

**The Faculty of Medicine of Harvard University  
Curriculum Vitae**

**Date Prepared:** 11/25/2025  
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**Place of Birth:** Thunder Bay, Canada

**Education:**

2003	BSc (honors)	Physics	Lakehead University, Canada
2007	MD (honors)	Medicine	University of Toronto, Canada
2013	MSc	Otolaryngology – Head & Neck Surgery	McGill University, Canada
2021	PhD	Biomedical Engineering	McGill University, Canada

**Postdoctoral Training:**

07/07-06/12	Resident	Otolaryngology – Head & Neck Surgery	McGill University, Canada
08/12-06/14	Clinical Fellow	Head & Neck Oncologic and Reconstructive Surgery	Universitätsklinikum Hamburg-Eppendorf, Germany
08/12-06/14	Research Fellow	Ultrafast laser ablation of tissue	Universitätsklinikum Hamburg-Eppendorf / Max Planck Institute for the Structure and Dynamics of Matter, Germany
08/12-06/14	Mentored Research	Clinician Investigator Program	Royal College of Surgeons of Canada
07/14-06/16	Clinical Fellow	Facial Plastic and Reconstructive Surgery	Harvard Medical School / Massachusetts Eye and Ear

**Faculty Academic Appointments:**

07/16-05/17	Instructor	Otolaryngology – Head & Neck Surgery	Harvard Medical School
05/17-11/23	Assistant Professor	Otolaryngology – Head & Neck Surgery	Harvard Medical School
04/24-	Assistant Professor, Part-Time	Otolaryngology – Head & Neck Surgery	Harvard Medical School

**Appointments at Hospitals/Affiliated Institutions:**

10/15-11/23	Investigator	Otolaryngology – Head & Neck Surgery	Mass Eye and Ear, Boston, MA
07/16-06/18	Assistant Surgeon	Otolaryngology – Head & Neck Surgery	Mass Eye and Ear, Boston, MA
07/16-11/23	Clinical Associate	Otolaryngology – Head & Neck Surgery	Mass General Hospital, Boston, MA
07/18-06/22	Associate Surgeon	Otolaryngology – Head & Neck Surgery	Mass Eye and Ear, Boston, MA
06/22-11/23	Surgeon	Otolaryngology – Head & Neck Surgery	Mass Eye and Ear, Boston, MA
11/23-04/25	Active staff	Department of Surgery	Mount Auburn Hospital, Cambridge, MA
05/24-04/25	Active staff	Department of Surgery	Winchester Hospital, Winchester, MA
04/25	Active staff	Department of Surgery	Dignity Health St. Joseph's, Phoenix, AZ
10/25	Active staff	Department of Surgery	HonorHealth Osborne and Shea, Scottsdale, AZ

**Major Administrative Leadership Positions:****Local**

2007-2008	Chief Resident	McGill University Department of Otolaryngology – Head & Neck Surgery
2013-2014	Project Leader	European Research Council (ERC) Advanced Grant – SUREPIRL Project, University of Hamburg and Max Planck Institute for the Structure and Dynamics of Matter, Hamburg Germany (PI: RJ Dwayne Miller)
2018-2023	Director	Surgical Photonics & Engineering Laboratory, Massachusetts Eye & Ear and Harvard Medical School
2020-2023	Academic Teaching Coordinator	Division of Facial Plastic & Reconstructive Surgery, Massachusetts Eye & Ear and Harvard Medical School

**Committee Service:****Local**

2004-2007	Surgical Education Directorate Committee, Faculty of Medicine MD Program	University of Toronto
2005	Admissions Committee - Faculty of Medicine MD Program	University of Toronto
2006	Award Committee - Faculty of Medicine Summer Student Scholarship Program	University of Toronto
2010-2012	Admissions Committee – Otolaryngology - Head & Neck Surgery Residency Program	McGill University
2012	Fundraising Committee - Head & Neck Cancer Fund	McGill University
2016-2023	Laser Safety Committee	Massachusetts Eye and Ear
2020-2023	Resident Curriculum Committee	Otolaryngology – Head & Neck Surgery – MEE
2022-2023	Otolaryngology Technology and Innovation Collaborative	Otolaryngology – Head & Neck Surgery – MEE

**National and International**

2019	External examiner – Otolaryngology Head and Neck Surgery Oral Board Examination	King Saud University, Riyadh, Saudi Arabia
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**Professional Societies:**

2003-2014	Canadian Medical Association	Member-at-large
2007-2014	Association d’Oto-rhino-laryngologie du Québec	In-training member
2007-2014	Canadian Society of Otolaryngology - Head & Neck Surgery	In-training member
2009-	American Academy of Otolaryngology- Head & Neck Surgery	Member
2012-	Royal College of Surgeons of Canada	Fellow
2014-	American Academy of Facial Plastic and Reconstructive Surgery	Member
2016-	Sir Charles Bell Society	Member
2016-	American Society for Peripheral Nerve (ASPN) Scientific Program Committee	Active Member 2020-2025
2024-	American Society for Reconstructive Microsurgery (ASRM)	Member

**Grant Review Activities:**

2022	U.S. National Institute of Standards and Technology	U.S.-Israel Binational Industrial R&D (BIRD) Foundation
2017	Detweiler Travelling Fellowship	Royal College of Physicians and Surgeons of Canada

**Editorial Activities:****Ad hoc Reviewer**

British Journal of Ophthalmology  
 Scientific Reports  
 Laryngoscope  
 Otology & Neurotology  
 Journal of Reconstructive Microsurgery  
 Annals of Plastic Surgery  
 Facial Plastic Surgery & Aesthetic Medicine  
 Journal of NeuroEngineering and Rehabilitation  
 PLOS ONE  
 iScience  
 Neurosurgery Review  
 Diagnostic Microbiology and Infectious Disease  
 IEEE Transactions on Computational Social Systems  
 Acta Oto-Laryngologica  
 British Medical Journal (BMJ) Case Reports  
 British Medical Journal – Point of Care/Best Practice  
 Journal of Biomedical Materials Research: Part B – Applied Biomaterials  
 Journal of Neurological Surgery Reports  
 Journal of Oculoplastic and Reconstructive Surgery  
 Laryngoscope Investigative Otolaryngology  
 Health Science Reports

### Other Editorial Roles

2018 Co-Editor of special volume “Facial palsy: Diagnostic and Therapeutic Management” Otolaryngologic Clinics of North America

### Honors and Prizes (selected):

2000 – 2003	Presidential Scholarship	Lakehead University, Thunder Bay, Canada	Academics, athletics, and community involvement
2003	Vice-Chancellor’s Medal	Lakehead University, Thunder Bay, Canada	Highest graduating average
2005 – 2007	Dr. F.J. Colling, O.B.E., Memorial Scholarship	University of Toronto Faculty of Medicine	Academics
2010	Frederick Banting and Charles Best MSc Award	Canadian Institutes of Health Research (CIHR)	Research
2012	Frank Litvack Fellowship for Clinician Scientists	McGill University Faculty of Medicine	Research
2013	German Academic Exchange Service (DAAD) Post-Doctoral Research Grant	DAAD North America (New York)	Research
2014	Detweiler Travelling Fellowship	Royal College of Physicians and Surgeons of Canada	Surgery
2020	Nomination for Excellence in Mentoring Award	Harvard Medical School	Research mentorship
2021	2021 John F. and Evangeline M. Davis Award	McGill University Department of Biomedical Engineering	Research
2022	Nomination for Excellence in Mentoring Award	Harvard Medical School	Research mentorship

### Report of Funded and Unfunded Projects

#### Funding Information:

##### Past

2005 *Self-assessment of Technical Surgical Ability by Medical Student and its Impact on Training*

University of Toronto Faculty of Medicine Dean’s Excellence Fund for Innovation in Medical Education

Co-Investigator (PI: Dubrowski A) (Total direct \$28,620, Jowett direct \$5,000)

This project seeks to determine the ability of medical trainees to accurately assess their learning of surgical skills

2010-2014 *Ultrafast laser ablation of tissue*

Canadian Institute for Photonic Innovations (CIPI) Technology Exploitation and Networking Program Collaboration Grant

Co-Investigator (PI: Wiseman P) (Total direct \$50,915, Jowett direct \$25,000)

This project seeks to compare osseous and soft tissue healing in a live rodent model following ultrafast laser ablation versus conventional surgical techniques

- 2011-2013 *Osseointegration following ultrafast laser ablation osteotomy*  
 American Academy of Otolaryngology – Head & Neck Surgery CORE Resident  
 Research Grant (203371)  
 Principal Investigator (Total/Jowett direct \$10,000)  
 This project seeks to examine osseointegration of a titanium implant in a live rodent model following ultrafast laser ablation
- 2012-2014 *Infrared imaging of ultrafast laser ablation of tissue*  
 McGill University Head & Neck Fund Head & Neck Research Grant  
 Principal Investigator (Total/Jowett direct \$15,000)  
 This project seeks to characterize heat generation during ultrafast laser ablation of tissue
- 2016-2018 *Function and Form Outcomes in Patients with Facial Paralysis*  
 NIH - 1R21DE025295 - 01A1  
 Other significant contributor (PI: Trotman)  
 This project seeks to advance outcome analysis and surgical planning in the field of facial reanimation
- 2016-2022 *Surgical and Rehabilitative Management of Facial Nerve Injury*  
 NIH - 2R01NS071067 – 06A1, NINDS  
 Co-Investigator (PI: Hadlock), (Total direct \$2,241,400, Jowett direct \$623,220)  
 This project seeks to establish in a rodent model a paradigm for hemi-facial reanimation using an implantable neuroprosthetic device (Impact Score: 20, Percentile: 4)
- 2019-2021 *Gene Therapy for Peripheral Nerve Repair*  
 Charles H. Hood Foundation  
 Principal Investigator (Total/Jowett direct: \$165,000)  
 To explore the potential of adeno-associated virus vector gene therapy in peripheral nerve repair in a murine model.
- 2019-2022 *Facial EMG for Neuroprosthetic Device Control in Facial Palsy*  
 AAFPRS Research Scholar Award  
 Principal Investigator (Total/Jowett direct: \$30,000)  
 To characterize relationships between facial surface electromyography signals and facial displacements as a means for control of a neuroprosthetic device for hemifacial palsy.
- 2021-2023 *Evaluating a next generation AAV capsid for targeted transduction of Schwann cells*  
 Gilbert Family Foundation Gene Therapy Initiative Award  
 Co-investigator (PI- Maguire) (Jowett direct: \$61,925)  
 To quantify Schwann cell transduction using a novel capsid engineered AAV vector
- 2022-2027 *Next-generation clinical phenotyping and pathophysiology of laryngeal dystonia & voice tremor*  
 NIH P50 - National Institute on Deafness and Other Communication Disorders  
 Other Personnel (PI – Simonyan)  
 To explore the potential of computer vision based objective assessment of laryngoscopy data to diagnose laryngeal movement disorders

