

## Division Data Summary

### Research and Training Details

Number of Faculty	5
Direct Annual Grant Support	\$343,485
Peer Reviewed Publications	8

### Clinical Activities and Training

Number of Clinical Staff	8
Number of Clinical Fellows	1

## Division Photo



Left to Right: F Mangano, K Bierbrauer, T Maugans

## Significant Publications

Mangano, Francesco et al. **mTOR positive neurons and diffuse cortical gliosis are common in children with focal cortical dysplasia type Ib.** 21st Meeting of the European Neurological Society, May 30, 2011; Lisbon, Portugal.

Maugans TA. **Intracranial migration of a fractured intrathecal catheter from a baclofen pump system: case report and analysis of possible causes.** Neurosurgery. 66(2):319-22. Feb, 2010.

Stevenson, Charles. **Youmans textbook of Neurological Surgery.** Bone Graft Options, Bone graft Substitutes, Bone harvest Techniques

## Faculty Members

**Kerry R. Crone, MD**, Professor

*Director of Clinical Affairs and Graduate Education in Pediatric Neurosurgery; Director, Pediatric Neurosurgery*  
**Research Interests**

**Karin S. Bierbrauer, MD**, Associate Professor

**Research Interests**

**Francesco T. Mangano, DO, FACOS**, Associate Professor

*Director Pediatric Epilepsy Surgery Program*

**Research Interests**

**Todd Maugans, MD**, Assistant Professor

## Research Interests

Charles Stevenson, MD, Assistant Professor

## Research Interests

## Clinical Staff Members

- Diane Baudendistel, MSN, RN, CFNP
- Brian Crowley, MSN, RN, CFNP
- Grace Deyo, MSN, RN, CPNP
- Emily Garber, MSN, RN, CPNP
- Cristina Hochwalt, PA-C, MSPA
- Lynn Olberding, MSN, RN, CPNP
- Andrea Orban, MSN, RN, CPNP
- Michelle Haimowitz, MSN, RN, CPNP

## Trainees

- Ian Mutchnik, MD, Fellow, 2010, University of Louisville, PGY7
- Chad Farley, MD, Resident, 2009, University of Cincinnati, PGY4
- Dean Hertzler, MD, Resident, 2009, University of Cincinnati, PGY6
- Benjamin Bixenman, MD, Resident, 2010, University of Cincinnati, PGY3
- Joseph Serrone, MD, Resident, 2010, University of Cincinnati, PGY4
- Vincent Dinapoli, MD, Resident, 2010, University of Cincinnati, PGY4
- Christopher Sanders-Taylor, MD, Resident, 2010, University of Cincinnati, PGY4
- Lauren Ostling, MD, Resident, 2010, University of Cincinnati, PGY3
- John DePowell, MD Resident , 2010, University Of Cincinnati PGY5

## Significant Accomplishments

### Deep Brain Stimulation

The Division of Pediatric Neurosurgery, headed by Kerry Crone, MD, will launch a program in deep brain stimulation. Ellen Air, MD, will join the staff this year to develop a program that will focus on children with complex movement disorders and pain. Cincinnati Children's will be the first major pediatric center to offer this treatment.

### Understanding Seizures, Hydrocephalus

Francesco Mangano, DO, directs the Surgical Epilepsy Program. Collaborating with the Pediatric Neurology Division, it is one of the few national centers offering a surgical option for children with treatment-resistant epilepsy. The program focuses on advanced methods to identify and subsequently resect the precise location of seizure origin in the brain. The goal is to eliminate or significantly reduce the number of seizures. For many young patients, the treatment has taken them from frequent daily seizures to seizure freedom or managing fewer episodes with minimal medication. During this past year, the program has grown and has published highly favorable outcomes.

Using diffusion tensor imaging (DTI), Mangano and colleagues continue researching how to predict outcomes for children with hydrocephalus based on pre- and post-treatment MR diffusion properties. Their work is

funded by the National Institute of Neurological Disorders and Stroke. Mangano's investigation into hydrocephalus earned the research team a National Student Research Forum Neuroscience Award and the Ohio State Neurosurgical Society Resident Award in 2010-2011. Mangano worked with a neurosurgeon from China who was a visiting professor at Cincinnati Children's. The focus was to collaborate and implement an epilepsy program in China. This year further research funding was secured through an industry grant.

