

# 2014 Research Annual Report

## Otolaryngology



### Division Summary

#### RESEARCH AND TRAINING DETAILS

Number of Faculty	14
Number of Joint Appointment Faculty	4
Number of Research Fellows	4
Number of Research Students	3
Number of Support Personnel	50
Direct Annual Grant Support	\$1,297,089
Peer Reviewed Publications	29

#### CLINICAL ACTIVITIES AND TRAINING

Number of Clinical Fellows	5
Number of Other Students	3
Inpatient Encounters	923
Outpatient Encounters	45,120

### Division Photo



Row 1: C Hart, R Cotton, C Myer III, C Myer IV  
Row 2: J Greinwald, R Elluru, M Rutter, D Choo, P Willging

## Significant Accomplishments

### Cotton Receives 2014 Jacobson Innovation Award

**Robin Cotton, MD, FACS**, was awarded the American College of Surgeons (ACS) 2014 Jacobson Innovation Award for his life's work in the care and reconstruction of the pediatric stenotic airway. The prestigious award honors living surgeons who have developed a new technique in any field of surgery. ACS president Carlos Pellegrini said that, "Dr. Cotton embodies the meaning and spirit of this award. Until he developed his innovative approach to reconstruction of the stenotic airway, children were condemned to a lifetime of breathing through a tracheostomy."

## Research Highlights

### Saima Riazuddin

Under the mentorship of Dr. Riazuddin, Post Doc Gowri Sarangdhar successfully completed for her first extramurally funded research grant from the Hearing Health Foundation. The long-term goal of her project is to understand how tight junctions are involved in the biological processes of the inner ear.

### Daniel Choo, MD-I2S2: Standardization of Perioperative PE Tube Management

Dr. Choo completed his I2S2 project in January 2014. The goal of this project was to decrease the rate of early postoperative PE Tube complications by standardizing the use of appropriate perioperative ear drops. Prior to the implementation of this project, a little over 40% of PET Cases used appropriate antibiotics drops. In the weeks following the test of change ramp, compliance jumped to 91%.

### J. Paul Willging-I2S2: Documentation Supporting Consultation Charges-Letter Generation

Dr. J. Paul Willging completed his I2S2 project in January 2014. The goal of this project was to increase billing

compliance performance by increasing the percentage of letters dictated on consult level patient encounters in Otolaryngology clinics for three key physicians from 93 to 97%. Compliance after implementation jumped to 100%.

Charles M. Myer IV-Midwest Airway Course.

The second Annual Midwest Airway Course was held at Cincinnati Children's to provide education in both endoscopic airway techniques and open airway surgery. Over 30 trainees from 10 programs completed the two day course, combining surgical simulation, animal models and traditional didactics. Attendees reported improved confidence in technical skills on post-participation surveys. The third Annual Midwest Airway Course will be held October 2014 at Cincinnati Children's.

## Significant Publications

Ahmed ZM, Frolenkov GI, **Riazuddin S. Usher proteins in inner ear structure and function.** *Physiol Genomics*. 2013 1;45(21):987-9.

Feng L, Ward JA, Li SK, Tolia G, Hao J, **Choo DI. Assessment of PLGA-PEG-PLGA copolymer hydrogel for sustained drug delivery in the ear.** *Curr Drug Deliv*. 2014;11(2):279-86.

Provenzano MJ, **Rutter MJ**, von Allmen D, Manning PB, Paul Boesch R, Putnam PE, Black AP, **deAlarcon A. Slide tracheoploasty for the treatment of tracheoesophageal fistula.** *J Pediatr Surg*. 2014 49(6):910-4.

Ward JA, Sidell DR, Nassar M, Reece AL, **Choo DI. Safety of cidofovir by intratympanic delivery technique.** *Antivir Ther*. 2014;19(1):97-105.

These publications are significant because they are published in journals outside the mainstream of Otolaryngology academia.

## Division Publications

1. Ahmed ZM, Frolenkov GI, Riazuddin S. **Usher proteins in inner ear structure and function.** *Physiol Genomics*. 2013; 45:987-9.
2. Black AP, Shott SR. **Is adenoidectomy alone sufficient for the treatment of airway obstruction in children?** *Laryngoscope*. 2014; 124:6-7.
3. Chun R, Preciado D, Brown DJ, Elluru R, Ishman SL, Kerschner J, Richter GT, Sulman C. **Choosing a fellow or fellowship: a survey of pediatric otolaryngologists.** *JAMA Otolaryngol Head Neck Surg*. 2014; 140:102-5.
4. Elluru RG, Contreras JM, Albert DM. **Management of manifestations of epidermolysis bullosa.** *Curr Opin Otolaryngol Head Neck Surg*. 2013; 21:588-93.
5. Feng L, Ward JA, Li SK, Tolia G, Hao J, Choo DI. **Assessment of PLGA-PEG-PLGA copolymer hydrogel for sustained drug delivery in the ear.** *Curr Drug Deliv*. 2014; 11:279-86.
6. Harmon J, Balakrishnan K, de Alarcon A, Hart CK. **The nasogastric tube syndrome in infants.** *Int J Pediatr Otorhinolaryngol*. 2014; 78:882-4.
7. Ishman SL, Ishii LE, Gourin CG. **Temporal trends in sleep apnea surgery: 1993-2010.** *Laryngoscope*. 2014; 124:1251-8.
8. Jaworek TJ, Richard EM, Ivanova AA, Giese AP, Choo DI, Khan SN, Riazuddin S, Kahn RA. **An alteration in ELMOD3, an Arl2 GTPase-activating protein, is associated with hearing impairment in humans.** *PLoS Genet*. 2013; 9:e1003774.