## Awarded Funding

- 2016-2026 Surgical Photonics and Engineering Laboratory Seed Funding  
Berthiaume Family Foundation (2016-2025)  
PI – Jowett / Tan / Hadlock (Jowett allocation: \$360,000 per year, total \$3,600,000)  
To support new knowledge discovery and development of novel therapies for complex deformities of the head & neck in the new Surgical Photonics & Engineering Laboratory at Massachusetts Eye and Ear
- 2023-2024 Can EVs expand the therapeutic effect of gene replacement for Tsc1 in brain?  
DoD – CDMRP  
Co-I (PI – Breakefield) (Jowett total costs: \$170,000)  
To explore the potential of AAV vector-based gene therapy to treat tuberous sclerosis
- 2024-2026 *Elucidating the Mechanism of End-to-Side Motor Nerve Repair*  
NIH NIDCR R21 DE033561-01, *Impact Score 31*  
PI – Jowett (Jowett total costs \$467,500)  
To employ viral vectors encoding fluorescent proteins to elucidate the microanatomy of end-to-side neural coaptation

### Projects Submitted for Funding

- 2022 *Viral Vector Functionalized Core-Shell Scaffold for Peripheral Nerve Repair*  
NIH – R01 NS131539-01 *Impact Score 55, Percentile: 48* (pending funding decision)  
PI – Jowett (Co-PI Wegst)  
To study the potential of viral vector gene therapy to functionalize bioengineered nerve guidance conduits

### Current Unfunded Projects

- 2021- *Viral Vector Gene Therapy for Peripheral Nerve Repair*  
PI – Jowett  
Pilot study to characterize the ability of AAV vectors to deliver growth factors to murine facial nerve motor axons and Schwann cells to enhance nerve regeneration
- 2022- *Signs and Symptoms of Lyme Disease Associated and Bell's Facial Palsy*  
co-PI – Jowett  
Retrospective cohort study to develop a clinical scoring tool for use at the point-of-care to diagnose Lyme disease associated facial palsy prior to seroconversion
- 2023- *Vasopressors in Free Gracilis Transfer*  
PI – Jowett  
Retrospective cohort study comparing outcomes of patients undergoing free gracilis muscle transfer who received intraoperative vasopressors intraoperatively

### Training Grants and Mentored Trainee Grants

- 2018-2019 *Optogenetic Stimulation of the Facial Nerve*  
AAFPRS Leslie Bernstein Resident Research Grant  
co-Mentor (PI: Kanumuri)  
To characterize whether viral optogene transfection of the facial nerve would allow for optogenetic stimulation to achieve functional stimulation of facial movements.
- 2018-2020 *Enhancement of Axonal Penetration through Cross-Facial Nerve Grafts*  
AAFPRS Leslie Bernstein Resident Research Grant  
co-Mentor (PI: Mohan)  
To study the effects of various surgical strategies on improving axonal regeneration along cross-facial nerve grafts.

- 2019-2020 *Enhancement of Axonal Penetration through Cross-facial Nerve Grafts*  
 NIDCR NIH 1F32DE028185-01A1  
 Co-Mentor (PI: Mohan, S)  
 To characterize transcriptional heterogeneity among nerve graft Schwann cells following injury
- 2019-2020 *Quantitative Model of Decompression Surgery for Bell's Palsy*  
 AAO-HNSF Core Resident Research Award  
 Faculty Mentor (PI: Malka)  
 To establish the impact of facial nerve decompression following various periods of neural compression on long-term facial function outcomes in a rodent model.
- 2019-2020 *Neuronal and Schwann Cell Transcriptional States in Peripheral Nerve Regeneration*  
 Plastic Surgery Foundation / American Society for Peripheral Nerve Combined Pilot Research Grant  
 Faculty co-Mentor (PI: Mohan)  
 To characterize the heterogeneity of Schwann cell transcriptional states during prolonged peripheral nerve denervation and reinnervation.
- 2020-2021 *Gene delivery to injured peripheral nerves*  
 NIDCR NIH 1 F32 DE029964-01  
 Mentor (PI: Miller, M)  
 To characterize the ability of benign viruses to deliver transgenes to murine facial nerve motor axons and Schwann cells
- 2020-2022 *The Effect of Electrical Stimulation on Schwann Cell States Along Nerve Grafts*  
 New England Otolaryngological Society Resident Research Award  
 Mentor (PI: Derakhshan, A)  
 To determine whether intravital electrical stimulation of denervated nerve grafts impacts Schwann cell phenotypes in a rat model.
- 2020-2022 *The Effect of Electrical Stimulation on Schwann Cell States Along Nerve Grafts*  
 American Academy of Facial Plastic & Reconstructive Surgery  
 Leslie Bernstein Resident Research Grant  
 Mentor (PI: Derakhshan, A)  
 To determine whether intravital electrical stimulation of denervated nerve grafts impacts Schwann cell phenotypes in a rat model.
- 2022-2023 *Visualizing the Mechanism of End-to-Side Motor Neurotrophicity*  
 AAO-HNSF Core Resident Research Award  
 Mentor (PI: Xiao, R)  
 To determine whether intravital electrical stimulation of denervated nerve grafts impacts Schwann cell phenotypes in a rat model.
- 2023- 2026 *Super-resolved multiphoton microscopy with dual output ultrafast laser*  
 NIBIB NIH K25 – Impact score: 25, Active  
 Co-Mentor (PI: Coto Hernandez, I)  
 To study trafficking of adeno-associated virus vectors within murine corneal sensory axons and Schwann cells in vivo via time-lapse super-resolution microscopy

### **Report of Local Teaching and Training**

#### **Teaching of Students in Courses:**

2018	Examination of the Head and Neck (for 1 <sup>st</sup> year medical students)	HMS 3 hr teaching session
2018	Facial Nerve Anatomy (for 1 <sup>st</sup> year medical students)	HMS/MIT HST Program 3 hrs teaching

2019	Facial Nerve Anatomy (for 1 <sup>st</sup> year medical students)	HMS/MIT HST Program 3 hrs teaching
2023	ENT Clinical Skills Course for medical students	HMS 1 hr teaching
2024	Facial Nerve Anatomy (for Harvard Medical School Plastic Surgery residents)	J&J Depuy Synthes Institute Raynham, Massachusetts 5 hrs teaching

**Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs):**

2015	Management of acute facial paralysis (for incoming otolaryngology residents)	HMS Dept of OHNS 1 hr lecture
2016	Practice (mock) oral examinations for senior otolaryngology residents	HMS Dept of OHNS 1 full day
2016	Chief rounds in Facial Plastic and Reconstructive Surgery for otolaryngology residents	HMS Dept of OHNS 1 hr lecture
2017	Practice (mock) oral examinations for senior otolaryngology residents	HMS Dept of OHNS 1 full day
2017	Chief rounds in Facial Plastic and Reconstructive Surgery for otolaryngology residents	HMS Dept of OHNS 1 hr lecture
2018	Practice (mock) oral examinations for senior otolaryngology residents	HMS Dept of OHNS 1 full day
2018	Chief rounds in Facial Plastic and Reconstructive Surgery for otolaryngology residents	HMS Dept of OHNS 1 hr lecture
2019	Practice (mock) oral examinations for senior otolaryngology residents	HMS Dept of OHNS 1 full day
2019	Chief rounds in Facial Plastic and Reconstructive Surgery for otolaryngology residents	HMS Dept of OHNS 1 hr lecture
2021	Principles of Nerve Repair	HMS Dept of OHNS 1 hr lecture
2021	Journal Club: Enhancing Recovery after Surgery	HMS Dept of OHNS 1 hr lecture
2021	Chief rounds in Facial Plastic and Reconstructive Surgery for otolaryngology residents	HMS Dept of OHNS 1 hr lecture
2022	Journal Club: Evidence Based Scar Management	HMS Dept of OHNS 1 hr lecture

**Clinical Supervisory and Training Responsibilities:**

2016-2023	<b>Massachusetts Eye and Ear</b> Operating room (as attending surgeon) (HMS students, OHNS residents, Plastic Surgery Residents, FPRS Fellow)	1 dy/wk
	Ambulatory and procedure clinic (as attending surgeon) (HMS students, OHNS residents, Plastic Surgery Residents, FPRS Fellow)	1 dy/wk
	Otolaryngology – Head and Neck Surgery Facial Plastic & Reconstructive Surgery Back-up On-Call (HMS Dept OHNS residents, FPRS Fellow)	2 wks/rr

Otolaryngology – Head and Neck Surgery General                      8.5 wks/yr  
On-call  
(HMS Dept OHNS residents, FPRS Fellow)

2024-

**Mount Auburn Hospital**

Operating room (as attending surgeon)                                      ~1 dy/wk  
(Open to training HMS students, OHNS residents, Plastic  
Surgery Residents)

**New England Facial Plastic & Reconstructive Surgery**

Ambulatory and procedure clinic (as attending surgeon)                      ~2-3 dys/wk  
(Open to training HMS students, OHNS residents, Plastic  
Surgery Residents)

