Division Data Summary

Research and Training Details

<table>
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<th>Category</th>
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<tr>
<td>Number of Faculty</td>
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<td>Peer Reviewed Publications</td>
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Clinical Activities and Training

<table>
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<tr>
<td>Number of Clinical Staff</td>
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<td>Number of Clinical Fellows</td>
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<td>Number of Clinical Students</td>
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<td>Inpatient Encounters</td>
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<td>Outpatient Encounters</td>
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Faculty Members

**Eric Wall, MD**, Associate Professor; Director, Pediatric Orthopaedic Surgery; Director, Orthopaedic Sports Medicine; Director, Orthopaedic Research  
**Research Interests**: Scoliosis and Sports Medicine

**Alvin Crawford, MD**, Professor; Director, Spine Center and Fellowship Program  
**Research Interests**: Scoliosis and Neurofibromatosis

**Twee Do, MD, FAAP**, Assistant Professor; Director, Neuromuscular Services
Research Interests: Neuromuscular
A. Atiq Durrani, MD, Assistant Professor; Co-Director of Spine Center; Director of Skeletal Developmental Biology Research Lab

Research Interests: Spine and Bone Tumor
Charles Mehlman, DO, MPH, Associate Professor; 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
Junichi Tamai, MD, Assistant Professor; Director, Physician Assistant Program

Research Interests: Process Improvement
Diane Von Stein, MD, Assistant Professor; Co-Director of Limb Reconstruction Center

Research Interests: Spine Biomechanics
Donita Bylski-Austrow, PhD, Research Associate Professor; Director of Biomechanics Research

Clinical Staff Members
- Lance Bolin, PA-C
- Angela Kramig, PA-C
- Adriana Reinersman, PA-C
- Mary Pam Pfiester, PA-C
- Steven Wurzelbacher, PA-C
- Hillary McClung, PA-C

Trainees
- Moh'd Alfawareh, MD, Fellow, UTMB Galveston, TX
- Shannon Antekeier, MD, Fellow, University of Louisville, Louisville, KY
- Clint Basener, DO, PGY-IV, Oklahoma State University Medical Center, Tulsa, OK
- Ali Behboudi, DO, PGY-III, Firelands Regional Medical Center, Sandusky, OH
- Syndhir Belagaje, MD, PGY-II, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Albert Chavanne, MD, Fellow, Medical School at University of Vienna, Austria
- Adam Cote, DO, PGY-IV, Ingham Regional Medical Center, Langsham, MI
- Dennis Cramer, DO, Fellow, Arrowhead Regional Medical Center, Colton, CA
- Chitra Dahia, PhD, Fellow, India Institute of Science of Bangalore, India
- Thad Dean, DO, Intern, Grandview Hospital Medical Center, Dayton, OH
- Rasesh Desai, MD, Fellow, VS Hospital NHL, MMC, India
- Nathan Donaldson, DO, Intern, Grandview Hospital Medical Center, Dayton, OH
- Dave Eichten, DO, Intern, Grandview Hospital Medical Center, Dayton, OH
- Andrew Farber, DO, PGY-III, Peninsula Medical Center, Far Rockaway, NY
- Aaron Florence, DO, PGY-IV, Peninsula Medical Center, Far Rockaway, NY
- Steve Gammon, MD, PGY-II, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Michael Greiwe, MD, PGY-IV, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Joseph Hubbard, DO, PGY-IV, Ingham Regional Medical Center, Langsham, MI
- Viral Jain, MD, Fellow, Medical College Baroda F.F.G. Hospital, Vadovar, India
- Todd Kelly, MD, PGY-IV, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Jason Kinkartz, MD, PGY-II, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Michael Leslie, DO, PGY-IV, Peninsula Medical Center, Far Rockaway, NY
- Kevin Little, MD, PGY-IV, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Taruna Madhav, MD, PGY-IV, University of Cincinnati, Orthopaedics, Cincinnati, OH
- Shahab Mahboubian, DO, PGY-III, Peninsula Medical Center, Far Rockaway, NY
- Robert Marsh, DO, PGY-IV, Ingham Regional Medical Center, Langsham, MI
Significant Accomplishments in FY08

Outpatient Clinical Performance Improvement

Performance improvement efforts result in reduced orthopaedic outpatient office visit wait times by an average of 20 minutes per patient.