9. Kline AD, Calof AL, Schaaf CA, Krantz ID, Jyonouchi S, Yokomori K, Gauze M, Carrico CS, Woodman J, Gerton JL, Vega H, Levin AV, Shirahige K, Champion M, Goodban MT, O'Connor JT, Pipan M, Horsfield J, Deardorff MA, Ishman SL, Dorsett D. **Cornelia de Lange syndrome: Further delineation of phenotype, cohesin biology and educational focus, 5th Biennial Scientific and Educational Symposium abstracts.** *Am J Med Genet A*. 2014; 164:1384-93.
10. Lam DJ, Tabangin ME, Shikary TA, Uribe-Rivera A, Meinzen-Derr JK, de Alarcon A, Billmire DA, Gordon CB. **Outcomes of mandibular distraction osteogenesis in the treatment of severe micrognathia.** *JAMA Otolaryngol Head Neck Surg*. 2014; 140:338-45.
11. Liang J, Higgins T, Ishman SL, Boss EF, Benke JR, Lin SY. **Medical management of chronic rhinosinusitis in cystic fibrosis: a systematic review.** *Laryngoscope*. 2014; 124:1308-13.
12. Meinzen-Derr J, Wiley S, Bishop S, Manning-Courtney P, Choo DI, Murray D. **Autism spectrum disorders in 24 children who are deaf or hard of hearing.** *Int J Pediatr Otorhinolaryngol*. 2014; 78:112-8.
13. Miller CK, Kelchner LN, de Alarcon A, Willging JP. **Compensatory laryngeal function and airway protection in children following airway reconstruction.** *Ann Otol Rhinol Laryngol*. 2014; 123:305-13.
14. Nayak G, Lee SI, Yousaf R, Edelmann SE, Trincot C, Van Itallie CM, Sinha GP, Rafeeq M, Jones SM, Belyantseva IA, Anderson JM, Forge A, Frolenkov GI, Riazuddin S. **Tricellulin deficiency affects tight junction architecture and cochlear hair cells.** *J Clin Invest*. 2013; 123:4036-49.
15. Nieman CL, Benke JR, Ishman SL, Smith DF, Boss EF. **Whose experience is measured? A pilot study of patient satisfaction demographics in pediatric otolaryngology.** *Laryngoscope*. 2014; 124:290-4.
16. Osborn AJ, de Alarcon A, Hart CK, Cotton RT, Rutter MJ. **Tracheocutaneous fistula closure in the pediatric population: should secondary closure be the standard of care?** *Otolaryngol Head Neck Surg*. 2013; 149:766-71.
17. Provenzano MJ, Choo DI. **Is ventilation tube placement beneficial during tympanoplasty for atelectatic tympanic membranes?** *Laryngoscope*. 2014; 124:818-9.
18. Provenzano MJ, Rutter MJ, von Allmen D, Manning PB, Paul Boesch R, Putnam PE, Black AP, de Alarcon A. **Slide tracheoplasty for the treatment of tracheoesophageal fistulas.** *J Pediatr Surg*. 2014; 49:910-4.
19. Prows CA, Zhang X, Huth MM, Zhang K, Saldana SN, Daraiseh NM, Esslinger HR, Freeman E, Greinwald JH, Martin LJ, Sadhasivam S. **Codeine-related adverse drug reactions in children following tonsillectomy: a prospective study.** *Laryngoscope*. 2014; 124:1242-50.
20. Rehman AU, Santos-Cortez RL, Morell RJ, Drummond MC, Ito T, Lee K, Khan AA, Basra MA, Wasif N, Ayub M, Ali RA, Raza SI, Nickerson DA, Shendure J, Bamshad M, Riazuddin S, Billington N, Khan SN, Friedman PL, Griffith AJ, Ahmad W, Leal SM, Friedman TB. **Mutations in TBC1D24, a gene associated with epilepsy, also cause nonsyndromic deafness DFNB86.** *Am J Hum Genet*. 2014; 94:144-52.
21. Santos-Cortez RL, Lee K, Giese AP, Ansar M, Amin-Ud-Din M, Rehn K, Wang X, Aziz A, Chiu I, Hussain Ali R, Smith JD, University of Washington Center for Mendelian G, Shendure J, Bamshad M, Nickerson DA, Ahmed ZM, Ahmad W, Riazuddin S, Leal SM. **Adenylate cyclase 1 (ADCY1) mutations cause recessive hearing impairment in humans and defects in hair cell function and hearing in zebrafish.** *Hum Mol Genet*. 2014; 23:3289-98.
22. Sedaghat AR, Cunningham MJ, Ishman SL. **Regional and socioeconomic disparities in emergency department use of radiographic imaging for acute pediatric sinusitis.** *Am J Rhinol Allergy*. 2014; 28:23-8.
23. Sidell D, Hunter LL, Lin L, Arjmand E. **Risk Factors for Preoperative and Postoperative Hearing Loss in Children Undergoing Pressure Equalization Tube Placement.** *Otolaryngol Head Neck Surg*. 2014; 150:1048-1055.
24. Sidell DR, Balakrishnan K, Hart CK, Willging JP, Knecht SK, de Alarcon A. **Pediatric Exercise Stress**

