

Orthopaedics

Division Details

RESEARCH AND TRAINING DETAILS

Faculty	14
Research Graduate Students	4
Total Annual Grant Award Dollars	\$110,000

CLINICAL ACTIVITIES AND TRAINING

Clinical Fellows	4
Inpatient Encounters	1,002
Outpatient Encounters	44,350



Row 1: J Sorger, S Chandran

Row 2: V Jain, S Parikh, P Sturm, R Cornwall, P Whitlock

Row 3: E Wall, A Crawford, J McCarthy, J Tamai, C Mehlman, K Little, J Denning, D Bylski-Austrow

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Division Highlights

A Bioinspired Approach to Large Pediatric Osteochondral Injuries

[Dr. Patrick Whitlock, MD, PhD](#), recently earned the 2017 [Angela Kuo Award](#) from the [Pediatric Orthopaedic Society of North America](#) for his groundbreaking research in cartilage repair. Traditionally, the only solution for joints with large areas of destroyed cartilage has been to replace the joint with something artificial. For young people, that's particularly troublesome, since it means multiple replacements over a lifetime, with the accompanying trauma, expense, and limitations that imposes.

His research led to a breakthrough idea for a type of artificial scaffolding that would dispense growth factors and proteins to injured cartilage, helping its regrowth. "It's a scaffold of biomaterial that can be formed into the shape of the defect," says Whitlock. "Within the material we put biologic material derived from cartilage, which releases growth factors and proteins that drive the recipient cells to form bone and cartilage to repair the defect into which it's placed." Whitlock developed the scaffold material with [Dr. James Lin, PhD](#), a bioengineer at the [University of Cincinnati](#).

Researchers are just beginning studies in an animal model, and Whitlock is optimistic about what they will find. So far, he says, the in vitro data show that the 3D scaffold holds up well, and drives cells to grow cartilage. His hope is to come away with a better solution that he and his orthopaedic colleagues can offer their young patients.

Resorbable Magnesium Nails for Internal Fixation of Upper Extremity Fractures

In June 2016, [Dr. Kevin Little, MD](#), director of the [Hand and Upper Extremity Center](#) at Cincinnati Children's, began working to develop a biomaterial solution to one of the most common problems in pediatric orthopaedic, the placement and subsequent removal of temporary hardware to stabilize fractured bones. The solution—essentially, a type of nail that wouldn't need removal. Along with his team, he

discovered that magnesium is ideal for this purpose because it is biodegradable, and it shown to aid nerve regeneration as it biodegrades. Additional studies, at other institutions, demonstrated that magnesium can promote bone healing.

In order to test the durability of the magnesium nails, his team has been placing them in porcine bone. Part of the National Science Foundation (NSF) grant, under which they work, has studied methods of growing magnesium as a single crystal, which translates to a stronger, more durable material. The work underway is truly a team effort, with staff from orthopaedics, physiology and engineering collaborating to tackle the question of whether magnesium is—or can be made to be—strong enough to use in pediatric orthopaedic surgery.

Clinical use of this technology in children is at least a decade away, says Dr. Little. However, he looks forward to seeing resorbable magnesium nails in widespread use. “They will make a phenomenal impact on our patients’ lives by limiting the amount of surgery they need, by reducing the amount of time missed from school, activities and sports—and they will lower the cost of healthcare delivery as well.”

Justifying Patellar Instability Treatment by Early Results (JUPITER)

Dr. Nehal Parikh, DO, MS, received a combined \$50,000 from the [Arthroscopy Association of North America](#) and the [Pediatric Society of North America](#) for the establishment of a hypothesis-driven, multi-center, multi-armed, prospective research cohort to study pediatric patellar instability. The incidence of patellar instability ranges from 5.8 to 77 per 100,000 population, with the highest risk in females 10 to 17 years age. Patellar instability can lead to significant morbidity, and eventually patellofemoral osteoarthritis.

The objectives of this study are to compare the safety and efficacy of: (1) non-operative treatment, and (2) operative treatment to treat patellar instability and to evaluate long-term outcomes with each treatment approach. Standardized non-operative treatment is in place across all centers. The operative treatment arms include: (Arm 1) isolated medial patellofemoral ligament (MPFL) reconstruction which is increasingly popular, and (Arm 2) ‘à la carte’ surgical approach which involves correction of underlying anatomic abnormalities.

