

# 2014 Research Annual Report

## Orthopaedics



### Division Summary

#### RESEARCH AND TRAINING DETAILS

Number of Faculty	14
Number of Research Students	6
Number of Support Personnel	10
Direct Annual Grant Support	\$152,568
Direct Annual Industry Support	\$20,669
Peer Reviewed Publications	39

#### CLINICAL ACTIVITIES AND TRAINING

Number of Clinical Staff	6
Number of Clinical Fellows	3
Outpatient Encounters	38,405

### Division Photo



Row 1: J Sorger  
Row 2: V Jain, S Parikh, J Rice-Denning, S. Chandran  
Row 3: P Sturm, K Little, A Crawford, C Mehlman, E Wall, D Bylski-Austrow, R Cornwall  
Row 4: J McCarthy, J Tamai

## Significant Accomplishments

### Orthopaedic Surgery Leads Quality, Safety, Value Initiative

Over the past year, Orthopaedic Surgery has played a major role in the Pediatric Orthopaedic Society of North America's (POSNA) Quality, Safety, and Value Initiative (QSVI). This year, Cincinnati Children's Division of Orthopedic Surgery spearheaded contributions to QSVI, which provides a program for hospitals and practices to share best practices and ideas to improve quality of care, safety, and value. Quality work has been completed that improved utilization in the operating room resulting in over a millions of dollars of unrealized revenue and nearly 100 additional surgeries being performed using the same resources; creating surgical simulation programs to educate the next generation of surgeons; and completing and publishing a "compartment syndrome alert process" that has nearly eliminated the missed compartment releases.

### Research Suggests Way to Prevent Contractures

Ground breaking new basic science research tests the hypothesis that neonatal denervation, as occurs in brachial plexus injury, leads to impaired muscle growth and ultimate contractures. Understanding the molecular cross-talk between nerves and muscles during this critical postnatal development window will lead to novel treatments to preserve muscle growth while awaiting nerve healing. This has direct implications on the treatment of many other disorders, such as cerebral palsy and myelodysplasia. This work is funded by the Goldner Research Pioneer Award from the American Foundation for Surgery of the Hand and the Career Development Grant from the Orthopaedic Research and Education Foundation.

### New research using flexible implants to treat early onset scoliosis

Scoliosis that begins at less than five years of age (Early Onset Scoliosis [EOS]) is much less common than adolescent idiopathic scoliosis. However, it has life threatening consequences. Further, EOS is often a significant deformity and is therefore much more difficult to treat. The Crawford Spine Center provides comprehensive treatment options such as magnetically-activated “growing” rods and other guided growth techniques. New pilot research using flexible growing rods recently won an international award as an innovative approach to this devastating disorder.

### **ROCK study group researches treatment of osteochondritis dissecans**

ROCK (Research for Osteochondritis Dissecans of the Knee) is a multicenter study group focused upon evaluation and management of young patients with osteochondritis dissecans, a condition that often damages and occasionally destroys the knees of young athletes. The ROCK group is organized around the use of best evidence, including clinical practice guidelines, prospective cohort studies, and validated evaluation instruments for diagnosis and treatment. The group includes 14 centers in North America, and centers in Singapore, Sweden, and Germany. The ultimate goal is to cure this condition. Cincinnati Children’s has been the principle research-coordination site for several of the group’s early research studies.