**Formally Supervised Trainees (selected)**

- 2016-2020    Ronit Malka MD / Medical Student HMS/HST MD Program. Project: Rat model of Bell's palsy to study effects of nerve decompression at distinct timepoints. Faculty Mentor on Training Grant: American Academy of Otolaryngology – Head & Neck Surgery Core Resident Research Award. Manuscripts Published: *JAMA Facial Plastic Surgery*, *Operative Techniques in Otolaryngology – Head & Neck Surgery*, and *Journal of Neuroscience Methods*. Posters Presented: American Society for Peripheral Nerve and American Academy of Otolaryngology – Head & Neck Surgery. Current position: Otolaryngology – Head and Neck Surgery Resident at Brooke Army Medical Center
- 2016-2022    Suresh Mohan MD / Otolaryngology – Head and Neck Surgery Resident Harvard Medical School. Principal project: To characterize the heterogeneity of Schwann cell transcriptional states during prolonged peripheral nerve denervation and reinnervation. Faculty Mentor on Training Grants: NIH T32 and F32, Plastic Surgery Foundation Award, American Academy of Otolaryngology – Head & Neck Surgery Core Resident Research Award. Manuscripts Published: *Laryngoscope*, *Journal of Neuroscience Methods*, *Journal of Neuropathology and Experimental Neurology*, *Facial Plastic Surgery and Aesthetic Medicine*, *Muscle & Nerve*, *Scientific Reports*, *Operative Techniques in Otolaryngology – Head & Neck Surgery*, *Journal of Pediatrics*. Oral Presentations: American Society for Peripheral Nerve. Current Position: Assistant Professor of Otolaryngology – Head & Neck Surgery, Facial Plastic and Reconstructive Surgery, Yale School of Medicine
- 2016-2018    Diego Guarin PhD / Post-doctoral fellow. Principal Project: Functional Outcomes Tracking of Facial Function. Manuscripts Published: *Plastic & Reconstructive Surgery*, *Laryngoscope*, *Journal of Neuroscience Methods*, *Annals of Plastic Surgery*. Current position: Assistant Professor of Applied Physiology and Kinesiology, University of Florida
- 2016-2019    Ivan Coto Hernandez PhD / Post-doctoral fellow. Principal Project: Multiphoton High-Resolution Imaging of Peripheral Nerve. Faculty Mentor on NIH K25 Grant. Manuscripts Published: *Plastic & Reconstructive Surgery*, *Laryngoscope*, *Journal of Neuroscience Methods*, *Journal of Neuropathology and Experimental Neurology*, *Muscle & Nerve*, *Scientific Reports*, *Journal of Biomedical Optics*. Current position: Instructor of Otolaryngology – Head & Neck Surgery, Harvard Medical School
- 2017-2019    Jacqueline Greene MD / Post-doctoral fellow. Principal Project: Wireless Power in Rodent Models of Nerve Regeneration. Manuscripts Published: *Laryngoscope*, *Facial Plastic Surgery and Aesthetic Medicine*, *Journal of Pediatrics*. Best paper award American Society for Peripheral Nerve. Current position: Assistant Professor

of Surgery, Division of Otolaryngology – Head & Neck Surgery, UC San Diego School of Medicine.

- 2019-2021 Mathew Miller MD / Post-doctoral fellow. Principal Project: Gene Therapy for Nerve Regeneration. Faculty Mentor on NIH F32 Grant. Manuscripts Published: *Scientific Reports, Facial Plast Surg Clin North America, Plastic & Reconstructive Surgery*. Oral Presentation: Outstanding Paper Session Joint Meeting of the American Society for Peripheral Nerve and American Society for Reconstructive Microsurgery. Current position: Assistant Professor of Otolaryngology – Head & Neck Surgery, Facial Plastic Surgery, University of North Carolina Chapel Hill
- 2021-2023 Nanke Cui, MD / Post-doctoral fellow. Principal Project: AAV Gene Therapy Transduction of Transected Nerves. Poster Presentation: Retrograde Transduction of Transected Murine Sciatic Primary Sensory Neurons by Adeno-Associated Virus Vector Immersion. American Association for Peripheral Nerve Annual Meeting. Jan 2023, Miami, FL, USA. Resident, Amsterdam University Medical Center.

**Laboratory and Other Research Supervisory and Training Responsibilities:**

- |      |   |   |
|------|---|---|
| 2017 | Principal Investigator – Surgical Photonics and Engineering Laboratory (SPEL) at MEE<br>Supervision of research student Sung Kang BA (Candidate)<br>Supervision of post-doctoral research fellow Wenjin Wang, MD, PhD   | Two hour lab meetings per week<br>One hour lectures twice monthly<br>1:1 one hour per week (3 months total)<br>1:1 one hour per week (6 months total)                               |
| 2018 | Principal Investigator – Surgical Photonics and Engineering Laboratory (SPEL) at MEE  | Two hour lab meetings per week<br>One hour lectures twice monthly   |
| 2019 | Principal Investigator – Surgical Photonics and Engineering Laboratory (SPEL) at MEE<br>Supervision of research student Alexander Zhu, BS<br>Supervision of research student Nat Adamian, BS Candidate (Computer Science)<br>Supervision / Mentorship of MSc student Rohith Bhethanabotla, BS       | Two hour lab meetings per week<br>One hour lectures twice monthly<br>1:1 two hours per week (04-07/2019)<br>1:1 one hour per week (05-08/2019)<br>1:1 one hour per week (09/2019- ) |
| 2020 | Supervision of research student Nat Adamian, BS Candidate (Computer Science)<br>Supervision of research student Frank Ma, BS Candidate (Computer Science)<br>Supervision of resident research (Focus) project Adeeb Derakhshan, MD<br>Supervision of resident research (Focus) project Roy Xiao, MD | 1:1 two hours per week (04-12/2020)<br>1:1 two hours per week (05-08/2020)<br>1:1 one hour per month (01-12/2020)<br>1:1 one hour per month (07-12/2020)                            |
| 2021 | Supervision of research student Nat Adamian, BS Candidate (Computer Science)<br>Supervision of research student Frank Ma, BS Candidate (Computer Science)<br>Supervision of resident research (Focus) project Adeeb Derakhshan, MD  | 1:1 one hour per two weeks (01-06)<br>1:1 two hours per week (01-6)<br>1:1 one hour per two weeks (01-12)   |

	Supervision of resident research (Focus) project Roy Xiao, MD	1:1 one hour per two week (01-12)
	Supervision of research intern Ansel Link, BS Candidate (Computer Science)	1:1 one hour per week (07-09)
	Supervision of research intern Adam Rubinstein, BS Candidate (Computer Science)	1:1 one hour per week (07-09)
	Supervision of research intern Louis Adamian, BS Candidate (Computer Science)	1:1 two hour per week (09-)
	Supervision of research intern Nanke Cui, MD Candidate	1:1 two hour per week (11-)
2022	Supervision of research student Louis Adamian, BS Candidate (Computer Science)	1:1 one hour per week (01-)
	Supervision of research student Nanke Cui, MD Candidate	1:1 one hour per week (01)
	Supervision of research student Jenny Yau, BS	1:1 one hour per week (01-)
	Supervision of research student Alex Cregan, BS	1:1 one hour per week (01-05)
	Supervision of research student Nat Adamian, BS Candidate (Computer Science)	1:1 one hour per week (04-08)
	Supervision of postdoctoral student Roy Xiao, MD, MS	1:1 one hour per four weeks (01-)
2023	Supervision of research student Nanke Cui, MD Candidate	1:1 one hour per week (01-06)
	Supervision of research student Jenny Yau, BS	1:1 one hour per week (01-06-)
	Supervision of research student Nat Adamian, BS Candidate (Computer Science)	1:1 one hour per week (05-)
	Supervision of postdoctoral student Chris Guirguis	1:1 one hour per four weeks (07-)
	Supervision of research student Keisha Barrera, BS	1:1 two hours per week (06-)

### **Formal Teaching of Peers:**

*Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

### **Local Invited Presentations:**

*No presentations below were sponsored by outside entities*

- 2012 Initial thermography results with PIRL vs. Er:YAG laser / Seminar series  
Universitätsklinikum Hamburg-Eppendorf (UKE) Ultrafast Laser Lab, Hamburg, Germany
- 2013 Blood, circulation, and coagulation / Seminar series  
Universitätsklinikum Hamburg-Eppendorf (UKE) Ultrafast Laser Lab, Hamburg, Germany
- 2013 Photocoagulation / Seminar series  
Universitätsklinikum Hamburg-Eppendorf (UKE) Ultrafast Laser Lab, Hamburg, Germany
- 2014 Animal use in research / Seminar series  
Universitätsklinikum Hamburg-Eppendorf (UKE) Ultrafast Laser Lab, Hamburg, Germany

- 2014 Reconstruction of the cheek: Principles and techniques / Teaching rounds  
Universitätsklinikum Hamburg-Eppendorf (UKE) Department of Otolaryngology, Hamburg, Germany
- 2014 Regional flaps of the anterior chest wall / Teaching rounds  
Universitätsklinikum Hamburg-Eppendorf (UKE) Department of Otolaryngology, Hamburg, Germany
- 2014 Reconstruction of the lip / Teaching rounds  
Universitätsklinikum Hamburg-Eppendorf (UKE) Department of Otolaryngology, Hamburg, Germany
- 2014 Knowledge transfer and licensing / Seminar series  
Universitätsklinikum Hamburg-Eppendorf (UKE) Ultrafast Laser Lab, Hamburg, Germany
- 2015 Laser-tissue interaction and applications of a novel picosecond infrared laser at 3  $\mu\text{m}$  / Grand rounds  
McGill University Department of Biomedical Engineering, Montréal, Canada
- 2016 Facial plastic and reconstructive surgery review for American Boards / Review lecture  
Harvard University Department of Otolaryngology
- 2016 Introduction to the Surgical Photonics and Engineering Laboratory / Grand rounds  
Harvard University Department of Otolaryngology – Head and Neck Surgery
- 2017 Photocoagulation and Photoablation / Seminar Series Surgical Photonics & Engineering Laboratory, Massachusetts Eye and Ear
- 2017 Clinico-pathologic Correlate: Facial Nerve Schwannomas / Grand rounds  
Harvard University Department of Otolaryngology – Head and Neck Surgery
- 2017 Clinico-radiologic Correlate: Facial Nerve Disorders / Guest Lecture  
Massachusetts General Hospital Neuroradiology Rounds
- 2018 Novel Approaches to Management of VIIIth and Vth Nerve Palsies / Grand rounds  
Harvard Medical School Department of Otolaryngology – Head and Neck Surgery
- 2019 Innovation in Facial Plastic Surgery / Panelist - Grand rounds  
Harvard Medical School Department of Otolaryngology – Head and Neck Surgery
- 2020 Wonder at Sidcup / Grand rounds  
Harvard Medical School Department of Otolaryngology – Head and Neck Surgery
- 2021 Optimizing Perioperative Care and Enhancing Recovery after Surgery / Grand rounds panel  
Harvard Medical School Department of Otolaryngology – Head and Neck Surgery
- 2022 Facial Nerve Reanimation and Rehabilitation / Divisional Teaching  
Beth Israel Division of Otolaryngology – Head & Neck Surgery, Harvard Medical School
- 2022 NSAID Use in Postoperative Pain Management / Mass Eye & Ear Nursing Grand Rounds
- 2022 Wonder at Sidcup: Innovation During Crisis / Snoring and Sleep Disordered Breathing Course, Harvard Medical School Department of Otolaryngology – Head and Neck Surgery
- 2022 The Opioid Crisis and Strategies to Reduce Perioperative Opioid Use / Grand Rounds  
Harvard Medical School Department of Otolaryngology – Head and Neck Surgery
- 2024 Facial Palsy Rehabilitation / Teaching Rounds  
Harvard Medical School Department of Surgery, Division of Plastic & Reconstructive Surgery, Beth Israel Deaconess Medical Center
- 2024 The Opioid Crisis and Strategies to Reduce Perioperative Opioid Use / Anesthesia Rounds  
Mount Auburn Hospital

