Mehlman CT, Parikh SN. **Fracture and Dislocations of the Foot and Ankle**. In: GA Mencia, MF Swiontkowski, eds. *Green's Skeletal Trauma in Children*. Philadelphia PA: Elsevier Saunders; 2014:473-542.

7. Edmonds EW, Roocroft JH, Parikh SN. **Spectrum of operative childhood intra-articular shoulder pathology.** *J Child Orthop.* 2014; 8:337-40.
8. Eismann EA, Little KJ, Laor T, Cornwall R. **Glenohumeral abduction contracture in children with unresolved neonatal brachial plexus palsy.** *J Bone Joint Surg Am.* 2015; 97:112-8.
9. Eismann EA, Pettit RJ, Wall EJ, Myer GD. **Management strategies for osteochondritis dissecans of the knee in the skeletally immature athlete.** *J Orthop Sports Phys Ther.* 2014; 44:665-79.
10. Eismann EA, Stephan ZA, Mehlman CT, Denning J, Mehlman T, Parikh SN, Tamai J, Zbojnowicz A. **Pediatric Triplane Ankle Fractures: Impact of Radiographs and Computed Tomography on Fracture Classification and Treatment Planning.** *J Bone Joint Surg Am.* 2015; 97:995-1002.
11. Fader LM, Laor T, Eismann EA, Cornwall R, Little KJ. **MR imaging of capitellar ossification: a study in children of different ages.** *Pediatr Radiol.* 2014; 44:963-70.
12. Gussous YM, Tarima S, Zhao S, Khan S, Caudill A, Sturm P, Hammerberg KW. **Serial derotational casting in idiopathic and non-idiopathic progressive early-onset scoliosis.** *Spine Deformity.* 2015; 3:233-238.
13. Jain VV, Anadio JM, Chan G, Sturm PF, Crawford AH. **Dural ectasia in a child with Larsen syndrome.** *J Pediatr Orthop.* 2014; 34:e44-9.
14. Laine JC, Denning JR, Riccio AI, Jo C, Joglar JM, Wimberly RL. **The use of ultrasound in the management of septic arthritis of the hip.** *J Pediatr Orthop B.* 2015; 24:95-8.
15. Little KJ. **Elbow fractures and dislocations.** *Orthop Clin North Am.* 2014; 45:327-40.
16. Loudon E, Allgier A, Overton M, Welge J, Mehlman CT. **The impact of pediatric brachial plexus injury on families.** *J Hand Surg Am.* 2015; 40:1190-5.
17. Lykissas MG, Sharma V, V VJ, Crawford AH. **Assessment of rib hump deformity correction in adolescent idiopathic scoliosis with or without costoplasty using the double rib contour sign.** *J Spinal Disord Tech.* 2015; 28:134-9.
18. Martin BD, McClung A, Denning JR, Laine JC, Johnston CE. **Intrathecal anomalies in presumed infantile idiopathic scoliosis: When is mri necessary?.** *Spine Deformity.* 2014; 2:444-447.
19. Masnovi ME, Mehlman CT, Eismann EA, Matey DA. **Pediatric refracture rates after angulated and completely displaced clavicle shaft fractures.** *J Orthop Trauma.* 2014; 28:648-52.
20. McPhail GL, Ehsan Z, Howells SA, Boesch RP, Fenchel MC, Szczesniak R, Jain V, Agabegi S, Sturm P, Wall E, Redding GJ. **Obstructive lung disease in children with idiopathic scoliosis.** *J Pediatr.* 2015; 166:1018-21.
21. Mehlman CT. **Diaphyseal Radius and Ulna Fractures.** In: JM Flynn, DL Skaggs, PM Waters, eds. *Rockwood & Wilkins' Fractures in Children.* Philadelphia PA: Wollters Kluwer Health; 2014:413-472.
22. Mehlman CT. **Neonatal Brachial Plexus Palsy.** In: JM Abzug, SH Kozin, DA Zlotolow, eds. *The Pediatric Upper Extremity.* New York: Springer; 2014:589-605.
23. Michaud LJ, Loudon EJ, Lippert WC, Allgier AJ, Foad SL, Mehlman CT. **Use of botulinum toxin type A in the management of neonatal brachial plexus palsy.** *PM R.* 2014; 6:1107-19.
24. Parikh SN, Nathan ST, Priola MJ, Eismann EA. **Elastic nailing for pediatric subtrochanteric and supracondylar femur fractures.** *Clin Orthop Relat Res.* 2014; 472:2735-44.