## **Division Publications**

1. Coombs MT, Glos DL, Wall EJ, Kim J, Bylski-Austrow DI. **Biomechanics of spinal hemiepiphysiodesis for fusionless scoliosis treatment using titanium implant.** *Spine (Phila Pa 1976)*. 2013; 38:E1454-60.
2. Cornwall R. **The controversy continues: commentary on an article by Ryan M. Zimmerman, MD, et al.: "Surgical management of pediatric radial neck fractures".** *J Bone Joint Surg Am*. 2013; 95:e157.
3. Eismann EA, Bauer A, Kozin SH, Loudon E, Cornwall R. **The relationship between medical malpractice litigation and parent reports of patient function following neonatal brachial plexus palsy.** *J Bone Joint Surg Am*. 2014; 96:373-9.
4. Eismann EA, Little KJ, Kunkel ST, Cornwall R. **Clinical research fails to support more aggressive management of pediatric upper extremity fractures.** *J Bone Joint Surg Am*. 2013; 95:1345-50.
5. Eismann EA, Lucky AW, Cornwall R. **Hand function and quality of life in children with epidermolysis bullosa.** *Pediatr Dermatol*. 2014; 31:176-82.
6. Ghattas PJ, Mehlman CT, Eichten D. **Treatment of postoperative infection after posterior spinal fusion and instrumentation in a patient with neuromuscular scoliosis.** *Am J Orthop (Belle Mead NJ)*. 2014; 43:89-93.
7. Jain V, Lykissas M, Trobisch P, Wall EJ, Newton PO, Sturm PF, Cahill PJ, Bylski-Austrow DI. **Surgical aspects of spinal growth modulation in scoliosis correction.** *Instr Course Lect*. 2014; 63:335-44.
8. Jain VV, Abejie B, Bashir MH, Tyner T, Vempilly J. **Lung volume abnormalities and its correlation to spirometric and demographic variables in adult asthma.** *J Asthma*. 2013; 50:600-5.
9. Jain VV, Gupta OP, Jajoo S, Khiangate B. **Recurrent pneumothorax in a young female with pulmonary lymphangiomyomatosis: a case report and overview of literature.** *J Family Med Prim Care*. 2014; 3:86-8.
10. Little KJ, Zlotolow DA, Soldado F, Cornwall R, Kozin SH. **Early functional recovery of elbow flexion and supination following median and/or ulnar nerve fascicle transfer in upper neonatal brachial plexus palsy.** *J Bone Joint Surg Am*. 2014; 96:215-21.
11. Loudon EJ, Broering CA, Mehlman CT, Lippert WC, Pratt J, King EC. **Meta-analysis of function after secondary shoulder surgery in neonatal brachial plexus palsy.** *J Pediatr Orthop*. 2013; 33:656-63.
12. Lykissas MG, Crawford AH, Abruzzo TA. **Rib osteoblastoma as an incidental finding in a patient with adolescent idiopathic scoliosis: a case report.** *J Pediatr Orthop B*. 2013; 22:602-7.

13. Lykissas MG, Crawford AH, Eismann EA, Tamai J. **Ponseti method compared with soft-tissue release for the management of clubfoot: A meta-analysis study.** *World J Orthop.* 2013; 4:144-53.
14. Lykissas MG, Crawford AH, Jain VV. **Complications of surgical treatment of pediatric spinal deformities.** *Orthop Clin North Am.* 2013; 44:357-70, ix.
15. Lykissas MG, Eismann EA, Parikh SN. **Trends in pediatric sports-related and recreation-related Injuries in the United States in the last decade.** *J Pediatr Orthop.* 2013; 33:803-10.
16. Lykissas MG, Jain VV, Manickam V, Nathan S, Eismann EA, McCarthy JJ. **Guided growth for the treatment of limb length discrepancy: a comparative study of the three most commonly used surgical techniques.** *J Pediatr Orthop B.* 2013; 22:311-7.
17. Lykissas MG, Li T, Eismann EA, Parikh SN. **Does medial patellofemoral ligament reconstruction decrease patellar height? A preliminary report.** *J Pediatr Orthop.* 2014; 34:78-85.
18. Lykissas MG, McCarthy JJ. **Should all unstable slipped capital femoral epiphysis be treated open?.** *J Pediatr Orthop.* 2013; 33 Suppl 1:S92-8.
19. Lykissas MG, Schorry EK, Crawford AH, Gaines S, Rieley M, Jain VV. **Does the presence of dystrophic features in patients with type 1 neurofibromatosis and spinal deformities increase the risk of surgery?.** *Spine (Phila Pa 1976).* 2013; 38:1595-601.
20. Lykissas MG, Sturm PF, McClung A, Sucato DJ, Riordan M, Hammerberg KW. **Challenges of spine surgery in patients with chondrodysplasia punctata.** *J Pediatr Orthop.* 2013; 33:685-93.
21. Lykissas MG, Wall EJ, Nathan S. **Retro-articular drilling and bone grafting of juvenile knee osteochondritis dissecans: a technical description.** *Knee Surg Sports Traumatol Arthrosc.* 2014; 22:274-8.
22. Matzon JL, Cornwall R. **A stepwise algorithm for surgical treatment of type II displaced pediatric phalangeal neck fractures.** *J Hand Surg Am.* 2014; 39:467-73.
23. McPhail GL, Howells SA, Boesch RP, Wood RE, Ednick M, Chini BA, Jain V, Agabegi S, Sturm P, Wall E, Crawford A, Redding G. **Obstructive lung disease is common in children with syndromic and congenital scoliosis: a preliminary study.** *J Pediatr Orthop.* 2013; 33:781-5.
24. Nathan ST, Crawford AH, Lykissas, M.G., Mangano, F.T.. (2013) **Severe Thoracic Kyphosis with Neuropathy in a Three-Year-Old Child: a case report.** 3:e77.
25. Nathan ST, Jain V, Lykissas MG, Crawford AH, West CE. **Transient cortical blindness as a complication of posterior spinal surgery in a pediatric patient.** *J Pediatr Orthop B.* 2013; 22:416-9.
26. Nikolaou S, Liangjun H, Tuttle LJ, Weekley H, Christopher W, Lieber RL, Cornwall R. **Contribution of denervated muscle to contractures after neonatal brachial plexus injury: not just muscle fibrosis.** *Muscle Nerve.* 2014; 49:398-404.
27. Parikh SN. **Pediatrics.** *Orthop Clin North Am.* 2014; 45:xvii.
28. Parikh SN. **Pediatrics.** *Orthop Clin North Am.* 2013; 44:xvii.
29. Parikh SN. **Preface. SLAP IV tear.** *Orthop Clin North Am.* 2013; 44:xvii-xviii.
30. Parikh SN, Desai VR, Gupta A, Anton CG. **Langerhans cell histiocytosis of the clavicle in a 13-year-old boy.** *Case Rep Orthop.* 2014; 2014:510287.
31. Parikh SN, d'Heurle A, Eismann EA, Cornwall R. **The value of interpretation of intraoperative fluoroscopy by radiologists during pediatric fracture treatment.** *J Pediatr Orthop.* 2014; 34:359-61.
32. Parikh SN, Lykissas MG, Mehlman CT, Sands S, Herrera-Soto J, Panchal A, Crawford AH. **Convergent and divergent dislocation of the pediatric elbow: two case reports and comprehensive review of literature.** *J Pediatr Orthop B.* 2014; 23:158-67.
33. Parikh SN, Myer D, Eismann EA. **Prevention of arthrofibrosis after arthroscopic screw fixation of tibial spine fracture in children and adolescents.** *Orthopedics.* 2014; 37:e58-65.