New Developments in Spine Growth Implant

A new spine growth implant developed at Cincinnati Children's is undergoing FDA review. If approved, a multi-center trial could begin within the next year to study a new, minimally invasive method of scoliosis correction that does not require a spine fusion. Currently there are no FDA approved devices designed to guide the growth of the spine in children with scoliosis.

New Developments in ACL Reconstruction for the Young Athlete.

Physicians at Cincinnati Children’s developed and presented a new surgical technique of anatomic ACL reconstruction for very young athletes that does not violate the growth plates.

Significant Publications in FY08


Found superior results with stainless steel flexible nails versus titanium. Has led to reintroduction of stainless steel flexible nails in the US market.


No evidence of publication bias found in top tier orthopaedic journal.


Found equivalent correction of scoliosis with a cost-effective implant. The article compares a matched series of patients operated by three internationally respected spinal deformity surgeons. These authors were able to demonstrate safe effective correction of scoliosis with implants costing several thousand dollars per patient less than pedicle screws without risk of spinal cord injury. No patient required expensive synthetic or genetically engineered bone graft substitutes and there were no pseudoarthrosis. Their coronal plane correction was better.

Division Highlights

Alvin H. Crawford, MD

Scoliosis Outcomes Database Registry: A Prospective, Multi-Center Database Registry of the DePuy Spine Harms Study Group. Comprised of 12 sites and 18 surgeon members to analyze the long-term outcomes of surgical treatment of idiopathic scoliosis of all curve patterns treated by either anterior or posterior procedures.

Alvin H. Crawford, MD

Genetic Evaluation for the Scoliosis Gene(s) in Patients with Neurofibromatosis 1 Scoliosis. Consultant. This study is being conducted by Dr. David Polly at the University of Minnesota. The purpose of this study is to find out if
there is something in these genes that cause spinal deformity in NF1 patients.

Alvin H. Crawford, MD and Eric J. Wall, MD
Dual Rod Instrumentation with Limited Fusion for the Treatment of Progressive Early Onset Scoliosis. This is a Prospective, Multi-center study out of the San Diego Center for Spinal Disorders will evaluate the efficacy and safety of the dual rod technique in achieving and maintaining scoliosis curve correction and allowing additional spinal growth in a larger patient population.

Eric J. Wall, MD and Shital Parikh, MD
Is Juvenile Osteochondritis Dissecans a Growth Arrest of the Secondary Ossification Center? The purpose of this study is to develop an animal model to examine the effects of injury to the secondary growth plate of the distal femur and its potential for causing JOCD. Drs. Tal Laor and Eric Wall of Cincinnati Children's Hospital recently uncovered a positive correlation between abnormalities in the physis around the secondary ossification center of the epiphysis and presence of JOCD. Better insight into the etiology and mechanism of JOCD would likely result in a rationale for both non-operative and operative treatment.

Orthopaedic Research Laboratory; Donita Bylski-Austrow, PhD, David Glos, RAIV, Sherrie Powers, CRC
Verified efficacy of spine growth modulation device in independent, FDA-GLP laboratory. Collaboration: SpineForm.

Determined mechanism of action of growth modulation device on the structure of tissues and cells of the vertebral growth plate. Collaboration: CCHMC Pathology

Defined major differences between human and quadruped model in spine physiological dynamic biomechanics in vivo. Collaboration: CCHRF Veterinary Services, UC ECE.

Determined the effect of spine growth modification device on the initial biomechanical properties of the spine. Collaboration: UC WISE.

Designed and fabricated system to determine effects of repetitive biomechanical stress overloads on bone growth in the pediatric knee. Collaborations: CCHRF Vet Services, CCHRF Imaging Research Center, CCHMC Radiology, CCHMC Pathology, UC Orthopaedics, OREF.

Charles T. Mehlman, DO, MPH
Bracing in Adolescent Idiopathic Scoliosis Clinical Trial (BrAIST). A Multi-center site for an NIH funded randomized controlled study to determine the effectiveness of bracing for idiopathic scoliosis.