- Laryngoscopy following Laryngotracheoplasty: A Comparative Review.** *Otolaryngol Head Neck Surg.* 2014; 150:1056-1061.
25. Sidell DR, Myer CM, 3rd. **Comment regarding article "an adolescent found unconscious".** *Clin Pediatr (Phila).* 2014; 53:507.
26. Sidell DR, Nassar M, Cotton RT, Zeitels SM, de Alarcon A. **High-dose sublesional bevacizumab (avastin) for pediatric recurrent respiratory papillomatosis.** *Ann Otol Rhinol Laryngol.* 2014; 123:214-21.
27. Subramanyam R, Chidambaram V, Ding L, Myer CM, 3rd, Sadhasivam S. **Anesthesia- and opioids-related malpractice claims following tonsillectomy in USA: LexisNexis claims database 1984-2012.** *Paediatr Anaesth.* 2014; 24:412-20.
28. Tanphaichitr A, Tanphaichitr P, Apiwattanasawee P, Brockbank J, Rutter MJ, Simakajornboon N. **Prevalence and risk factors for central sleep apnea in infants with laryngomalacia.** *Otolaryngol Head Neck Surg.* 2014; 150:677-83.
29. Ward JA, Sidell DR, Nassar M, Reece AL, Choo DI. **Safety of cidofovir by intratympanic delivery technique.** *Antivir Ther.* 2013; 19:97-105.

## Faculty, Staff, and Trainees

### Faculty Members

**Daniel I. Choo, MD**, Professor

**Leadership** Director, Department of Pediatric Otolaryngology

**Robin T. Cotton, MD**, Professor

**Leadership** Director, Aerodigestive and Sleep Center

**Ellis M. Arjmand, MD, PhD**, Associate Professor

**Leadership** Director, Ear and Hearing Center

**Alessandro deAlarcon, MD**, Associate Professor

**Leadership** Director, Voice Clinic

**Ravindhra G. Elluru, MD, PhD**, Associate Professor

**John. H. Greinwald Jr., MD**, Professor

**Catherine Hart, MD**, Assistant Professor

**Kaalan Johnson, MD**, Assistant Professor

**Leadership** Director, Otolaryngology Simulation Program

**Charles M. Myer III, MD**, Professor

**Leadership** Director, Pediatric Otolaryngology Residency Program

**Charles M. Myer IV, MD**, Assistant Professor

**Saima Riazuddin, PhD**, Assistant Professor

**Leadership** Director, Laboratory of Molecular Genetics

**Michael J. Rutter, MD**, Professor

**Sally R. Shott, MD**, Professor

**J. Paul Willging, MD**, Professor

**Leadership** Director, Pediatric Otolaryngology Fellowship Program

## Joint Appointment Faculty Members

**Zubair Ahmed, PhD**, Assistant Professor (Ophthalmology)

**Research Interests** Genetics

**Dimitar Deliyski, PhD**, Associate Professor (Communication Science Research Center)

**Research Interests** Communication Disorders

**Scott Holland, PhD**, Professor (Neuroimaging Research Consortium)

**Research Interests** Neuroimaging

**Jareen Meinzen-Derr, MPH, PhD**, Assistant Professor (Biostatistics & Epidemiology)

**Research Interests** Epidemiology

## Clinical Staff Members

- **Michael Bowen, PA-C, RN, MA**,  
*Adult Airway*

## Trainees

- **Karthik Balakrishnan, MD, MPH**, PGYVII, University of Washington at Seattle
- **April Landry, MD**, PGYVI, Mayo Clinic Arizona
- **Drew Prosser, MD**, PGYVI, Georgia Regents in Augusta
- **Douglas Sidell, MD**, PGYVII, UCLA
- **Christina Yang, MD**, PGYI, Tulane University School of Medicine

## Division Collaboration

### **Aerodigestive and Esophageal Center (ADEC)**

Interdisciplinary care team that coordinates the evaluation, care and treatment of children with complex conditions involving the airway and digestive systems.