34. Pfiester MP, Eismann EA, Wilson LM, Parikh SN. **Localized acquired hypertrichosis after cast treatment in pediatric and adolescent patients: a natural history study.** *J Pediatr Orthop.* 2013; 33:755-8.
35. Post JM, Switzer KD, Brown DK, Meinzen-Derr J, Dively J, Dunkin BS, Mehlman CT. **Cast saw noise does not reach occupational hazard levels.** *J Pediatr Orthop.* 2013; 33:580-4.
36. Schaffzin JK, Prichard H, Bisig J, Gainor P, Wolfe K, Solan LG, Webster L, McCarthy JJ. **A collaborative system to improve compartment syndrome recognition.** *Pediatrics.* 2013; 132:e1672-9.
37. Squires JH, Emery KH, Johnson N, Sorger J. **Tibial nerve intraneural ganglion cyst in a 10-year-old boy.** *Pediatr Radiol.* 2014; 44:488-90.
38. Talusan PG, Milewski MD, Toy JO, Wall EJ. **Osteochondritis dissecans of the talus: diagnosis and treatment in athletes.** *Clin Sports Med.* 2014; 33:267-84.
39. Zebracki K, Thawrani D, Oswald TS, Anadio JM, Sturm PF, Spine Deformity Study G. **Predictors of emotional functioning in youth after surgical correction of idiopathic scoliosis.** *J Pediatr Orthop.* 2013; 33:624-7.

## Faculty, Staff, and Trainees

### Faculty Members

**James McCarthy, MD**, Professor

**Leadership** Division Director, Pediatric Orthopaedic Surgery

**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

**Roger Cornwall, MD**, Assistant Professor

**Leadership** Clinical Director; 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

**Research Interests** Hand and Upper Extremity

**Charles Mehlman, DO, MPH**, Associate Professor

**Leadership** Director, Musculoskeletal Outcomes Research, Pediatric Orthopaedic Resident Education, Brachial Plexus and Co-Director of the Limb Reconstruction Center

**Research Interests** Spine Bracing and Evidence-Based Medicine

**Shital Parikh, MD**, Assistant Professor

**Research Interests** Sports Medicine

**Jaime Rice-Denning, MD**, Assistant Professor

**Joel Sorger, MD**, Assistant Professor

**Research Interests** Musculoskeletal Oncology

**Peter Sturm, MD**, Professor

**Leadership** Co-Director, The Crawford Spine Center; Director, Spine Fellowship Program

**Junichi Tamai, MD**, Assistant Professor

**Leadership** Director, Physician Assistant Program

**Research Interests** Process Improvement

**Eric Wall, MD**, Professor

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

#### Clinical Staff Members

- **Lance Bolin, PA-C**,  
*Lead Physician Assistant*
- **Angela Hildebrandt, PA-C**
- **Sarah Ogle, PA-C**
- **Mary Pam Pfister, PA-C**
- **Stephanie Pinkstock, PA-C**
- **Adriana Reinersman, PA-C**

