

Department of Otolaryngology and Communication Sciences
MEDICAL COLLEGE OF WISCONSIN
Faculty Research Projects/Interests

December 2023

Joel H. Blumin, MD

- Neurolaryngology including:
 - Spasmodic dysphonia
 - Parkinson's hypophonia
 - Laryngeal paresis, paralysis, and sensory dysfunction
- Extraesophageal reflux including weak-acid and non-acid reflux
- Laryngeal biomechanics
- Upper airway stenosis

Jonathan M. Bock, MD, FACS

- Subglottic stenosis
 - Pepsin biomarker utility in disease evolution/progression (w/ Nikki Johnston, PhD)
 - Computational fluid dynamics airway modeling of stenosis patterns (w/ Guilherme Garcia, PhD)
 - Multi-institutional NIH-funded study participant in rare diseases initiative data finding project for patients with subglottic stenosis
- Superior laryngeal nerve testing/function
 - Chronic cough treatment algorithms
 - Medical treatments for neurogenic chronic cough
- Dysphagia evaluation and treatment
 - Open IRB for prospective multi-institutional study on cervical dysphagia surgical outcomes
 - CP myotomy and Zenker's management protocols
 - Aspiration outcomes research
- Laryngopharyngeal reflux treatment:
 - Dual pH with multichannel intraluminal impedance reflux testing
 - Pepsin biomarker utility in reflux diagnosis

Jennifer D. Bruening, MD

- Transoral robotic surgery outcomes
- Microvascular reconstruction
- Delays to adjuvant radiation in head and neck cancer
- Improving post-treatment xerostomia in head and neck cancer patients

Robert H. Chun, MD

- Assessing otolaryngology surgical competency: Use of surgical videos in resident education
 - Tonsillectomy, bronchoscopy
- Vascular Anomalies: Associated co-morbidities in adults with vascular malformation
- Pepsin in the pediatric upper airway: Laryngomalacia, Subglottic Stenosis
- Faculty development: providing feedback, effective teaching
- The value of laryngotracheal reconstruction surgery

Karl W. Doerfer, MD

- Impact of state-level policy changes and social determinants of health on pediatric cochlear implant recipients
- Intraoperative electrocochleography for monitoring of electrode placement during cochlear implantation
- Pre-operative vestibular therapy for patients undergoing vestibular schwannoma surgery
- Cochlear implantation in vestibular schwannoma patients
- Efficacy of Birth-to-Three services for children with hearing loss
- Sound awareness in adolescent, long-term cochlear implant users
- Prescribing habits of vestibular suppressants in patients experiencing falls
- Impact of cochlear implantation on cognitive function in adult cochlear implant recipients
- Communicating hydrocephalus in patients with vestibular schwannoma
- Unmasked intracranial hypertension following repair of skull base encephalocele and cerebrospinal fluid leak

Valerie A. Flanary, MD

- Hearing loss progression in Down syndrome patients
- Effectiveness of Echinacea in treating otitis media
- Outcomes in pediatric otolaryngology
- Obstructive sleep apnea in the pediatric patient

David R. Friedland, MD, PhD

- Clinical Outcomes in Otolaryngology: OTO Clinomics
- Vestibular disorders
- Cardiovascular risk factors and hearing loss

Michael Gorelik, MD

- Outcomes of hypoglossal nerve stimulation in the pediatric Trisomy 21 population
- Application of base of tongue suspension in refractory obstructive sleep apnea
- Surgical management of refractory sleep apnea
- Indication and outcomes for pediatric inferior turbinate reduction
- Prevention of infant subglottic stenosis
- Resident surgical training for endoscopic ear surgery
- Outcomes for pediatric thyroid surgery

Michael S. Harris, MD

- Neurocognitive factors affecting cochlear implant performance among adult cochlear implant users
- Improving speech perception among adults with cochlear implants
- Environmental sound awareness among cochlear implant users
- Electrocochleography during cochlear implant surgery as an indication of intracochlear trauma
- Use of electrocochleography during cochlear implant surgery to characterize site of dysfunction associated with sudden sensorineural hearing loss
- Improving hearing and facial nerve outcomes associated with resection of vestibular schwannomas

Steven A. Harvey, MD

- Intraoperative audiometry results in stapedectomy

Wenzhou Hong, PhD

- Bacterial pathogenesis of otitis media and upper airway infection
- Host-pathogen interactions
- Microbial interference in polymicrobial infection
- Recombinant vaccine and immunization studies