**Report of Regional, National and International Invited Teaching and Presentations**

*Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

**Regional – Invited Teaching:**

- 2014 Management of bilateral vocal fold immobility / Invited lecture  
HNO Akademie, Hamburg, Germany
- 2021 Facial Reanimation and Trigeminal Sensory Neurotization / Invited Lecture  
New England Otolaryngological Society Meeting, Webinar, Boston, MA

**National – Invited Teaching:**

- 2016 Improving outcomes measures and progress towards a neuroprosthetic device for facial reanimation / Invited lecture  
Moebius Syndrome Foundation – Scientific Meeting, Long Beach, CA
- 2016 Contemporary Facial Reanimation / Instructional lecture  
American Association of Facial Plastic and Reconstructive Surgery (AAFPRS) 2016 Fall Meeting, Nashville, TN
- 2016 Quality of Life and Outcomes in Facial Reanimation / Invited Lecture  
Microsurgery Symposium - American Association of Facial Plastic and Reconstructive Surgery (AAFPRS) 2016 Fall Meeting, Nashville, TN
- 2017 Innovations in Free Gracilis Transfer / Invited Lecture and Facial Reanimation Panel  
Microsurgery Symposium - American Association of Facial Plastic and Reconstructive Surgery (AAFPRS) 2017 Fall Meeting, Phoenix, AZ
- 2019 The Best Time to Surgically Intervene for Idiopathic Facial Paralysis and the Management of Acute Facial Paralysis / Panel Discussion  
American Association of Facial Plastic and Reconstructive Surgery (AAFPRS) 2019 Spring Meeting, Austin, TX
- 2019 Current Treatment Options for Facial Paralysis / Panel Discussion  
Triological Society 2019 Spring Meeting, Austin, TX
- 2019 Trigeminal Neurotization and Facial Reanimation: The State of the Art / Instructional Lecture  
Annual Meeting of the American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS), New Orleans, LA
- 2019 Management of Facial Synkinesis / Panel Discussion  
Annual Meeting of the American College of Surgeons, San Francisco, CA
- 2020 Facial Nerve Anatomy and Clinical Disorders / Zoom Lecture Series during Covid-19 Crisis  
National Capital Consortium Otolaryngology – Head and Neck Surgery, San Antonio, TX and Bethesda, MD
- 2022 Dual-Vector Gracilis Muscle Transfer for Smile Reanimation with Lower Lip Depression / Invited Panelist  
Triological Society Combined Section Meeting, Hotel Del Coronado, Coronado, California
- 2023 Facial Reanimation, Invited Speaker and Panelist (2 lectures / 2 panels), Vanderbilt CME Course, Nashville, TN
- 2024 Management of Flaccid Facial Paralysis, Invited Panelist  
Annual Meeting of the American Society for Peripheral Nerve, Nassau, Bahamas.
- 2024 Reconstruction of Radical Parotidectomy, Invited Panelist, Annual Meeting of the American Society for Reconstructive Microsurgery, Nassau, Bahamas.
- 2025 What Technology Do I Find Helpful For Peripheral Nerve Surgery, Invited Panelist, Annual Meeting of the American Society for Reconstructive Microsurgery, Kona, Hawaii.
- 2025 Nerve Transfers in Facial Reanimation / Invited Panelist, Northeast Society of Plastic Surgeons Annual Meeting Baltimore, MD

### **International – Invited Teaching:**

- 2013 Management of the Thyroid Nodule / Invited Lecture  
Joint European Thyroid and Head & Neck Robotic Workshop, Universitätsklinikum  
Hamburg-Eppendorf (UKE) Hamburg, Germany  
(Olympus, Fentex, CryoLifeEuropar, Ceatec)
- 2014 Head & neck surgical anatomy cadaver dissection / Proctor (3 days)  
9th London Head & Neck Dissection Course, St. George's Hospital, London, UK
- 2014 The facial artery musculomucosal (FAMM) Flap: Indications and technique / Instructional  
Lecture  
88th Annual Congress of the Korean Society of Otorhinolaryngology – Head & Neck  
Surgery, Seoul, Korea
- 2014 Novel picosecond infrared laser at 3  $\mu\text{m}$  - laser tissue interaction and clinical applications /  
Invited lecture  
International Conference on Laser Applications in Life Science (LALS), Ulm, Germany
- 2014 The facial artery musculomucosal flap in oropharyngeal reconstruction / Invited lecture  
2nd Joint European Thyroid and Head & Neck Robotic Workshop (JETHROW), Hamburg,  
Germany (Olympus, Fentex, CryoLifeEuropar, Ceatec)
- 2014 The facial artery musculomucosal flap in oropharyngeal reconstruction / Visiting Surgeon  
Mbarara University of Science and Technology, Mbarara, Uganda
- 2015 The facial artery musculomucosal flap / Invited lecture  
Head & Neck Surgical Anatomy Cadaver Dissection / Proctor (3 days)  
10th London Head & Neck Dissection Course, St. George's Hospital, London, UK  
(Aesculap Academia)
- 2016 Microtia Techniques and Principles / Visiting Surgeon  
Hospital Padre Carollo/Fundación Tierra Nueva, Quito Ecuador
- 2016 The facial artery musculomucosal flap / Invited lecture  
Head & Neck Surgical Anatomy Cadaver Dissection / Proctor (3 days)  
11th London Head & Neck Dissection Course, St. George's Hospital, London, UK  
(Aesculap Academia)
- 2016 Facial reanimation at the Massachusetts Eye and Ear: Current approach and future  
directions / Invited lecture  
15th Shanghai International Plastic Surgery Conference (SIPSC 2016) and the Fifth  
Shanghai Plastic & Cosmetic Forum (SPCF 2016), Shanghai, China
- 2016 Facial reanimation / Visiting professor  
1 week of lectures and teaching in ambulatory clinic and operating theatre at the 9th  
People's Hospital – Department of Plastic and Reconstructive Surgery  
Inviter: Dr. Wei (David) Wang, Shanghai, China
- 2017 Regional flaps of the head and neck / Invited lecture  
Head & Neck Surgical Anatomy Cadaver Dissection / Course Proctor (3 days)  
12<sup>th</sup> London Head & Neck Dissection Course, St. George's Hospital, London, UK  
(Aesculap Academia)
- 2017 The MEE/HMS Approach to Facial Palsy – Surgical Management / Invited Lecture  
13th International Facial Nerve Symposium, Los Angeles, CA
- 2018 Regional flaps of the head and neck / Invited lecture  
Head & Neck Surgical Anatomy Cadaver Dissection / Proctor (3 days)

- 13<sup>th</sup> London Head & Neck Dissection Course, St. George's Hospital, London, UK  
(Aesculap Academia)
- 2018 Contemporary Management of Facial Palsy / Invited Lecture  
Department of Otolaryngology – Head & Neck Surgery (HNO)  
St. Elisabethen-Krankenhaus Frankfurt, Germany
- 2018 Towards a neuroprosthetic device for facial palsy / Invited Lecture  
Facial Nerve Symposium at the Annual Congress of the European Association of Cranio-  
Maxillofacial Surgery (EACMFS), Munich, Germany
- 2018 The Bionic Face / Invited Lecture  
SyNC Symposium, Sydney Nanoscience Hub, University of Sydney, Australia
- 2019 Contemporary Management of Facial Palsy / Invited Lecture  
McGill University Annual Update in Otolaryngology - Head and Neck Surgery, Mont-  
Tremblant, Québec, Canada
- 2019 Regional flaps of the head and neck / Invited lecture  
Head & Neck Surgical Anatomy Cadaver Dissection / Proctor (3 days)  
14<sup>th</sup> London Head & Neck Dissection Course, St. George's Hospital, London, UK  
(Aesculap Academia)
- 2019 Trigeminal and Facial Reanimation: The State of the Art / Invited Lecture  
Annual Meeting of Middle East Academy of Otolaryngology, Dubai, United Arab Emirates
- 2019 Facial Reanimation and Sensory Neurotization: The State of the Art / Invited Lecture  
Visiting Professor  
King Saud University 30th Annual ENT Update Symposium, Riyadh, Saudi Arabia
- 2019 Dynamic Smile Reanimation / Invited Lecture Visiting Professor  
King Saud University 30th Annual ENT Update Symposium, Riyadh, Saudi Arabia
- 2021 New developments, tip and tricks with the gracilis free flap for the management of facial  
paralysis / Invited Lecture  
European Academy of Facial Plastic Surgery Webinar Series during COVID-19
- 2021 Free Gracilis Muscle Transfer for Smile Reanimation Insights After 200 Flaps / Invited  
Lecture  
International Microsurgery Club Webinar Series, Chang Gung, Taiwan
- 2021 Facial Reanimation Panel / Invited Panelist  
5th Congress of Asian Pacific Federation of Societies for Reconstructive Microsurgery,  
Tsukuba, Japan
- 2022 Wonder at Sidcup: Sir Harold Gillies and the Birth of Modern Reconstructive Surgery /  
Invited Lecture Keynote  
17th Annual Meeting of Middle East Academy of Otolaryngology Head and Neck  
Surgery, Dubai, UAE
- 2022 Avoid Facial Danger Zones for Safe Navigation in the Face / Invited Lecture  
17th Annual Meeting of Middle East Academy of Otolaryngology Head and Neck  
Surgery, Dubai, UAE
- 2022 Facial Reanimation / Invited Lecture  
17th Annual Meeting of Middle East Academy of Otolaryngology Head and Neck  
Surgery, Dubai, UAE
- 2022 A General Approach to Facial Palsy / Invited Lecture  
17th Annual Meeting of Middle East Academy of Otolaryngology Head and Neck  
Surgery, Dubai, UAE
- 2023 A General Approach to Facial Palsy / Invited Lecture

