2013 Research Annual Report  
Neurosurgery

Division Details

Division Data Summary

<table>
<thead>
<tr>
<th>RESEARCH AND TRAINING DETAILS</th>
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<tr>
<td>Number of Faculty</td>
<td>4</td>
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<tr>
<td>Number of Joint Appointment Faculty</td>
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<td>Number of Research Fellows</td>
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<td>Direct Annual Grant Support</td>
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<td>Peer Reviewed Publications</td>
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<tr>
<th>CLINICAL ACTIVITIES AND TRAINING</th>
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<td>Number of Clinical Fellows</td>
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Significant Accomplishments

**Diverse, Collaborative Clinical and Research Activities**

Pediatric Neurosurgery at Cincinnati Children’s is headed by Division Chief Francesco Mangano, DO. He focuses on the surgical treatment of intractable epilepsy in children. In collaboration with the Comprehensive Epilepsy Program, we are very active in the evaluation and treatment of afflicted patients. Our ongoing research focuses on finding new techniques to continue to improve outcomes while minimizing morbidity.

Ellen Air, MD, leads the surgical arm of our Dystonia and Surgical Movement Disorders Clinic, a unique program in collaboration with Neurology that focuses on the evaluation and advanced medical and surgical treatment of pediatric movement disorders. Air’s work also focuses on real-time, intra-operative imaging techniques to maximize surgical treatment while minimizing patient discomfort. Her research focuses on the detailed understanding of electrical brain activity and she is the principal investigator of a study that evaluates low frequency electrical activity in response to traumatic brain injury in adults and children.

Karin Bierbrauer, MD, collaborates with other institutions to further our understanding of complex injuries and diseases that affect children in unique ways. She serves as site principal investigator for a national registry of children with Chiari I malformations and syringomyelia. An active member of the Fetal Care Program, she also conducts clinical research in spina bifida and other neurologic conditions detected in utero. Bierbrauer recently presented research on the timing of the development of syringomyelia cavities in fetuses with spina bifida.

**Focus on Hydrocephalus**
Mangano and Weihong Yuan, PhD, Department of Radiology, are co-principal investigators on an NIH-funded study of advanced MR imaging techniques in hydrocephalus. Work from this multi-institutional study has been presented and published regionally, nationally and internationally.

Sudhakar Vadivelu, DO, and Timothy Vogel, MD, recently joined the division. Vadivelu’s research is in cerebrovascular neurosurgery and the effect of medications on the blood brain barrier. Vogel’s research focuses on targeting neural progenitor cells in treating congenital hydrocephalus.

Kenneth Campbell, PhD, is the Robert and Sarah McLaurin Chair of Pediatric Neurosurgery Research. His work is focuses on the molecular genetic mechanisms that control normal brain development. He and Mangano are collaborating to establish a hydrocephalus research program that spans from the lab bench to the clinic. So far, their work includes recruiting two new researchers: June Goto, PhD, and Tim Vogel, MD.

Goto studies the molecular and cellular basis of obstructive and communicating hydrocephalus using both genetic and acquired animal models. In the past year, she has generated several new genetic models of neurological disorders such as tuberous sclerosis complex and hydrocephalus and performed pre-clinical trials targeting epilepsy, developmental delay, and brain malformations in the animal models.

**Battling Brain Tumors, Studying Neural Circuits**

Collaborating with physicians in Neuro-Oncology and Radiation Oncology, Dr. Charles Stevenson, MD, leads our Division’s brain tumor program, which provides state-of-the-art surgical and medical treatment for children from around the world. The program continues to participate in new clinical trials as a member of the Pediatric Brain Tumor Consortium. Stevenson and colleagues in the Fetal Care Program also perform *in utero* repair of myelomeningocele defects, with good success rates. Cincinnati Children’s is one of the few pediatric centers in the US that performs fetal myelomeningocele repairs.

Steven Crone, PhD, joined the division as an Assistant Professor in 2012. Dr. Crone’s laboratory performs basic research studying the development and function of neural circuits that control motor behavior and how they are altered by disease or injury. Crone has received an Emerging Investigator Award from the FightSMA! and Gwendolyn Strong Foundations and a Starter Grant from the Amyotrophic Lateral Sclerosis Association. He presented his work as an invited speaker at the FightSMA! National Meeting in Washington, D.C.

**Division Publications**


Faculty, Staff, and Trainees

Faculty Members

Francesco T. Mangano, DO, Associate Professor

Leadership Director Pediatric Neurosurgery

Karin S. Bierbrauer, MD, Associate Professor

Kerry Crone, MD, Professor
Charles Stevenson, MD, Assistant Professor

Joint Appointment Faculty Members

Ellen Air, MD, PhD, Assistant Professor (Neurosurgery)
Kenneth Campbell, PhD, Professor (Developmental Biology and Neurosurgery)
Steven Crone, PhD, Assistant Professor (Neurosurgery)
June Goto, PhD, Instructor (Neurosurgery)

Clinical Staff Members

Brian Crowley, MSN, RN, CFNP
Cristina Carone, PA-C, MSPA
Kelly Clapp, MSN, RN, CPNP
Michelle Haimowitz, MSN, RN, CPNP
Candace Sturm, MSN, RN, CPNP
Mary Miller, MSN, RN, CPNP
Rodolfo Canos, MSN, RN, CPNP
Rachel Griffiths, MSN, RN, CPNP

Trainees

Kaveh Asadi-Moghaddam, MD, Fellow, 2012, Ohio State University PGY6
Mohan S., MD, Resident, 2012, Henry Ford Hospital PGY5
Paul Mazaris, MD, Resident, 2012, Henry Ford Hospital PGY5
Michael Sawvel, DO, Resident, 2013, West Virginia University PGY4
Daniel Harwell, MD, Resident, 2012, University of Cincinnati PGY3
Ryan Tackla, MD, Resident, 2012, University of Cincinnati PGY3
Jennifer Kosty, MD, Resident, 2013, University of Cincinnati, PGY1
Mohammed Alsaidi, MD, Resident, 2013, Henry Ford Hospital PGY5
Jonathan York, MD, Resident, 2013, University of Cincinnati PGY3
Christopher Carroll, MD, Resident, 2013, University of Cincinnati PGY1
Shawn Vuong, MD, Resident, 2013, University of Cincinnati PGY1
Lauren Ostling, MD, Resident, 2012, University of Cincinnati PGY4

Grants, Contracts, and Industry Agreements

Neurosurgery

Grant and Contract Awards

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<td>Park- Reeves Syringomyelia Research Consortium</td>
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<td>Washington University</td>
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<td>Degeneration of Spinal Circuitry in Mouse Models of ALS</td>
<td>The ALS Association</td>
<td>08/01/2012</td>
<td>06/30/2014</td>
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<td>A Circuit Mechanism of Degeneration in Mouse Models of SMA</td>
<td>FightSMA, Inc and Gwendolyn Strong Foundation</td>
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<td>Longitudinal DTI Study in Children Treated for Congenital Hydrocephalus</td>
<td>National Institutes of Health</td>
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