There are currently 12 sites participating in this initiative.

Division Publications

1. Mehlman CT; Okike K; Bhandari M; Kocher MS. **Potential Financial Conflict of Interest Among Physician Editorial Board Members of Orthopaedic Surgery Journals.** *The Journal of Bone and Joint Surgery.* 2017; 99:e19.1-e19.5.
2. Donohue KW; Little KJ; Gaughan JP; Kozin SH; Norton BD; Zlotolow DA. **Comparison of Ultrasound and MRI for the Diagnosis of Glenohumeral Dysplasia in Brachial Plexus Birth Palsy.** *The Journal of Bone and Joint Surgery.* 2017; 99:123-132.
3. Wall EJ; Milewski MD; Carey JL; Shea KG; Ganley TJ; Polousky JD; Grimm NL; Eismann EA; Jr JJC; Murnaghan L. **The Reliability of Assessing Radiographic Healing of Osteochondritis Dissecans of the Knee.** *American Journal of Sports Medicine.* 2017; 45:1370-1375.
4. Schneider DK; Grawe B; Magnussen RA; Ceasar A; Parikh SN; Wall EJ; Colosimo AJ; Kaeding CC; Myer GD. **Outcomes After Isolated Medial Patellofemoral Ligament Reconstruction for the Treatment of Recurrent Lateral Patellar Dislocations A Systematic Review and Meta-analysis.** *American Journal of Sports Medicine.* 2016; 44:2993-3005.
5. Stone AV; Little KJ; Glos DL; Stringer KF; Wall EJ. **Repetitive Stresses Generate Osteochondral Lesions in Skeletally Immature Rabbits.** *American Journal of Sports Medicine.* 2016; 44:2957-2966.
6. Carey JL; Wall EJ; Grimm NL; Ganley TJ; Edmonds EW; Anderson AF; Polousky J; Murnaghan ML; Nissen CW; Weiss J. **Novel Arthroscopic Classification of Osteochondritis Dissecans of the Knee: A Multicenter Reliability Study.** *American Journal of Sports Medicine.* 2016; 44:1694-1698.
7. Seyler TM; Bracey DN; Plate JF; Lively MO; Mannava S; Smith TL; Saul JM; Poehling GG; Van Dyke ME; Whitlock PW. **The Development of a Xenograft-Derived Scaffold for Tendon and Ligament Reconstruction Using a Decellularization and**