- International Federation of Otolaryngology Societies (IFOS) World Congress, Dubai, UAE
- 2023 Challenging Cases in Facial Reanimation / Invited Panelist  
International Federation of Otolaryngology Societies (IFOS) World Congress, Dubai, UAE
- 2023 Instructional course: My Approach to Facial Palsy / Invited Speaker  
International Federation of Otolaryngology Societies (IFOS) World Congress, Dubai, UAE
- 2023 Instructional course: Free Gracilis Transfer / Panelist  
International Federation of Otolaryngology Societies (IFOS) World Congress, Dubai, UAE
- 2023 Facial Palsy Reconstruction Instructional Course / Invited Panelist  
International Microsurgery Club, Chang Gung Memorial Hospital Zoom
- 2023 General Approach to Facial Palsy / Invited Lecture  
McGill University Division of Plastic Surgery Teaching Rounds
- 2023 Facial Reanimation / Invited Panelist and Guest Speaker (3 lectures)  
12th Congress of the World Society of Reconstructive Microsurgery, Singapore
- 2023 Facial Reanimation / Invited Speaker (2 lectures), Moderator, and Live Surgery Proctor  
Free Multi-Vector Gracilis Muscle Transfer, 2nd Instructional Course for Facial Paralysis  
Reconstruction, Chang-Gung Memorial Hospital, Taoyuan, Taiwan
- 2023 Smile Reanimation by Free Gracilis Transfer: Enhancing Outcomes, Reducing Morbidity /  
Invited Lecture, 3rd Nordic Facial Nerve Meeting, Uppsala University Hospital (Virtual)
- 2024 Facial Reanimation / Invited Lecture  
Head & Neck Surgical Anatomy Cadaver Dissection / Proctor (3 days)  
15<sup>th</sup> London Head & Neck Dissection Course, St. George's Hospital, London, UK  
(Aesculap Academia)
- 2024 Innovations in Free Gracilis Transfer / Invited Lecture  
Svensk Förening för Rekonstruktiv Mikrokirurgi, Dept of Plastic & Maxillofacial, Uppsala  
University Hospital
- 2025 Facial reanimation and Rejuvenation / Visiting professor  
9th People's Hospital – Department of Plastic and Reconstructive Surgery, Shanghai,  
China
- 2025 Facial Palsy Management / Invited Lecture (Virtual)  
University of British Columbia - Department of Otolaryngology – Head & Neck Surgery  
Grand Rounds
- 2025 Facial Reanimation / Visiting Professor  
McGill University – Division of Plastic & Reconstructive Surgery Grand Rounds and  
Resident Teaching

### **Regional – Abstract Presentations:**

- 2005 Self-assessment of technical surgical proficiency by medical students and the impact on self-  
directed training (selected oral abstract)  
Wilson Centre Day, University of Toronto, Canada
- 2006 Bench-model practice improves trainees' ability to multitask (selected oral abstract)  
Wilson Centre Day, University of Toronto, Canada
- 2010 New advancements in cheek reconstruction (selected oral abstract)  
Conference Annuelle de l'Association Oto-Rhino-Laryngologie du Québec, Québec City,  
Canada
- 2010 Minimally invasive video assisted thyroidectomy (selected oral abstract)  
Conference Annuelle de l'Association Oto-Rhino-Laryngologie du Québec, Québec City,  
Canada

- 2011 Persistent adenopathy following primary chemoradiation (CRT) in the N2/N3 neck (selected oral abstract)  
Conférence Annuelle de l'Association Oto-Rhino-Laryngologie du Québec, Montréal, Canada

**National – Abstract Presentations:**

- 2006 Self-assessment of surgical skill acquisition with computer-based video training and the impact on self-directed training (selected oral abstract)  
The Association for Surgical Education (ASE) Surgical Education Week, Tuscon, AZ
- 2006 Airway luminal diameter and shape measurement by means of an intraluminal fiber optic probe: A bench model (selected oral abstract)  
21st American Society of Pediatric Otolaryngology Annual Meeting, Chicago, IL
- 2006 Self-assessed proficiency on technical surgical skill is an accurate predictor of technical performance (selected oral abstract)  
American Association of Medical Colleges (AAMC) Research in Medical Education (RIME) Annual Meeting, Seattle, WA
- 2010 Minimally invasive video assisted thyroidectomy (selected oral abstract)  
Canadian Society of Otolaryngology Annual Meeting, Niagara Falls, ON, Canada
- 2010 Linking extra-esophageal gastric reflux to chronic rhinosinusitis: Pepsinogen study of paranasal sinus and adenoid tissue (selected oral abstract)  
Canadian Society of Otolaryngology Annual Meeting, Niagara Falls, ON, Canada
- 2014 The facial artery musculomucosal (FAMM) flap in floor of mouth reconstruction (selected oral abstract)  
8th International Forum of the 85th Annual Meeting of the German Society of Oto-Rhino-Laryngology, Head & Neck Surgery, Dortmund, Germany
- 2016 A novel approach to synkinesis – targeted conduction blockade using high frequency alternating current (selected oral abstract)  
Annual Meeting of the American Society for Peripheral Nerve, Phoenix, AZ
- 2016 Performance of a novel bioengineered scaffold for peripheral nerve repair in a facial nerve rodent model (selected oral abstract)  
Annual Meeting of the American Head & Neck Society (AHNS), Seattle, WA
- 2017 Three-Dimensional Wet-Mount Imaging of Peripheral Nerves by Two-Photon Microscopy: A Transgenic Murine Model with High-Throughput Automated Histomorphometric Assessment  
Annual Meeting of the American Society for Peripheral Nerve, Waikoloa, HI
- 2022 Resting Symmetry without Morbidity: The Descendens Hypoglossi - Hypoglossal Nerve Transfer for Facial Palsy (selected oral abstract)  
Annual Meeting of the American Society for Peripheral Nerve, Carlsbad, CA

**International – Abstract Presentations:**

- 2006 Surgical skill acquisition with computer-based video training: Comparison of forced and unstructured practice (selected oral abstract)  
12th International Ottawa Conference on Clinical Competence, New York City, USA
- 2013 Ablation of bone without thermal or acoustic injury via a novel ultrafast picosecond infrared laser (selected oral abstract)  
Annual Meeting of the American Academy of Otolaryngology - Head & Neck Surgery (AAO-HNS), Vancouver, Canada

- 2014 Mimetic outcomes of use of the facial artery musculomucosal flap in oral cavity reconstruction (selected oral abstract)  
88th Annual Congress of the Korean Society of Otorhinolaryngology – Head & Neck Surgery, Seoul, Korea
- 2014 Use of a novel picosecond infrared laser (PIRL) in microsurgery (selected oral abstract)  
88th Annual Congress of the Korean Society of Otorhinolaryngology – Head & Neck Surgery, Seoul, Korea
- 2014 Utility of the buccinator myomucosal flap in floor of mouth reconstruction (selected oral abstract)  
Joint American Head & Neck Society (AHNS) and International Federation of Head & Neck Oncologic Societies (IFHNOS) 5th World Congress, New York City, USA
- 2017 Double-Paddle Free Gracilis Flap for Two-Vector Smile Reanimation  
13th International Facial Nerve Symposium, Los Angeles, CA
- 2017 Lyme Disease-Associated Facial Palsy: Corticosteroid Use and Long-Term Outcomes  
13th International Facial Nerve Symposium, Los Angeles, CA
- 2018 Corneal Neurotization by Ipsilateral Great Auricular Nerve Transfer and Scleral Tunnel Incisions: 12 Month Outcomes of a Novel Therapy for Neurotrophic Keratopathy  
12<sup>th</sup> International Symposium of Facial Plastic Surgery, Dallas, TX, USA
- 2019 Management of the Insensate Cornea Following Vestibular Schwannoma Resection: Corneal Neurotization by Great Auricular Nerve Transfer for Neurotrophic Keratopathy  
8th Quadrennial International Conference on Vestibular Schwannoma and Other CPA Tumors, Mayo Clinic, Rochester, MN, USA
- 2019 Corneal Neurotization by Great Auricular Nerve Transfer for Neurotrophic Keratopathy.  
Annual Meeting of the European Academy of Facial Plastic Surgery  
Amsterdam, Netherlands
- 2021 Free Gracilis Muscle Transfer for Smile Reanimation Insights After 200 Flaps  
5th Congress of Asian Pacific Federation of Societies for Reconstructive Microsurgery, Tsukuba, Japan
- 2022 Fluorescent Imaging for Peripheral Nerve Histomorphometry, 14th International Facial Nerve Symposium, Seoul, Korea (Virtual)
- 2022 Improving Dentition Show Smile: Dual Vector Free Gracilis Transfer, 14th International Facial Nerve Symposium, Seoul, Korea (Virtual)

### **Report of Clinical Activities and Innovations**

#### **Past and Current Licensure and Board Certification:**

- 2012- Diplomate, Royal College of Physicians and Surgeons of Canada, Otolaryngology – Head and Neck Surgery
- 2014 Clinician Investigator, Royal College of Physicians and Surgeons
- 2014- Approbation als Arzt, Behörde für Gesundheit und Verbraucherschutz, Freie und Hansestadt Hamburg, Germany (EU Valid)
- 2016- Massachusetts Board of Registration in Medicine Medical License
- 2016- Controlled Substance Registration Certificate, Drug Enforcement Administration, Clinical
- 2016- The Commonwealth of Massachusetts, Controlled Substances, Clinical
- 2016- Controlled Substance Registration Certificate, Drug Enforcement Administration, Research
- 2016- The Commonwealth of Massachusetts, Controlled Substances, Research
- 2016- American Heart Association (AHA) Advanced Cardiovascular Life Support (ACLS) Program
- 2022- Diplomate, American Board of Facial Plastic and Reconstructive Surgery
- 2024- Eligible, American Board of Otolaryngology – Head & Neck Surgery

2024- Arizona Medical License

**Practice Activities:**

2016-2023	Ambulatory Care	Facial plastic and reconstructive surgery, Massachusetts Eye and Ear (MEE)	½ dy/wk
2016-2023	Procedure Clinic	Facial plastic and reconstructive surgery, MEE	½ dy/wk
2016-2023	Surgery	Facial plastic and reconstructive surgery, MEE	4-6 dys/mo
2016-2023	Research	Facial plastic and reconstructive surgery, MEE	3 dys/wk
2016-2023	Backup call (facial plastics)	Otolaryngology Head & Neck Surgery – MEE and Massachusetts General Hospital	1 in 6 dys
2024-	First call	Otolaryngology Head & Neck Surgery – Mount Auburn Hospital	1 in 4 dys
2024-	Surgery	Otolaryngology Head & Neck Surgery – Mount Auburn Hospital	1 dy/wk
2024-	Ambulatory clinic	New England Facial Plastic & Reconstructive Surgery	2 dys/wk
2024-	Procedure clinic	New England Facial Plastic & Reconstructive Surgery	1 dy/wk

**Clinical Innovations:**

Multi-vector free muscle transfer for smile reanimation

Smile reanimation techniques in patients with facial palsy restore oral commissure excursion, but ideal results are uncommonly achieved without restoration of lower lip depressor function. We characterized how the gracilis muscle flap could be elevated with a multiple paddle configuration based on a common neurovascular pedicle for multi-vector rehabilitation of joy-expressing smile (other publications #24). This technique has since been employed in over thirty cases at our institution, has been presented at national and international meetings (King Saud University 30th Annual ENT Update Symposium, Riyadh, Saudi Arabia 2019, Tribological Society 2022, International Facial Nerve Symposium 2022, International Federation of Otolaryngology Societies (IFOS) World Congress, Dubai, UAE 2023, 12th Congress of the World Society of Reconstructive Microsurgery, Singapore 2023), and was demonstrated live at the 2nd Instructional Course for Facial Paralysis Reconstruction, Department of Plastic & Reconstructive Surgery, Chang-Gung Memorial Hospital, Taoyuan, Taiwan October 2023. Other applications of this multiple-vector flap design include simultaneous reconstruction of smile and blink in facial palsy patients.