25. Ramirez N, Flynn JM, Smith JT, Vitale M, Sturm PF, D'Amato C, Samdani A, Machiavelli R, El-Hawary R. **Use of the S-hook for Pelvic Fixation in Rib-Based Treatment of Early-Onset Scoliosis: A Multicenter Study.** *Spine (Phila Pa 1976)*. 2015; 40:816-22.
26. Schulz J, Asghar J, Bastrom T, Shufflebarger H, Newton PO, Sturm P, Betz RR, Samdani AF, Yazsay B, Harms Study G. **Optimal radiographical criteria after selective thoracic fusion for patients with adolescent idiopathic scoliosis with a C lumbar modifier: does adherence to current guidelines predict success?** *Spine (Phila Pa 1976)*. 2014; 39:E1368-73.
27. Shea KG, Polousky JD, Jacobs JC, Jr., Ganley TJ, Aoki SK, Grimm NL, Parikh SN. **The patellar insertion of the medial patellofemoral ligament in children: a cadaveric study.** *J Pediatr Orthop*. 2015; 35:e31-5.
28. Shea KG, Polousky JD, Jacobs JC, Jr., Ganley TJ, Aoki SK, Grimm NL, Parikh SN. **The relationship of the femoral physis and the medial patellofemoral ligament in children: a cadaveric study.** *J Pediatr Orthop*. 2014; 34:808-13.
29. Smith BG, Kanel JS, Halsey MF, Thometz JG, Rosenfeld SR, Epps HR, McCarthy J. **Emergency department on-call status for pediatric orthopaedics: a survey of the POSNA membership.** *J Pediatr Orthop*. 2015; 35:199-202.
30. Smucny M, Parikh SN, Pandya NK. **Consequences of single sport specialization in the pediatric and adolescent athlete.** *Orthop Clin North Am*. 2015; 46:249-58.
31. Spencer SA, Sorger J. **Orthopedic issues in vascular anomalies.** *Semin Pediatr Surg*. 2014; 23:227-32.
32. Spierre LZ, Thorogood C, Mehlman CT. **Rehabilitation of the Child with Multiple Injuries.** In: GA Mencio, MF Swiontkowski, eds. *Green's Skeletal Trauma in Children*. Philadelphia PA: Elsevier Saunders; 2014:578-593.
33. Sturm PF, Anadio JM, Dede O. **Recent advances in the management of early onset scoliosis.** *Orthop Clin North Am*. 2014; 45:501-14.
34. Trout AT, Sharp SE, Anton CG, Gelfand MJ, Mehlman CT. **Spondylolysis and Beyond: Value of SPECT/CT in Evaluation of Low Back Pain in Children and Young Adults.** *Radiographics*. 2015; 35:819-34.
35. Udoekwere UI, Krzak JJ, Graf A, Hassani S, Tarima S, Riordan M, Sturm PF, Hammerberg KW, Gupta P, Anissipour AK, Harris GF. **Effect of lowest instrumented vertebra on trunk mobility in patients with adolescent idiopathic scoliosis undergoing a posterior spinal fusion.** *Spine Deformity*. 2014; 2:291-300.
36. Vennemeyer JJ, Hopkins T, Hershcovitch M, Little KD, Hagen MC, Minteer D, Hom DB, Marra K, Pixley SK. **Initial observations on using magnesium metal in peripheral nerve repair.** *J Biomater Appl*. 2015; 29:1145-54.
37. Vitale MG, Sullivan M, Trupia E, Matsumoto H, Garg S, Flynn J, Sturm PF, Perez-Gueso FS, Roye DP. **Paper #37: Prospective Study Comparing the Effects of Proximal Rib Anchors Versus Proximal Spine Anchors: Examining Complications, Curve Correction, and Quality of Life.** *Spine Deformity*. 2014; 2:513.
38. Wall EJ, Heyworth BE, Shea KG, Edmonds EW, Wright RW, Anderson AF, Eismann EA, Myer GD. **Trochlear groove osteochondritis dissecans of the knee patellofemoral joint.** *J Pediatr Orthop*. 2014; 34:625-30.
39. Wall EJ, Polousky JD, Shea KG, Carey JL, Ganley TJ, Grimm NL, Jacobs JC, Jr., Edmonds EW, Eismann EA, Anderson AF, Heyworth BE, Lyon R, Research on OsteoChondritis Dissecans of the Knee Study G. **Novel radiographic feature classification of knee osteochondritis dissecans: a multicenter reliability study.** *Am J Sports Med*. 2015; 43:303-9.
40. Williams BA, Matsumoto H, McCalla DJ, Akbarnia BA, Blakemore LC, Betz RR, Flynn JM, Johnston CE, McCarthy RE, Roye DP, Jr., Skaggs DL, Smith JT, Snyder BD, Sponseller PD, Sturm PF, Thompson GH, Yazici M, Vitale MG.