Division Collaboration

Collaboration with Orthopaedic Surgery; Human Genetics
Collaborating Faculty: Alvin H. Crawford, MD; Elizabeth Schorry, MD
Spinal Abnormalities in Neurofibromatosis Type1. NIH funded study based out of the University of Utah.

Collaboration with Orthopaedic Surgery; Human Genetics; Physical Medicine and Rehabilitation; Pulmonary; Neurosurgery
Collaborating Faculty: Alvin H. Crawford, MD
The Spine Center. Evaluating the effects of scoliotic deformities on pulmonary functions.

Collaboration with Orthopaedic Surgery; Developmental Biology
Collaborating Faculty: A.A Durrani, MD; Christopher Wylie, PhD
Spinal Deformity Related Projects: Local biochemical regulation of physeal growth in a mouse model, spatial and temporal mapping of the various zones of vertebral growth plate delineating the site and mode of action of various locally produced ligands, their receptors, activated pathways and the genes expressed during longitudinal bone growth in a mouse model, identification of the biomechanical and the genetic signal for termination of vertebral growth in a mouse model, correction of spinal deformity by modulation of vertebral growth through delivery of local growth in a rabbit model.

Intervertebral Disc Projects: Spatial and temporal mapping of the various ligands, their receptors, activated pathways and the genes expressed in the intervertebral disc during physiological aging in a mouse, effect of removal of nucleus pulposus cells on the annulus fibrosis in the intervertebral disc, use of biological growth factors in
Collaboration with Orthopaedics; Hematology/Oncology

Collaborating Faculty: A.A. Durrani, MD; Timothy Cripe, MD

Musculoskeletal Oncology Related Projects: Expression of vascular markers in aneurysmal bone cysts and their correlation to clinical response and correlation of gene expression to clinical outcome in various sarcomas using the Tumor tissue bank.

Collaboration with Orthopaedics; Physical Medicine and Rehabilitation; Plastic Surgery

Collaborating Faculty: Charles T. Mehlman, DO, MPH & Susan Foad, MPH; Linda Michaud, MD; Kevin Yakuboff, MD

Brachial Plexus Birth Palsy (BPBP): Multi-center prospective research study to determine the optimal age for microvascular repair of brachial plexus birth palsy and persistent upper extremity weakness; compare the functional outcome of patients undergoing early microscopic repair versus late reconstructive surgery versus late reconstructive surgery alone; and determine the natural history of neurologic recovery in patients with BPBP.

Collaboration with Orthopaedics; Radiology; Sports Medicine BioDynamics

Collaborating Faculty: Eric J. Wall, MD; Tai Laor, MD; Jon Divine, MD

MRI Findings of Iliac Crest Apophysitis: Described MRI Findings of children with iliac crest apophysitis.

Collaboration with Orthopaedics; Radiology; Sports Medicine BioDynamics; Epidemiology

Collaborating Faculty: Eric J. Wall, MD; Kathy Emery, MD; Jon Divine, MD, Tim Hewett, PhD, and Greg Myer, MS; Nick Todd, PhD

Predictive Model for Healing in Juvenile Osteochondritis Dissecans. Developed nomogram to predict healing response for children with JOCD to heal after six months of nonoperative treatment. Accepted for publication in top tier orthopaedic journal (JBJS; December 2008).

Mentions in Consumer Media

- Eric J. Wall, MD - Every Day Ergonomics- Avoid backpack attacks. Disney Family.com, Web Site

Division Publications

11. Srivastava AK, Mehlman CT, Wall EJ, Do TT. Elastic stable intramedullary nailing of tibial shaft fractures in


### Grants, Contracts, and Industry Agreements

#### Grant and Contract Awards

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<th>Grant and Contract Awards</th>
<th>Annual Direct / Project Period Direct</th>
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| Mehlman, C | Bracing in Adolescent Idiopathic Scoliosis  
National Institutes of Health (University of Iowa)  
R01 AR 052113  
09/01/06 - 08/31/11 | $11,894 / $45,242 |

#### Industry Contracts

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| Crawford, A  
DePuy AcroMed | $ 19,703 |
| Durrani, A  
Synthes Spine | $ 17,500 |
| Medtronics Sofamor Danek | $ 60,000 |
| DePuy Spine | $ 74,790 |

**Current Year Direct Receipts** $171,993

**Total** $183,887