Novel approach to corneal neurotization

Neurotrophic keratopathy (NK) is a degenerative disease of the ocular surface secondary to loss of sensory input to the cornea that may result in blindness. Medical management of NK is challenging and costly. We characterized a novel surgical approach to management of this condition, whereby sensory fibers of the great auricular nerve are transposed to the affected cornea via an interposition nerve graft, with fascicles positioned directly into the corneal stroma via scleral-corneal tunnel incisions (other publications #18, 22, 25, 26, 29). Surgical outcomes included improvement in corneal sensation, corneal surface health, and visual acuity. This procedure has been performed on twelve patients thus far at our institution, and is also being employed at other centers around the globe. The technique has been presented at multiple national and international meetings (8th Quadrennial International Conference on Vestibular Schwannoma and Other CPA Tumors, Mayo Clinic, Rochester, MN, USA, 12th International Symposium of Facial Plastic Surgery, Dallas, TX, USA, Annual Meeting of the European Academy of Facial Plastic Surgery Amsterdam, Netherlands). Our NIH funded (K25) work in the laboratory seeks to investigate gene therapy delivery to corneal nerves in murine models.

Lower eyelid retraction correction in paralytic lagophthalmos

Correction of lower eyelid retraction is necessary to restore adequate blink in paralytic lagophthalmos. We characterized novel means of fascia suspension of the lower eyelid under general anesthesia using miniature incisions and demonstrated the technique yields long-term correction of lower eyelid malposition (research investigations #50). We then demonstrated in-office feasibility of this approach under local anesthesia (other peer-reviewed publications #30). This procedure has been performed in over sixty patients at our institution, and was presented at a national meeting of facial reanimation experts at the 2023 Nashville Fall CME Meeting.

Selective muscle weakening in post-paralysis facial palsy

Post-paralytic facial palsy is a permanent disfiguring sequela of facial nerve insult. We characterized how ipsilateral weakening of the depressor anguli oris muscle (e.g. through chemodenervation or surgical resection) significantly improves smile dynamics and perceived expression of positive emotion in post-paralysis facial palsy (research investigations #19). We characterized the first in-office approach to resection of the depressor anguli oris muscle under local anesthesia (other peer-reviewed publications #23). This technique has since been implemented at local, national, and international scale.

## **Report of Technological and Other Scientific Innovations**

Electrical neural blockade and stimulation of injured nerves (Applied 2016, granted 2020/12)

### **US Patent US10850097B2**

As a clinical fellow, I described and reduced to practice a method and system for identifying a dysfunctional or transferred nerve, attaching an electrode array to the dysfunctional or transferred nerve proximal to the target musculature, delivering an electrical neural blockade signal, and stimulating the dysfunctional or transferred neuromusculature distal to the point of neural blockade. An immediate application of this method and system is for hemi-facial reanimation by means of an implantable neuroprosthetic device. Preliminary data used in this patent application was used as the basis for a successful NIH R01 grant.

Viral Vector  
Functionalized Core-  
Shell Scaffold

**PCT/US2024/012288 (Pending, file January 19, 2024)**

My laboratory described and demonstrated proof-of-principle of biological functionalization of bioengineered nerve guidance scaffolds using viral vectors to enhance their regenerative performance for use in the surgical repair of peripheral nerve gaps.

### **Report of Education of Patients and Service to the Community**

*Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

#### **Activities:**

- 2003 Let's Talk Science (University of Toronto, Canada) / Mentor  
Year-long program aimed at promoting interest in science among elementary school children, University of Toronto, Canada
- 2004 The Saturday Program (University of Toronto, Canada) / Mentor  
Summer tutoring and mentoring program for low income inner city high school students, University of Toronto, Canada
- 2005 The Saturday Program (University of Toronto, Canada) / Director  
Summer tutoring and mentoring program for low income inner city high school students, University of Toronto, Canada
- 2005 Growing up Healthy / Director  
One day conference to promote healthy eating and exercise habits for elementary school students, University of Toronto, Canada
- 2005 Summer Mentorship Program / Co-ordinator  
Mentorship program for low income inner city high school students, University of Toronto, Canada
- 2005 Students for Technology and Engineering in Medicine (STEM) / Lecturer  
University of Toronto Faculty of Medicine, Canada  
Interest group to foster interest in STEM among school children
- 2009 Ride to Conquer Cancer – Jewish General Hospital / Fundraiser and Participant  
Completed a two-day 180km cycling tour, raising \$4400 to support research at the Jewish General Hospital
- 2014 Massachusetts Eye and Ear Office of Global Health and Surgery / Curriculum Development  
Developed two novel oral examination cases and one novel Objective Structured Assessment of Technical Skill (OSATS) examination for the Facial Plastic and Reconstructive Surgery module used in Mbarara, Uganda
- 2014 Massachusetts Eye and Ear Office of Global Health and Surgery / Visiting Surgeon  
Participated in a two-week surgical training mission to Mbarara, Uganda to train local otolaryngology residents, delivering lectures and participating in operating cases focusing on facial plastic and reconstructive surgery, proctoring oral examinations, examinations of technical skill, and proctoring a comprehensive half-day written in-training examination
- 2016 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2016 Boston Marathon, raising \$9500 with my wife to support research at the Massachusetts Eye and Ear
- 2016 Massachusetts Eye and Ear Office of Global Health and Surgery / Curriculum Development  
Developed two novel oral examination cases and one novel Objective Structured Assessment of Technical Skill (OSATS) examination for the Head & Neck Teaching module used in Mbarara, Uganda

- 2016 Help Us Give Smile (HUGS) Microtia Mission / Volunteer Surgeon  
Participated in a one-week surgical mission to Quito, Ecuador to see patients in ambulatory clinic, and perform first and second stage auricular reconstruction surgeries for local patients with microtia
- 2016 Moebius Syndrome Foundation Family Conference / Invited guest speaker (Moebius Syndrome Foundation)  
Travelled to Long Beach California to deliver educational lecture entitled 'Approach to facial reanimation in Moebius syndrome at the Mass Eye and Ear Facial Nerve Center'
- 2017 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2017 Boston Marathon, raising funds to support research at Mass Eye and Ear
- 2018 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2018 Boston Marathon, raising funds to support research at Mass Eye and Ear
- 2019 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2019 Boston Marathon, raising funds to support research at Mass Eye and Ear
- 2019 Facial Reanimation and Restoration of Corneal Sensation in NF2 / Lecture  
Boston Neurofibromatosis Patient and Family Symposium, Boston Children's Hospital
- 2021 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2021 Boston Marathon, raising funds to support research at Mass Eye and Ear
- 2022 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2022 Boston Marathon, raising funds to support research at Mass Eye and Ear (2:57 personal record)
- 2023 Boston Marathon – Team Eye and Ear / Fundraiser and Participant  
Completed the 2022 Boston Marathon, raising funds to support research at Mass Eye and Ear (2:57)

**Recognition:**

- |      |   |   |
|------|---|---|
| 2016 | Publicity on Laryngoscope article on Lyme disease-associated facial palsy             | Science Daily<br>US Gov Dept of HHS       |
| 2018 | Response to paper in JAMA FPS on traumatic facial palsy                               | Reuters Health                            |
| 2018 | Lyme Disease and Facial Weakness: What You Should Know                                | Mass Eye and Ear<br>Focus Blog            |
| 2018 | Corneal Neurotization   | Harvard<br>Otolaryngology<br>Magazine     |
| 2018 | A Defining Moment of Convergence  | Harvard Medical<br>School News            |
| 2019 | 'Bionic face' experiments could lead to new treatment approach for facial paralysis   | Science Daily<br>Wolters Kluwer<br>Health |
| 2020 | Corneal Neurotization for Trigeminal Anesthesia                                       | Bulletin – Content<br>hub of AAO-HNS      |
| 2020 | Why you shouldn't worry about a connection between Bell's palsy and COVID-19 vaccines | Business Insider                          |
| 2023 | Nerves rerouted from her tongue restore woman's smile                                 | Harvard Gazette                           |