## Faculty, Staff, and Trainees

### Faculty Members

**James McCarthy, MD, MHCM**, Professor  
Leadership Division Director, Pediatric Orthopaedic Surgery  
Research Interests Limb Deformities, Cerebral Palsy and Motion Analysis

**Steven Agabegi, MD**, Assistant Professor  
Research Interests Scoliosis natural history

**Donita Bylski-Austrow, PhD**, Associate Professor  
Leadership Director of Biomechanics Research  
Research Interests Spine Biomechanics

**Sheila Chandran, MD**, Assistant Professor  
Research Interests Gait Deformities

**Roger Cornwall, MD**, Associate Professor  
Leadership Co-Director, The Hand and Upper Extremity Center  
Research Interests Hand and Upper Extremity

**Viral Jain, MD**, Assistant Professor  
Research Interests Scoliosis

**Kevin Little, MD**, Assistant Professor  
Leadership Compliance Officer  
Research Interests Hand and Upper Extremity

**Charles Mehlman, DO, MPH**, Professor  
Leadership Director, Pediatric Orthopaedic Resident Education  
Research Interests Spine Bracing and Evidence-Based Medicine

**Shital Parikh, MD**, Associate Professor  
Research Interests Sports Medicine

**Jaime Rice-Denning, MD**, Assistant Professor  
Leadership Safety Officer  
Research Interests Patient safety, trauma, foot and ankle conditions

**Joel Sorger, MD**, Associate Professor  
Research Interests Musculoskeletal Oncology

**Peter Sturm, MD**, Professor  
Leadership Director, The Crawford Spine Center  
Research Interests Scoliosis and other disorders of the spine

**Junichi Tamai, MD**, Assistant Professor  
Leadership Director, Physician Assistant Program  
Research Interests Pediatric Hip Disorders

**Eric Wall, MD**, Professor

**Leadership** Director, Orthopaedic Sports Medicine Program; Director, Pediatric Orthopaedic Fellowship Program

**Research Interests** Orthopaedic Sports Medicine, Minimally invasive scoliosis correction without spinal fusion

**Patrick Whitlock, MD, PhD**, Assistant Professor

**Research Interests** Regenerative medicine; biomaterials; musculoskeletal development; naturally-derived tissue scaffolds; clinical outcomes.

## Clinical Staff Members

- **Lance Bolin, PA-C**, Lead Physician Assistant
- **Angela Hildebrandt, PA-C**
- **Adriana Glazier, PA-C**
- **Sarah Gilday, PA-C**
- **Lori Mascall, PA-C**
- **Stephanie Pinkstock, PA-C**