### **New Craniofacial Team**

Todd Maugans, MD, directs the neurosurgical craniofacial team. He is engaged in the formation of a Craniofacial Center at Cincinnati Children's. He has presented his experiences with minimally invasive craniosynostosis techniques and the intraoperative use of medications to limit blood loss at national and international meetings, as well as in publications including the *Journal of Craniofacial Surgery*. His manuscript describing cutaneous anomalies associated with spina bifida was awarded an editor's choice distinction in the prestigious journal of *Neurosurgery*. He recently completed an investigation of pediatric sports-related concussion injury.

### **Improved Cerebral Palsy, Spina Bifida, Tumor Care**

Charles Stevenson, MD, working closely with physicians in the multidisciplinary Cerebral Palsy Program, has broadened the range of surgical treatment options for children with debilitating spasticity. Following comprehensive evaluation, children may be candidates for either intrathecal baclofen therapy or selective dorsal rhizotomy (SDR), a technique of reducing spasticity in the legs in which abnormally functioning nerve roots are identified and sectioned.

Stevenson and colleagues in the Fetal Care Program began performing *in utero* repair of myelomeningocele defects this year, following release of data from the NIH-sponsored Management of Myelomeningocele Study (MOMS) in February 2011 that demonstrated that fetal repair of spina bifida defects substantially reduces the chance that children will require placement of a shunt for hydrocephalus. Several fetal repairs have already been performed here, with highly favorable outcomes.

Utilizing a novel fluorescent compound engineered to selectively bind and label brain tumor cells, Stevenson is researching ways to make tumors "glow" in the operating room, thereby making it easier for surgeons to safely remove tumors in their entirety while sparing and protecting adjacent healthy brain matter. Such techniques, while enhancing the safety of brain tumor surgery, may potentially facilitate complete resection of tumors, leading to higher cure rates and fewer recurrences.

## **Division Publications**

1. Choutka O, Mangano FT. **Dandy -Walker Malformation** . *Youmans Neurological Surgery*. Philadelphia: Saunders; 2011.
2. Desai R, Stevenson CB, Crawford AH, Durrani AA, Mangano FT. **C-1 lateral mass screw fixation in children with atlantoaxial instability: case series and technical report**. *Journal of spinal disorders & techniques*. 2010; 23:474-9.
3. Hertzler DA, 2nd, DePowell JJ, Stevenson CB, Mangano FT. **Tethered cord syndrome: a review of the literature from embryology to adult presentation**. *Neurosurgical Focus*. 2010; 29:E1.
4. Lebow R, Yao T, Stevenson CB, Cheng JS. **Bone Graft Options, Bone Graft Substitutes, Bone Harvest Techniques**. *Youmans Neurological Surgery*. Philadelphia: Saunders; 2011.
5. Maugans TA. **Intracranial migration of a fractured intrathecal catheter from a baclofen pump system: case report and analysis of possible causes**. *Neurosurgery*. 2010; 66:319-22.

6. Patel NN, Mangano FT, Klimo P, Jr.. **Indirect revascularization techniques for treating moyamoya disease**. *Neurosurgery Clinics of North America*. 2010; 21:553-63.
7. Seo JH, Holland K, Rose D, Rozhkov L, Fujiwara H, Byars A, Arthur T, DeGrauw T, Leach JL, Gelfand MJ, Miles L, Mangano FT, Horn P, Lee KH. **Multimodality imaging in the surgical treatment of children with nonlesional epilepsy**. *Neurology*. 2011; 76:41-8.
8. Yuan W, Deren KE, McAllister JP, 2nd, Holland SK, Lindquist DM, Cancelliere A, Mason M, Shereen A, Hertzler DA, Altaye M, Mangano FT. **Diffusion tensor imaging correlates with cytopathology in a rat model of neonatal hydrocephalus**. *Cerebrospinal Fluid Research*. 2010; 7:19.

## Grants, Contracts, and Industry Agreements

Grant and Contract Awards Annual Direct / Project Period Direct

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### FRANCESCO MANGANO D.O

#### Longitudinal DTI Study in Children Treated for Congenital Hydrocephalus

National Institutes of Health

R01 NS 066932

09/30/09-06/30/13

\$343,485

**Current Year Direct**

**\$343,485**

**Total**

**\$343,485**