## **Report of Scholarship**

### **Peer reviewed publications in print or other media**

#### **Research Investigations:**

1. **Jowett N**, LeBlanc V, Xeroulis G, MacRae H, and Dubrowski A. Surgical skill acquisition with self-directed practice using computer-based video training. *Am J Surg*. Feb 2007;193(2):237-42. PMID: 17236854
2. **Jowett N**, Weersink R, Zhang K, Campisi P, Forte V. Airway luminal diameter and shape measurement by means of an intraluminal fiber optic probe: A bench model. *Arch Otolaryngol Head Neck Surg*. Jun 2008;134(6):637-42. PMID: 18559732
3. Grierson L, Melnyk M, **Jowett N** [sic], Backstein D, Dubrowski A. Bench model surgical skill training improves novice ability to multitask: a randomized controlled study. *Stud Health Technol Inform*. 2011;163:192-8. PMID: 21335787
4. Böttcher A, Clauditz TS, Kucher S, Wöllmer W, Sauter G, Krötz P, **Jowett N**, Knecht R, Dalchow CV, Münscher A, Miller RJD. A novel tool in laryngeal surgery - Preliminary results of the picosecond infrared laser (PIRL). *Laryngoscope*. 2013 Nov;123(11):2770-5. PMID: 23670639
5. **Jowett N**, Wöllmer W, Mlynarek MA, Wiseman P, Segal B, Franjic K, Krötz P, Knecht R, Böttcher A, Miller RJD. Heat generation during ablation of porcine skin with Er:Yag laser versus a novel picosecond infrared laser (PIRL). *JAMA Otolaryngol - Head Neck Surg*. Aug 2013;139(8):828-33. PMID: 23949359
6. Böttcher A, Mencke T, Zitzmann A, Knecht R, **Jowett N**, Nöldge-Schomburg G, Dommerich S. Laryngeal injuries following endotracheal intubation in ENT surgery: Predictive value of anatomical scores. *Eur Arch Otorhinolaryngol*. Feb 2014;271(2):345-352. PMID: 23990031
7. [**Jowett N**, Böttcher A], Kucher S, Reimer R, Schumacher U, Knecht R, Wöllmer W, Münscher A, Dalchow CV., Knecht R, Dalchow CV. Use of a microsecond Er:YAG laser in laryngeal surgery reduces collateral thermal injury in comparison to superpulsed CO2 laser. *Eur Arch Otorhinolaryngol*. 2014 May;271(5):1121-8. PMID: 24114067
8. **Jowett N**, Wöllmer W, Reimer R, Zustin J, Schumacher U, Wiseman P, Mlynarek A, Böttcher A, Dalchow C, Lörincz B, Knecht R, Miller RJD. Bone ablation without thermal or acoustic mechanical injury via a novel picosecond infrared laser (PIRL). *Otolaryngol - Head Neck Surg*. Mar 2014;150(3):385-393. PMID: 24376121
9. Löwenthal M, **Jowett N**, Thomalla R, Knecht R, Dalchow CV. A comparison of hearing results following stapedotomy under local versus general anesthesia. *Eur Arch Otorhinolaryngol*. 2015 Sep;272(9):2121-7. PMID: 24728229
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2. **Jowett N**, LeBlanc V, Xeroulis G, MacRae H, and Dubrowski A. Self-assessment of technical surgical proficiency by medical students and the impact on self-directed training. 20th Annual Medical Student Research Day, Faculty of Medicine, University of Toronto, Toronto, Canada, January 2006
3. **Jowett N**, LeBlanc V, Xeroulis G, MacRae H, and Dubrowski A. Self-assessment of technical surgical proficiency by medical students and the impact on self-directed training. 32nd Gallie Day, Department of Surgery, University of Toronto, Toronto, Canada, May 2006
4. **Jowett N**, Xeroulis G, MacRae H, LeBlanc V, and Dubrowski A. Self-assessment of surgical skill learning with computer-based video training and the impact on self-directed training. Association for Medical Education in Europe (AMEE), Genoa, Italy, September 2006
5. Lörincz BB, **Jowett N**, Möckelmann N, Busch CJ, Knecht R. Oncologic results following trans-oral robotic surgery (TORS) in the first proctor-level robotic head & neck center of Germany. Australian and New Zealand Head & Neck Cancer Society Annual Meeting, Brisbane, Australia, Oct 2012
6. Sela E, Hier MP, Black MJ, Mlynarek AM, Rochon L, Ywakim R, **Jowett N**, Payne. R. Concomitant parathyroid adenoma and thyroid carcinoma. Annual Israeli Otolaryngology Meeting Eilat, Israel, March 2013
7. **Jowett N**, Wöllmer W, Mlynarek MA, Wiseman P, Segal B, Franjic K, Krötz P, Knecht R, Böttcher A, Miller RJD. Heat generation during ablation of porcine skin with Er:Yag laser versus a novel picosecond infrared laser (PIRL). American Head & Neck Society (AHNS) in Combined Otolaryngology Spring Meeting (COSM), Orlando, Florida, USA, April 2013
8. Dalchow CV, Reimer R, Böttcher A, Kucher S, **Jowett N**. Er:YAG laser ablation of bone versus conventional burrs in otologic surgery. American Academy of Otolaryngology - Head & Neck Surgery (AAO-HNS), Vancouver, Canada, September 2013
9. Lörincz B, **Jowett N**, Knecht R. Decision management in transoral robotic surgery (TORS): Indications, individual patient selection, and role in the multidisciplinary treatment of Head & Neck squamous cell carcinoma. Joint American Head & Neck Society (AHNS) and International Federation of Head & Neck Oncologic Societies (IFHNOS) 5th World Congress. New York City, NY, USA. July 2014
10. **Jowett N**, Reimer R, Schumacher U, Hadlock T, Miller RJD. Cold-steel incisional shear stress results in more extensive nerve injury in comparison to ablation using a novel picosecond infrared laser (PIRL). Joint American Head & Neck Society (AHNS) and International Federation of Head & Neck Oncologic Societies (IFHNOS) 5th World Congress. New York City, NY, USA. July 2014
11. **Jowett N**, Knox C, Gaudin R, Hadlock TA. Interposition graft repair of a rat facial nerve defect with and without donor nerve interfascicular dissection. American Society for Peripheral Nerve, Phoenix, AZ, Jan 2016
12. **Jowett N**, Kearney RE, Knox CJ, Gaudin RA, Hadlock TA. A neuroprosthetic device for reanimation of the hemi-paralyzed face. Joint American Head & Neck Society (AHNS) and

International Federation of Head & Neck Oncologic Societies (IFHNOS) 6th World Congress. Seattle, WA. July 2016

13. Malka R, Knox CJ, Gorelik P, Mazor O, Hadlock TA, **Jowett N**. Fully Implantable Wireless Device for Continual and Dynamic Neural Pressure Monitoring: An Animal Model of Compression Neuropathy. Annual Meeting of the American Society for Peripheral Nerve, Waikoloa, HI, Jan 2017
14. **Jowett N**, Pineda R II. Corneal Neurotization by Ipsilateral Great Auricular Nerve Transfer and Circumferential Corneal Scleral Tunnel Incisions for Neurotrophic Keratopathy. American Association for Peripheral Nerve Annual Meeting. January 12 - 14, 2018, Phoenix, Arizona.
15. Mohan S, Wang W, Coto Hernandez I, Yin K, Sundback C, Wegst UGK, **Jowett N**. A High-Throughput Mouse Platform for Nerve Conduit Assessment. American Association for Peripheral Nerve Annual Meeting. January 12 - 14, 2018, Phoenix, Arizona.
16. Dusseldorp JR, **Jowett N**, Hadlock TA. Dually Innervated Free Gracilis Transfer in Smile Reanimation. American Association for Peripheral Nerve Annual Meeting. January 12 - 14, 2018, Phoenix, Arizona.
17. Guarin D, Tsrer G, **Jowett N**. Dynamic Relation Between Facial Surface EMG and Facial Displacements. 40th International Engineering in Medicine and Biology Conference. July 17-21, 2018, Honolulu, HI.
18. Derakhshan, A, Chen JX, Greene JL, **Jowett N**, Hadlock TA. Delayed Facial Palsy Associated with Polytetrafluoroethylene Granuloma: A Late Consequence of Microvascular Decompression. Triological Society Combined Sections Meeting, Coronado, CA, Jan 24-26, 2019.
19. Coto Hernández I, Mohan S, **Jowett N**. Super-resolution Microscopy in the Study of Peripheral Nerve Regeneration. American Association for Peripheral Nerve Annual Meeting. Feb 1-3, 2019, Palm Desert, CA.
20. **Jowett N**. Single-Stage Reanimation of Oral Commissure Excursion and Lower Lip Depression by Dual-Vector Free Gracilis Muscle Transfer. American Association for Peripheral Nerve Annual Meeting. Jan 10-12, 2020, Fort Lauderdale, FL, USA.
21. Adamian N, Naunheim MR, **Jowett N**. An Artificial Intelligence Approach for Outcomes Assessment in Laryngeal Reanimation. American Association for Peripheral Nerve Annual Meeting. Jan 10-12, 2020, Fort Lauderdale, FL, USA.
22. Coto Hernández I, Yang W, Rishøj L, Mohan D, Ramachandran S, **Jowett N**. Novel techniques for high-throughput peripheral nerve histomorphometry. American Association for Peripheral Nerve Annual Meeting. Jan 10-12, 2020, Fort Lauderdale, FL, USA.
23. Mohan S, Tenney A, Zhuo Z, Pratt B, Collins T, Gelber A, Ho Sui SJ, Hadlock TA, **Jowett N**, Engle EC. Characterizing Schwann cell transcriptional states in peripheral nerve regeneration with single-cell RNA sequencing. Annual Meeting of the American Society for Peripheral Nerve (ASPN), January 2021 (Virtual).
24. Derakhshan A, Minderler S, Coto-Hernandez I, **Jowett N**. A Comparison of Axonal Regeneration in Fresh vs Long-Term Denervated Nerve Grafts. American Association for Peripheral Nerve Annual Meeting. Jan 2022, Carlsbad, CA, USA.
25. Coto Hernández I, W. Yang, L. Rishøj, S. Ramachandran and **N. Jowett**. Novel techniques for high-throughput peripheral nerve histomorphometry. 2022 Northeast Symposium on Biomedical Optics 2022, MIT, Cambridge, MA, USA
26. Cui N, Yau J, Minderler S, Coto-Hernandez I, Maguire CA, **Jowett N**. Targeted Retrograde Transduction of Transected Murine Sciatic Primary Sensory Neurons by Adeno-Associated Virus Vector Immersion. American Association for Peripheral Nerve Annual Meeting. Jan 2023, Miami, FL, USA.
27. Barrera K, **Jowett N**. Enhanced Recovery After Free Functional Gracilis Muscle Transfer for Smile Reanimation. American Association for Peripheral Nerve Annual Meeting. Jan 2024, Bahamas.
28. Guirguis C, Adamian N, Adamian L, Ma F, Cui N, Coto Hernandez I, **Jowett N**. Assessment of Blink Dynamics in Facial Palsy: A Novel Tool. 2024 American Academy of Facial Plastic and Reconstructive Surgery Spring Meeting (COSM), May 15-19, 2024, Chicago, IL