## Trainees

- **Alan Aiken, DO**, PGY1, Wellmont Hospital
- **Seema Azher, DO**, PGY2, Bethesda Family Medicine
- **Kandice Beenkin, DO**, PGY4, McLaren Hospital
- **Kiel Beltinck, DO**, PGY4, McLaren Hospital
- **Chirag Berry, MD**, PL7, Mass General Hospital
- **Elizabeth Browning, DO**, PGY2, Bethesda Family Practice
- **Adam Burzynski, MD**, PGY4, University of Cincinnati
- **Camille Connelly, MD**, PGY4, University of Cincinnati
- **Leah Cobb, MD**, PL6, Medical College of Wisconsin, WI
- **Daniel Cowley, DO**, PGY3, Millcreek Hospital
- **Stephen Dailey, MD**, PG1, University of Cincinnati
- **Kris Danielson, DO**, PGY1, Metro Hospital
- **Albert d'Heurle, MD**, PGY3, University of Cincinnati
- **Tonya Dixon, MD**, PGY4, University of Cincinnati
- **Tyler Duncan, DO**, PGY1, Wellmont Hospital
- **Landon Fine, DO**, PGY4, McLaren Hospital
- **Brian Fuller, MD**, PGY4, Bethesda Sports Medicine
- **Kimberly Grueneisen, DO**, PGY2, Bethesda Family Medicine
- **Chad Hanson, DO**, PGY4, Oklahoma State University



- **Paul Henkel, DO**, PGY3, Wellmont Hospital
- **Brandon Horn, DO**, PGY4, McLaren Hospital
- **Lauren Hruskewycz, DO**, PGY1, Bethesda Family Medicine
- **Eric Jackson, DO**, PGY4, York Hospital
- **Brad Jaquith, MD**, PGY1, University of Cincinnati
- **Bryan Jarvis, DO**, PGY3, Millcreek Hospital
- **Micah Jones, MD**, PL6, The Kleinert Kutz Hand Institute, KY
- **Andrew Jimenez, MD**, PGY1, University of Cincinnati
- **Steven Jung, MD**, PGY2, Bethesda Family Medicine
- **Sara Kaja, MD**, PGY3, Bethesday Family Medicine
- **Kevin Keith, DO**, PGY3, Millcreek Hospital
- **Kelly Grueneisen, MD**, PGY2, Bethesda Family Medicine
- **Brad King, MD**, PGY1, University of Cincinnati
- **James Klunk, DO**, PGY1, York Hospital
- **Brandon Kohrs, DO**, PGY1, Grandview
- **Scott McDonald, DO**, PGY3, Wellmont Hospital
- **Patrick Massa, MD**, PGY2, Bethesda Family Medicine
- **William McClellan, MD**, PGY2, University of Cincinnati
- **Max McCray, DO**, PGY1, York Hospital
- **Ashley Miller, MD**, PGY1, University of Cincinnati
- **Tyler Noble, DO**, PGY4, York Hospital
- **Zach Nollin, DO**, PGY4, Oklahoma State University
- **Michelle Obrien, MD**, PGY4, University of Cincinnati
- **Andrew Pick, DO**, PGY4, McLaren Hospital
- **Caleb Pinegar, DO**, PGY4, Western Reserve
- **Wendy Quiles, MD**, PGY2, Bethesda Family Medicine
- **Christopher Redman, MD**, PL6, Allegheny General Hospital, PA
- **Nick Romeo, DO**, PGY2, York Hospital
- **Philip Ross, MD**, PGY2, University of Cincinnati
- **Mark Shoreman, MD**, PGY4, Bethesday Sports Medicine

- **Preetha Sinha, MD**, PGY2, University of Cincinnati
- **Travis Small, DO**, PGY4, Millcreek Hospital
- **Stephen Steffes, DO**, PGy4, Western Reserve
- **Jarrold Steimie, DO**, PGY1, Grandview
- **Ryan Tarr, DO**, PGY1, Grandview
- **Ruberte Theile-Ramon, MD**, PGY1, University of Cincinnati
- **Eric Varley, DO**, PGY3, Metro
- **Kent Walker, DO**, PGY3, Wellmont Hospital
- **Justin West, MD**, PGY4, University of Cincinnati

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## Grants, Contracts, and Industry Agreements