(Robin T. Cotton, MD, FACS, FRCS; Michael J. Rutter, MD; Catherine K. Hart, MD; Alessandro de Alarcon, MD, MPH; Charles Monroe Myer III, MD; J. Paul Willging, MD)

**Feeding Team** » Nancy Doan Leslie, MD and Wendy R. Kochevar, BSN, APRN, PNP

**Gastroenterology, Hepatology, and Nutrition** » Mitchell B. Cohen, MD, Ajay Kaul, MD, Scott P. Pentiuk, MD, and Philip E. Putnam, MD

**Nursing** » Cheryl S. Brumbaugh, MSN, APRN, CNP, Candace J. Hochstrasser, MSN, APRN, FNP, Claudia L. Pratt, MSN, APRN, CNP, and Marilyn Stoops, MSN, APRN, CPNP

**Pediatric General and Thoracic Surgery** » Maria H. Alonso-Peclet, MD, Richard G. Azizkhan, MD, Victor F. Garcia, MD, FACS, FAAP, Thomas H. Inge, MD, PhD, FACS, FAAP, Frederick C. Ryckman, MD, and Greg M. Tiao, MD

**Pulmonary Medicine** » Raouf S. Amin, MD, Barbara Chini, MD, Gary Lewis McPhail, MD, Hermant Sawnani, Michael Seid, PhD, and Robert E. Wood, PhD, MD

### **Upper Airway Center (UAC)**

The Upper Airway center provides evaluation, care and treatment of children with obstructive sleep apnea. This multidisciplinary team develops care plans for referred patients during weekly chart conferences.

(Sally R. Shott, MD; Stacey L. Ishman, MD, MPH)

**Developmental Pediatrics** » Sonya G. Oppenheimer, MD

**Human Genetics** » Howard M. Saal, MD, FACMG

**Plastic Surgery** » David A. Billmire, MD, FACS, FAAP, Christopher B. Gordon, MD, and Brian S. Pan, MD

**Pulmonary Medicine** » Raouf S. Amin, MD and Barbara Chini, MD

**Sleep Medicine** » Narong Simakajornboon, MD

### Communication Sciences Research Center (CSRC)

Collaborative Research group that investigates communication issues involving speech, hearing, language, voice quality, neurological and social disorders.

(Dimitar Deliyski, PhD; Alessandro de Alarcon, MD, MPH; Daniel I. Choo, MD)

**Audiology** » Lisa L. Hunter, PhD, FAAA

**Biostatistics and Epidemiology** » Jareen K. Meinzen-Derr, PhD

**Developmental and Behavioral Pediatrics** » Susan E. Wiley, MD

**Gastroenterology, Hepatology, and Nutrition** » James E. Heubi, MD

**Section of Neonatology, Perinatal and Pulmonary Biology** » James M. Greenberg, MD, Scott L. Wexelblatt, MD, and Suhas G. Kallapur, MD

**Physical Medicine and Rehabilitation** » Shari Wade, PhD

**Pediatric Neuroimaging Research Consortium** » Scott K. Holland, PhD

**Speech Pathology** » Erin Redle, PhD

## Grants, Contracts, and Industry Agreements

Grant and Contract Awards	Annual Direct
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### NAYAK, G

#### Signaling Defects Due to Tricellulin Deficiency

Hearing Health Foundation

07/01/13-06/30/14

\$22,727

### RIAZUDDIN, S

#### Functional Analyses of Tricellular Tight Junctions in Hearing and Deafness

National Institutes of Health

R01 DC 011748

07/01/11-06/30/16

\$237,500

#### Identifying Genes for Non-Syndromic Recessive Deafness - A Collaborative Study

National Institutes of Health

R01 DC 011803

04/15/12-03/31/17

\$212,500

#### The Regulation and Cellular Activities of the Arl2 GTPase

National Institutes of Health(Emory University School of Public Health)

R01 GM 090158

08/01/12-07/31/14

\$43,425

#### Understanding Suppression of Deafness Due to a Dominant Modifier Gene

Royal National Institute for Deaf People

12/01/11-11/30/14

\$78,804

### SHOTT S / AMIN R / FLECK R / GUTMARK I (MPI)

#### Dynamic Computational Modeling of Obstructive Sleep Apnea in Down Syndrome

National Institutes of Health

R01 HL 105206

09/17/10-08/31/15

\$702,133



		Current Year Direct	\$1,297,089
		Total	\$1,297,089