#### Trainees

- **Michael Anderson, DO**, PGY3, Henry Ford Hospital
- **Darren Barton, FO**, PGY3, Wellmont Health System
- **Kim Bjorklund, MD**, Fellow, University of Manitoba
- **Kyle Boren, DO**, PGY3, Wellmont Health System
- **Shawn Brandenburg, DO**, PGY1, Metro Hospital
- **Leroy Butler, DO**, PGY3, Wellmont Health System
- **Chris Casstevens, MD**, PGY2, University of Cincinnati
- **Jessica Childe, DO**, PGY4, McLaren Greater Lansing
- **Tyler Christman, DO**, PGY4, Millcreek Hospital
- **Michael Corum, DO**, PGY4, York Hospital
- **Albert d'Heurle, , PGY1**, University of Cincinnati
- **Ozgur Dede, MD**, Fellow, Children's Hospital of Pittsburgh
- **Amanda Farrell, DO**, PGY1, Bethesda Family Medicine
- **Seth Gengler, DO**, PGY4, McLaren Greater Lansing
- **Richard Goodrich, DO**, PGY3, Millcreek Hospital
- **Michael Groover, , PGY1**, Grandview Hospital
- **Jacob Gunzenhauser, MD**, PGY4, University of Cincinnati
- **Heather Harrison, MD**, Fellow, Henry Ford Hospital
- **Carrie Heincelman, MD**, PGY2, University of Cincinnati
- **Bryan Houseman, DO**, PGY4, York Hospital
- **Joe Hurst, DO**, PGY1, Wellmont Health System
- **Haroon Hussain, MD**, PGY2, University of Cincinnati
- **Jeff Jenks, DO**, PGY3, Millcreek Hospital
- **Rob Johnson, DO**, PGY4, Oklahoma State University
- **Nami Kazemi, MD**, PGY4, University of Cincinnati
- **Tyler Keller, MD**, PGY2, University of Cincinnati

- **Michael Knight, DO**, PGY1, Wellmont Health System
- **Will McClellan, MD**, PGY1, University of Cincinnati
- **Andrew Millis, MD**, PGY4, University of Cincinnati
- **Phillip Myers, , PGY1**, Grandview Hospital
- **Michelle O'Brien, MD**, PGY1, University of Cincinnati
- **Matthew Olsen, DO**, PGY3, Henry Ford Hospital
- **Brian Opalacz, DO**, PGY1, York Hospital
- **Wendy Ramalingam, MD**, PGY2, University of Cincinnati
- **Chris Rashidifard, DO**, PGY1, York Hospital
- **Tom Revak, DO**, PGY4, York Hospital
- **Phillip Ross, MD**, PGY1, University of Cincinnati
- **Katherine Sage, DO**, PGY3, Metro Hospital
- **Michael Saper, DO**, PGY4, McLaren Greater Lansing
- **Katherine Schroeder, MD**, PGY4, University of Cincinnati
- **Mark Schwartz, DO**, PGY4, Oklahoma State University
- **Preetha Sinha, MD**, PGY1, University of Cincinnati
- **Tim Volk, DO**, PGY3, Millcreek Hospital
- **Michael Wagner, DO**, PGY4, McLaren Greater Lansing
- **Brad Webb, DO**, PGY1, Grandview Hospital
- **Shawn Yang, MD**, PGY4, University of Cincinnati
- **Sarah Zawodny, MD**, Fellow, Medical College of Wisconsin

## Grants, Contracts, and Industry Agreements

Grant and Contract Awards	Annual Direct
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### CORNWALL, R

#### **Afferent Denervation and Contractures Following Neonatal Brachial Plexus Injury**

American Society for Surgery of the Hand

07/01/13-06/30/14

\$20,000

#### **Muscle Contracture Pathophysiology in Cerebral Palsy and Neonatal Brachial Plexus Injury**

Pediatric Orthopaedic Society of North America

06/01/14-05/31/15

\$30,000

#### **The Role of Muscle Satellite Cells in Contracture Formation**

Orthopaedic Research and Education Foundation

07/01/13-06/30/16

\$75,000

### MEHLMAN, C

#### **Bracing in Adolescent Idiopathic Scoliosis**

National Institutes of Health(University of Iowa)

R01 AR 052113

09/01/12-08/31/15

\$3,093

### STURM, P

#### **OMeGA Spine Fellowship 2013-2014**

OMeGA Medical Grants Association

08/01/13-07/31/14

\$24,475

**Current Year Direct      \$152,568**

Industry Contracts

**MCCARTHY, J**

Ellipse Technologies, Inc      \$2,335

**WALL, E**

SpineForm, LLC      \$18,334

**Current Year Direct Receipts      \$20,669**

**Total      \$173,237**