### Grant and Contract Awards

Annual Direct

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#### Cornwall, R

##### The Role of Satellite Cell Notch Signaling in Contracture Formation Following Neonatal Brachial Plexus Injury

American Society for Surgery of the Hand

11/1/2014-3/31/2015

\$4,000

##### The Role of Muscle Satellite Cells in Contracture Formation Following Neonatal Brachial Plexus Injury

Orthopaedic Research and Education Foundation

7/1/2013-6/30/2016

\$75,000

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#### Sturm, P

##### John and Marcella Fox Prospective Consortium Research Fund

John and Marcella Fox (Washington University)

10/1/2011-12/31/2015

\$116

##### Scoliosis Surgery Outcome Database Registry: A Prospective, MultiCenter Database Registry of the DePuy Spine Harms Study Group

Setting Scoliosis Straight

1/1/2014-12/31/2015

\$8,834

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**Current Year Direct**

**\$87,950**

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### Industry Contracts

**McCarthy, J**

Ellipse Technologies, Inc

\$5,484

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**Parikh, S**

Fixes 4 Kids Inc.

\$3,047

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**Wall, E**

SpineForm, LLC

\$13,430

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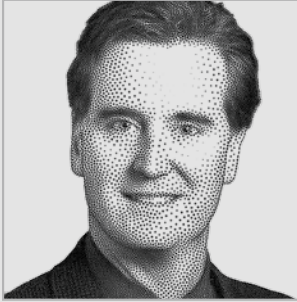
**Current Year Direct Receipts****\$21,961**

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**Total****\$109,911**

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# Orthopaedic Surgeons Help Form ROCK Group to Battle Degenerative Knee Condition in Adolescents



Eric Wall, MD

PUBLISHED FEBRUARY 2015

*The American Journal of Sports Medicine*

Pediatric orthopaedic surgeons around the country remain baffled by a rare condition called osteochondritis dissecans (OCD), a degenerative cartilage disorder that strikes the knees of active, athletic teenagers. The surgeons teleconference frequently and meet several times a year to share information about their rare cases to better understand a condition with no known cause, and no proven best treatment.

Their collaborative team, Research in OsteoChondritis of the Knee (ROCK) Group, has cleared one hurdle by reaching baseline agreement on the key anatomical features that mark the condition. Results of the team’s first Cincinnati-led, multi-center study appeared in the February 2015 issue of *The American Journal of Sports Medicine*.

In the ROCK study, seven orthopaedic specialists rated X-rays of 45 different knees for nine or more specific OCD characteristics. The study showed highly reliable agreement among the doctors on features such as growth plate maturity, condylar width and lesion size, and the ability to differentiate medial and lateral lesions in the knee. Other characteristics were less reliable for identifying OCD.

“We all hate osteochondritis dissecans because it’s so nebulous and so debilitating,” according to Eric Wall, MD, study coordinator and Director of Orthopaedic Sports Medicine. Aided by new data, doctors will now focus on how specific OCD features correlate to treatment outcomes, Wall says.

With treatment failure rates of 30 percent, some OCD-diagnosed adolescents must drastically reduce physical activities for up to two years as cartilage recovers, and others can develop early onset degenerative arthritis. Affected knee tissue, Wall says, “looks like a Cincinnati road after a hard winter, with a big deep pothole in the knee cartilage. But asking a 10-year-old to rest for up to two years — that’s a lot of time out of a young life. Our goal is to cure it in the next decade.”

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Wall EJ, Polousky JD, Shea KG, Carey JL, Ganley TJ, Grimm NL, Jacobs JC, Jr., Edmonds EW, Eismann EA, Anderson AF, Heyworth BE, Lyon R, Research on OsteoChondritis Dissecans of the Knee Study G. Novel radiographic feature classification of knee osteochondritis dissecans: a multicenter reliability study. *Am. J. Sports Med.* 2015;43(2):303-309.



These knee images show the articular side of osteochondritis dissecans (OCD) lesions with predominantly (A) convex, (B) linear, or (C) concave contours. The images were part of a multi-center study reporting that certain radiographic features can be reliably classified by multiple observers. This will allow for the determination of predictors of OCD healing with non-operative or operative treatment.

“We all hate osteochondritis dissecans because it’s so nebulous and so debilitating.”