- Oxidation Protocol.** *Arthroscopy: The Journal of Arthroscopy and Related Surgery.* 2017; 33:374-386.
8. Abzug JM; Dua K; Bauer AS; Cornwall R; Wyrick TO. **Pediatric Phalanx Fractures.** *Journal of the American Academy of Orthopaedic Surgeons.* 2016; 24:e174-e183.
 9. Cash T; Mcilvaine E; Krailo MD; Lessnick SL; Lawlor ER; Laack N; Sorger J; Marina N; Grier HE; Granowetter L. **Comparison of clinical features and outcomes in patients with extraskkeletal versus skeletal localized Ewing sarcoma: A report from the Children's Oncology Group.** *Pediatric Blood and Cancer.* 2016; 63:1771- 1779.
 10. Anadio JM; Sturm PF; Forslund JM; Agarwal S; Lane A; Tarango C; Palumbo JS. **A bleeding assessment tool correlates with intraoperative blood loss in children and adolescents undergoing major spinal surgery.** *Thrombosis Research.* 2017; 152:82-86.
 11. Mehlman CT. **Gartland Type 3 Supracondylar Humeral Fractures in Children: Which Open Reduction Approach Should Be Used After Failed Closed Reduction?.** *Journal of Orthopaedic Trauma.* 2017; 31:e23-e24.
 12. Mackel CE; Cahill PJ; Roguski M; Samdani AF; Sugrue PA; Kawakami N; Sturm PF; Pahys JM; Betz RR; El-Hawary R. **Factors associated with spinal fusion after posterior fossa decompression in pediatric patients with Chiari I malformation and scoliosis.** *Journal of neurosurgery. Pediatrics.* 2016; 25:737-743.
 13. Tan E; T. Mehlman C; Baker M. **Benign Osteolytic Lesions in Children With Previously Normal Radiographs.** *Journal of Pediatric Orthopaedics.* 2017; 37:e282-e285.
 14. El-Hawary R; Sturm P; Cahill P; Samdani A; Vitale M; Gabos P; Bodin N; d'Amato C; Harris C; Al Khudairy A. **What is the Risk of Developing Proximal Junctional Kyphosis During Growth Friendly Treatments for Early-onset Scoliosis?.** *Journal of Pediatric Orthopaedics.* 2017; 37:86-91.
 15. Samora W; Beran MC; Parikh SN. **Intercondylar Roof Inclination Angle: Is It a Risk Factor for ACL Tears or Tibial Spine Fractures?.** *Journal of Pediatric Orthopaedics.* 2016; 36:e71-e74.
 16. Glotzbecker MP; Wang K; Waters PM; McCarthy J; Flynn JM; Vitale MG; POSNA committee on the Quality, Safety, Value Initiative (QSVI). **Quality, Safety, and Value in Pediatric Orthopaedic Surgery.** *Journal of Pediatric Orthopaedics.* 2016; 36:549-557.
 17. Parikh SN; Shrivastava RK. **Evaluation of Children with Injuries Around the Knee.** *The Indian Journal of Pediatrics.* 2016; 83:844-851.
 18. Wall EJ; Ghattas PJ; Eismann EA; Myer GD; Carr P. **Outcomes and complications after all-epiphyseal anterior cruciate ligament reconstruction in skeletally immature patients.** *Orthopaedic Journal of Sports Medicine.* 2017; 5:2325967117693604-2325967117693604.
 19. Parikh SN; Jaquith BP; Brusalis CM; Redler LH; Ganley TJ; Kocher MS. **Skeletally Immature Anterior Cruciate Ligament Injuries: Controversies and Management..** *Instructional course lectures.* 2017; 66:461 -474.
 20. Godfrey J; Cornwall R. **Pediatric Metacarpal Fractures..** *Instructional course lectures.* 2017; 66:437-445.
 21. Dua K; Abzug JM; Sesko Bauer A; Cornwall R; Wyrick TO. **Pediatric Distal Radius Fractures..** *Instructional course lectures.* 2017; 66:447-460.
 22. Abzug JM; Dua K; Sesko Bauer A; Cornwall R; Wyrick TO. **Pediatric Phalanx Fractures..** *Instructional course lectures.* 2017; 66:417-427.
 23. Ting B; Sesko Bauer A; Abzug JM; Cornwall R; Wyrick TO; Bae DS. **Pediatric Scaphoid Fractures..** *Instructional course lectures.* 2017; 66:429-436.
 24. Bylski-Austrow DI; Glos DL; Bonifas AC; Carvalho MF; Coombs MC; Sturm PF. **Flexible growing rods: A biomechanical pilot study of polymer rod constructs in the stability of skeletally immature spines.** *Scoliosis and Spinal Disorders.* 2016; 11:39.

25. Pixley SK; Hopkins TM; Little KJ; Hom DB. **Evaluation of peripheral nerve regeneration through biomaterial conduits via micro-CT imaging.** *Laryngoscope Investigative Otolaryngology*. 2016; 1:185-190.

Grants, Contracts, and Industry Agreements

Annual Grant Award Dollars

Investigator	Title	Sponsor	ID	Dates	Amount
Shital Parikh, MD	Justifying Patellar Instability Treatment by Early Results (JUPITER)	Pediatric Orthopaedic Society of North America	POSNA Jupiter NOGA P	06/01/2016 - 05/31/2019	\$30,000
Eric J Wall, MD	OMeGA Medical Grants Association 2016-2017 Fellowship Grant - Pediatric Orthopaedics	OMeGA Medical Grants Association	OMeGA jbsp4318JB	08/01/2016 - 07/31/2017	\$25,000
Shital Parikh, MD	Justifying Patellar Instability Treatment by Early Results (JUPITER) AANA	Arthroscopy Assoc of North America	JUPITER-AANA- Parikh	07/01/2016 - 06/30/2017	\$25,000
Patrick Whitlock, MD, PhD	A Bioinspired Approach to Large Pediatric Osteochondral Injuries	Pediatric Orthopaedic Society of North America	POSNA_Whitlock	05/26/2017 - 05/31/2018	\$30,000
Total Annual Grant Award Dollars					\$110,000