#### Oral Presentations Delivered by Co-Author:

1. Chater M, Kost K, **Jowett N**. Percutaneous tracheostomy - A prospective study evaluating a new technique. Canadian Society of Otolaryngology Annual Meeting, Halifax, NS Canada. May 2009 (selected oral abstracts presented by M Chater)
2. Sela E, Black M, Hier M, Mlynarek AM, Payne R, **Jowett N**, Constantine A. Management of complete pharyngo-esophageal obstruction after chemo-radiation treatment for advanced head & neck cancer patients. 66th Annual Meeting of the Canadian Society of Otolaryngology – Head & Neck Surgery, Toronto, ON. May 2012 (selected oral abstract presented by E Sela)
3. Dalchow CV, **Jowett N**, Kappo N, Boettcher A. First clinical results of the dilatation of the eustachian tube in patients with tubal dysfunction. American Academy of Otolaryngology - Head & Neck Surgery (AAO-HNS), Vancouver, Canada Sept 2013 (selected oral abstracts presented by CV Dalchow)
4. Tsrer G, Guarin DL, **Jowett N**, Kearney RE. Eyelid and Blink Tracking in an Animal Model of Facial Palsy. 40th International Engineering in Medicine and Biology Conference. July 17-21, 2018, Honolulu, HI.
5. Green JJ, Tavares J, Guarin DL, Quetela O, **Jowett N**, Hadlock TA. The Spectrum of Facial Palsy: The Facial Palsy Photo and Video Standard Set. Triological Society Combined Sections Meeting, Coronado, CA, Jan 24-26, 2019.
6. Green JJ, Guarin DL, Knox CJ, Hadlock TA, **Jowett N**. A Low-Cost, Wirelessly Powered Implantable Microcontroller for Neural Stimulation. American Association for Peripheral Nerve Annual Meeting. Feb 1-3, 2019, Palm Desert, CA. (**\*Awarded best research paper**).
7. Guarin DL, Dusseldorp JR, **Jowett N**. High Frequency Alternating Current Neural Blockade as an Alternative Treatment for Spasticity. American Association for Peripheral Nerve Annual Meeting. Feb 1-3, 2019, Palm Desert, CA.
8. Guarin DL, **Jowett N**. Facial Muscle Electromyography Activity for Neuroprosthetic Device Control in Facial Reanimation: Dynamic Relation between Facial Surface EMG and Facial Displacements. American Association for Peripheral Nerve Annual Meeting. Feb 1-3, 2019, Palm Desert, CA.
9. Mohan S, Fortier E, **Jowett N**. Layperson and Artificial Intelligence Assessed Emotion in Facial Palsy. Spring Meeting of the American Association of Facial Plastic Surgery, May 1-2, 2019, Austin, TX
10. Derakhshan A, Guarin D, **Jowett N**. Smile Excursion and Facial Bulk following Free Gracilis Transfer: What is the Ideal Flap Weight? Spring Meeting of the American Association of Facial Plastic Surgery, May 1-2, 2019, Austin, TX
11. Naunheim MR, Adamian N, **Jowett N**. Vocal fold tracking by artificial intelligence. The Fall Voice Conference, Oct 17-19, 2019, Dallas, TX
12. Derakhshan A, Guarin DL, Wang W, Gadkaree S, Hadlock TA, **Jowett N**. Flap Mass and Outcomes in Gracilis Muscle Transfer for Smile Reanimation. Annual Meeting of the American Society for Peripheral Nerve (ASPN), January 2021 (Virtual)
13. Dusseldorp JR, Guarin DL, van Veen MM, **Jowett N**, Hadlock TA. Automated Spontaneity Assessment after Smile Reanimation: A Machine Learning Approach. Annual Meeting of the American Society for Peripheral Nerve (ASPN), January 2021 (Virtual)
14. Miller MQ, Coto Hernández I, Minderler S, Nammou J, Ng C, Maguire CA, **Jowett N**. Adeno-Associated Virus Vector Retrograde Transduction of Transected Murine Facial Motor Neurons. Annual Meeting of the American Society for Peripheral Nerve (ASPN) and American Society of Reconstructive Microsurgery (ASRM) Joint Session, January 2022, Carlsbad, CA, USA (**\*Selected for outstanding paper session**)
15. S. Minderler, **N. Jowett**, I. Coto Hernández. Multiphoton Microscopy for Three-dimensional Histomorphometry of Peripheral Nerve. 2022 Frontiers in Neurophotonics Quebec City, Canada
16. Yau J, Minderler S, Cui N, Coto Hernández I, Yin Kaiyang, Wegst UGK, **Jowett N**. Nerve Guidance Conduit Assessment and Functionalization via AAV Viral Vector in Mice. American Association for Peripheral Nerve Annual Meeting. Jan 2023, Miami, FL, USA.

#### **Narrative Report:**

I am an NIH funded fellowship-trained MD PhD surgeon-scientist specializing in reconstructive surgery of the head and neck. My passion is to advance treatment and outcomes for patients suffering from devastating loss of motor and sensory function of the head and neck, including facial paralysis and trigeminal anesthesia. From 2016-2023, I served on faculty in the Department of Otolaryngology – Head and Neck Surgery as a full-time Assistant Professor at HMS based at the Massachusetts Eye and Ear Infirmary. I launched and directed the Surgical Photonics & Engineering Laboratory from 2018-2023, securing over \$5,000,000 in combined grant and philanthropic funding to support our research focused on novel therapeutic approaches for management of cranial nerve injury. Since 2020, I have served on the Program Committee for the American Society for Peripheral Nerve and have served as an ad hoc reviewer for leading journals in my field, including the British Journal of Ophthalmology, Laryngoscope, Otology & Neurotology, Journal of Reconstructive Microsurgery, and the Annals of Plastic Surgery.

My clinical focus is on management of patients with facial palsy and loss of corneal and facial sensation. At the Mass Eye and Ear Facial Nerve Center, I received directed patient referrals from colleagues locally, regionally, nationally, and internationally, including Canada and Saudi Arabia. In 2022/2023, my annual volume of facial palsy patient visits exceeded 1000, including over 100 new patient consultations. In 2017, together with my colleague Dr. Roberto Pineda in ophthalmology, we launched a corneal neurotization program at MEE and developed a new surgical technique to treat this blinding neuropathic disease, published in the British Journal of Ophthalmology. In 2018, I developed a novel surgical technique to restore a joy-expressing dental display smile by free functional transfer of a multi-paddle gracilis muscle flap, published in Laryngoscope. This work was recognized by invited lectures regionally, nationally, and internationally, including invitations to lecture on the technique at the 2023 World Society for Reconstructive Microsurgery in Singapore, and to perform the technique on a live facial palsy patient at Chang Gung Memorial Hospital in Taiwan in October 2023 as invited Faculty for the Department of Plastic & Reconstructive Surgery 2<sup>nd</sup> International Course for Facial Paralysis Reconstruction. The technique has since been adopted by surgeons around the globe, including Japan, South Korea, and Sweden. Recently, my team has transitioned our surgical pathways to align with enhanced recovery after surgery (ERAS) principles including early hospital discharge and opioid sparing analgesia and have encouraged adoption of these techniques to enhance patient safety and quality through grand rounds presentations and peer-reviewed publications.

In the laboratory, my research efforts aligned with my clinical focus. Our laboratory employed a vertically integrated research platform comprising murine fluorescent reporter models, functional outcomes assessment, free-floating immunofluorescence, whole mount and in vivo multiphoton and super-resolution microscopy, and machine-learning based segmentation for quantitative assessment of cranial nerve structure, function, and response to injury. We have developed several novel approaches for high-resolution quantitative imaging of peripheral nerves to improve neural histomorphometry efficiency and inform intraoperative surgical decision making. We are presently leveraging our research platform to explore the potential of targeted transduction of peripheral neurons and Schwann cells using adeno-associated virus vectors to enhance nerve recovery after injury and to advance understanding of nerve transfer procedures. Our laboratory research was awarded best research paper at the 2019 American Society for Peripheral Nerve (ASPN) Annual meeting and was chosen as Outstanding Paper at the at the Joint Session of the 2022 Annual Meeting of the ASPN, American Association for Hand Society (AAHS), and American Society of Reconstructive Microsurgery (ASRM). I have received funding from the NINDS (R01) and the Department of Defense as co-Investigator, and from the Charles H Hood Foundation and Berthiaume Family as Principal Investigator. In March 2024, I was awarded sole PI NIH funding for an R21 grant from the NIDCR to explore the role of viral vector gene therapy to enhance understanding of nerve transfer techniques.

My clinical teaching passion is surgical anatomy and technique. From 2016-2019, I proctored a head and neck surgical anatomy dissection course at St. George's Hospital, University of London, UK for residents and consultants, and will be proctoring the first post-Covid course again in September 2024.

From 2016-2023, I taught HMS medical students, sub-interns, and OHNS residents at MEE in the clinic (one day/week), procedure clinic (half-day/week), and the operating theatre (4-6 days/month). I served as proctor mock-oral examinations for senior MEE/HMS residents most years and organized the academic program for the MEEI Division of Facial Plastic & Reconstructive Surgery from 2020 to 2023. I've been twice nominated for the Excellence in Mentoring Award from Harvard Medical School (**2020, 2022**). I have taught head and neck anatomy in the dissection lab, ENT clinical skills in a workshop setting, and lectured on facial palsy in a class setting to HMS junior medical students, HMS OHNS residents, and HMS Plastic Surgery residents. In the laboratory, I have mentored five residents on American Academy of Otolaryngology – Head & Neck Surgery Research Grants, have served as co-mentor on two NIH F32 awards, and currently serve as mentor to an HMS Investigator on his NIH K25 award.

Since my appointment as Assistant Professor at HMS, I have strived to provide exceptional clinical care for patients with devastating sensorimotor deficits of the head and neck, while mentoring students, residents, and fellows in the operating theatre, clinic, and the laboratory. Through my invited lectures at local, regional, national, and international forums, my peer-reviewed publications and book chapters, my laboratory research on peripheral nerve imaging and regeneration, my faculty committee service, and my professional involvement in the American Society for Peripheral Nerve, I have endeavored to improve the care for patients with facial palsy, neurotrophic keratopathy, and other cranial and peripheral nerve deficits, while also striving to inspire the next generation of clinicians and researchers in the field. In 2025, I launched a private practice in Scottsdale, Arizona, where I will be offering world-class care to patients with head and neck deformities in the Southwest, and where I plan to continue to train and help inspire the next generation of surgeon-scientists within the Arizona State University community.