

Division Details

Division Data Summary

Research and Training Details

Number of Faculty	4
Number of Joint Appointment Faculty	2
Number of Research Students	2
Number of Support Personnel	2
Direct Annual Grant Support	\$162,967
Direct Annual Industry Support	\$77,000
Peer Reviewed Publications	8

Clinical Activities and Training

Number of Clinical Staff	5
Inpatient Encounters	1,800
Outpatient Encounters	5,093

Division Photo

No Photo information has been entered yet.

Significant Accomplishments

Craniofacial Anomalies Team

The craniofacial anomalies team is an interdisciplinary clinical team comprised of Genetics, Plastic Surgery, Physical Therapy, Speech Pathology, Audiology, Dentistry, Psychiatry, Neurosurgery, Otolaryngology and Nursing. Our primary goal is to improve the health outcomes for patients with craniofacial abnormalities, such as cleft lip and palate. We held our first Cincinnati Children's Craniofacial Research Symposium on January 26, 2012. This symposium brought together researchers in the Divisions of Biomedical Informatics, Developmental Biology, Human Genetics, Plastic Surgery, and clinicians in the Cincinnati Children's Craniofacial Anomalies Team.

Neonatal Skin Development

Marty Visscher, PhD, is currently studying premature infants who lack vernix caseosa, have an incompetent skin barrier and who are predisposed to infection. She studies ontogeny of stratum corneum barrier development in premature infants as a function of gestational age, over time, and compared to full term infants. To do this, Visscher uses quantitative measures of barrier integrity, hydration, pH, and collection of skin surface samples to determine lipid composition, stratum corneum structural proteins and specific cytokines. Visscher collaborates with researchers from Johns Hopkins University on a parallel study on the effect of topical massage oils on neonatal skin integrity.

Quantitative Skin Imaging and Analysis

Visscher studies multiple imaging modalities to characterize the disease/healing processes and treatment for

skin conditions including hemangiomas, pressure ulcers and burn scars. Affected sites are evaluated with high resolution color imaging, thermal imaging (static, dynamic), three dimensional surface scans (3dMD Medical Imaging System), and biomechanical properties and compared with clinical assessments. We continue to investigate causes and evaluate interventions to reduce skin compromise.

Research Projects and Collaborations

Samantha Brugmann, PhD, studies the function of primary cilia in craniofacial development. Using both avian and murine model systems, her laboratory is examining how loss of ciliary proteins affects neural crest cell development. This work is supported by an R00 from the National Institute of Dental and Craniofacial Research (NIDCR) and a Trustees grant from Cincinnati Children's.

The lab interest in cilia has also extended into a more translational direction. Working with the laboratory of Rolf Stottmann, PhD, in the Division of Human Genetics, the Brugmann lab uses next generation sequencing technology to identify genetic variants in three families with ciliopathic features here at Cincinnati Children's. The goal of this project is to identify novel, ciliary genes responsible for human disease. This work is funded by a Pilot grant from Cincinnati Children's.

Brugmann collaborates with Jim Wells, PhD, Division of Developmental Biology, on a project designed to engineer human intestinal organoids innervated with a neural crest-derived enteric nervous system. This work is funded by a U18 grant from the National Center for Advancing Translational Sciences.

Brugmann welcomed post-doctoral fellow Ching-Fang Chang to the lab in March 2012.

Christopher Gordon, MD, and visiting research scientist Armando Uribe-Rivera, in collaboration with Bruce Aronow, PhD, are investigating the role of microRNAs as master controllers of craniofacial development.

Division Publications

1. Bailey JK, Park C, Yakuboff KP. **Fourth-degree burn of the brain from friction burn of scalp: an unusual injury from a golf cart.** *J Burn Care Res.* 2011; 32:e146-8.
2. Bookman LB, Melton KR, Pan BS, Bender PL, Chini BA, Greenberg JM, Saal HM, Taylor JA, Elluru RG. **Neonates with tongue-based airway obstruction: a systematic review.** *Otolaryngol Head Neck Surg.* 2012; 146:8-18.
3. Brinkman WB, Sherman SN, Zmitrovich AR, Visscher MO, Crosby LE, Phelan KJ, Donovan EF. **In their own words: adolescent views on ADHD and their evolving role managing medication.** *Acad Pediatr.* 2012; 12:53-61.
4. Kasamatsu S, Hachiya A, Fujimura T, Sriwiriyanont P, Haketa K, Visscher MO, Kitzmiller WJ, Bello A, Kitahara T, Kobinger GP, Takema Y. **Essential role of microfibrillar-associated protein 4 in human cutaneous homeostasis and in its photoprotection.** *Sci Rep.* 2011; 1:164.
5. Lenton K, James AW, Manu A, Brugmann SA, Birker D, Nelson ER, Leucht P, Helms JA, Longaker MT. **Indian hedgehog positively regulates calvarial ossification and modulates bone morphogenetic protein signaling.** *Genesis.* 2011; 49:784-96.
6. Powder KE, Ku YC, Brugmann SA, Veile RA, Renaud NA, Helms JA, Lovett M. **A cross-species analysis of microRNAs in the developing avian face.** *PLoS One.* 2012; 7:e35111.
7. Visscher MO, Barai N, LaRuffa AA, Pickens WL, Narendran V, Hoath SB. **Epidermal barrier treatments based on vernix caseosa.** *Skin Pharmacol Physiol.* 2011; 24:322-9.
8. Visscher MO, Hoath SB. **Vernix Caseosa and its Substitutes: Lipid Composition and Physiochemical**

Faculty, Staff, and Trainees

Faculty Members

David Billmire, MD, Professor

Leadership Director, Pediatric Plastic Surgery

Samantha Brugmann, PhD, Assistant Professor

Research Interests Craniofacial Development

Christopher Gordon, MD, Associate Professor

Donna Jones, PhD, Assistant Professor

Yu Lan, PhD, Associate Professor

Brian Pan, MD, Assistant Professor

Ann Schwentker, MD, Associate Professor

Marty Visscher, PhD, Associate Professor

Leadership Director, Skin Sciences Program

Research Interests Skin Science

Kevin Yakuboff, MD, Professor

Leadership Co-Director, Hand and Upper Extremity Center

Joint Appointment Faculty Members

Rulang Jiang, PhD, Professor (Developmental Biology)

Clinical Staff Members

- **Dawn Rothchild, RN, PNP**
- **Stacey Ruth, RN, MSN, CFNP**

Trainees

- **William Abouhassan, MD, Resident,** 2004, Cleveland Clinic, PGY9
- **Haithem Elhadi, MD, Resident,** 2000, Kasturba Medical College, PGY6
- **Darlene Guse, MD, Resident,** 2010, Mayo Clinic, PGY2
- **Jason Hedrick, MD, Resident,** 2006, Loma Linda University, PGY5
- **Audrey Kesselring, MD, Resident,** 2007, University of Cincinnati, PGY5
- **Scott Rapp, MD, Resident,** 2008, Medical College of Ohio, PGY4
- **Chris Runyan, MD, Resident,** 2009, University of Cincinnati, PGY3

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct

BRUGMANN, S

The Role of Primary Cilia in Craniofacial Development

National Institutes of Health

R00 DE 019853

02/01/11-01/31/14

\$162,967

Current Year Direct \$162,967

Industry Contracts

VISSCHER

The Procter and Gamble Company \$77,000

Current Year Direct Receipts \$77,000

Total \$239,967