Nikki Johnston, PhD

- Development of new therapeutics for airway reflux (pepsin inhibitors/receptor antagonists)
- Use of pepsin as a biomarker for extra-esophageal reflux
- Uptake of pepsin by laryngeal epithelial cells and its role in reflux - attributed laryngeal injury and disease
- Role of reflux, specifically pepsin, in laryngopharyngeal cancers
- Role of pepsin in Barrett's esophagus and its progression to esophageal adenocarcinoma
- Development and characterization of new human middle ear cell lines as tools for the Otitis Media research community
- Role of H/K ATPase in laryngeal and esophageal epithelium

Joseph E. Kerschner, MD

- Cell and molecular biology of otitis media
 - Cytokine and mucin gene expression
 - Biofilm formation
 - Population genetic diversity
- Clinical outcomes and quality of life in otitis media intervention
- Diagnostics and therapeutics in otitis media
 - Optical coherence tomography-assisted OM diagnosis
 - Trans-tympanic membrane delivery of OM therapeutics

Todd A. Loehrl, MD

- The role of dysautonomia in airway inflammation
- Extraesophageal manifestations of gastroesophageal reflux disease
- Gene expression and microbiome of the paranasal sinuses in rhinosinusitis

Timothy J. Martin, MD

- Timing of post-tonsil hemorrhage

Becky L. Massey, MD

- Outcomes analysis minimally invasive surgery for head and neck cancer
- Microvascular reconstruction

Michael E. McCormick, MD

- Comparing sedation regimens after pediatric airway reconstruction
- Improvements in patient safety and quality in otolaryngology
- Pediatric otolaryngology workforce analysis
- Outcomes of tonsillectomy in young children
- Outcomes of tonsillectomy in children with tracheostomy
- Resource utilization in the management of pediatric neck infections
- Role of reflux in chronic rhinosinusitis in children
- Ch of reflux in laryngomalacia in infants
- Sleep disorders in the pediatric cleft palate population
- Voice disorders in the pediatric cleft palate population
- Nasal airway modeling in children with cleft lip and palate
- Pediatric tracheostomy and airway outcomes
- Role of sleep studies in decannulation planning for pediatric tracheostomy patients
- National trends in the management of subglottic stenosis in children

Lauren M. North, MD

- Managing Obstructive Sleep Apnea (OSA) in the peri-operative period for skull base patients
 - Using STOP-BANG score as a risk tool for post-op respiratory complications in skull base patients
 - Timing of post-operative CPAP use in skull base patients
- Clinical trials for novel medications for CRSwNP

Sachin S. Pawar, MD

- Medical informatics in facial plastic surgery and otolaryngology
- Clinical facial plastic and reconstructive surgery studies
- Electronic health record utilization and optimization
- Generative AI and data analytics in clinical informatics

David M. Poetker, MD, MA

- Safety profile and systemic effects of corticosteroids

Ryan V. Puccia, MD

- Use of regenerative techniques in wound healing/ facial plastic and reconstructive surgery.
- Outcomes research in facial plastic surgery

John S. Rhee, MD, MPH

- Impact of virtual surgery on surgeon decision-making
- Evidence-based medicine and outcomes research systematic reviews
- Computer modeling of surgical outcomes for nasal airway obstruction

Thomas C. Robey, MD

- Pediatric vocal cord paralysis
- Pediatric vocal cord dysfunction
- Pediatric sinusitis in cystic fibrosis patients

Christina Runge, PhD

- Outcomes of hearing loss intervention programs
- Genetics of hearing loss
- Programming parameters in cochlear implant patients
- Personal sound amplification

Sophie G. Shay, MD

- Social determinants of health in pediatric otolaryngology
- Antibiotic use in and microbiome of pediatric sinusitis
- Laryngomalacia
- Opioid use and pain control in tonsillectomy
- Medical education in otolaryngology
- Simulation in otolaryngology education

Cecille G. Sulman, MD

- Difficult airway management in the pediatric population
- Treatment of sleep apnea after adenotonsillectomy
- Reducing readmissions after tonsillectomy
- Social determinants of health
- Leveraging the EHR to improve patient outcomes and reduce provider burnout
- Difficult airway management in the pediatric population

B. Tucker Woodson, MD

- Effects of the Inspire Implantable Nerve Stimulation System on obstructive sleep apnea
- Can breathing frequency measurements be used to determine partial and complete vocal cord occlusion?
- Sleep-related diseases and autonomic dysfunction
- Association of gastroesophageal reflux and sleep symptoms
- Nasal airway obstruction and sleep disorders
- Physiologic and structural phenotyping of OSA
- Computer modeling of the upper airway

Joseph Zenga, MD

- Immunology of radiotherapy for head and neck cancer
- Single-cell RNA and T cell receptor sequencing
- Tumor-specific T cell and neo-antigen discovery
- Murine modeling of oral cancer and in vivo imaging
- Phase I clinical trials