



15th International Conference on Advances in Quantitative Laryngology, Voice and Speech Research

March 30 – April 1, 2023

Mayo Clinic in Arizona

Thursday, March 30, 2023

Thursday workshops will be held at Mayo Clinic in Scottsdale, located at 13400 East Shea Boulevard. Shuttle transportation will be provided from designated hotels. Alternatively, participants may drive directly to the Mayo Clinic Scottsdale campus.

8:00 a.m.	Registration and Breakfast Mayo Clinic in Scottsdale (Transportation from hotel will be provided)
9:00 a.m. – 12:15 p.m.	Concurrent Workshops a) Dissection Lab in Mayo Clinic Center for Procedural Innovation David G. Lott, M.D. b) Voice, AI, Data Collection, Analysis and Interpretation Jessica W. Gregor, M.S., CCC-SLP Maryam Naghibolhosseini, Ph.D. Cyril Varghese, M.D., M.S. Stephanie R.C. Zacharias, Ph.D., CCC-SLP
12:15 p.m.	Lunch
1:15 – 4:30 p.m.	Concurrent Workshops (repeat of morning workshop) a) Dissection Lab in Mayo Clinic Center for Procedural Innovation David G. Lott, M.D. b) Voice, AI, Data Collection, Analysis and Interpretation Jessica W. Gregor, M.S., CCC-SLP Maryam Naghibolhosseini, Ph.D. Cyril Varghese, M.D., M.S. Stephanie R.C. Zacharias, Ph.D., CCC-SLP
4:30 p.m.	Workshops Adjourn
4:45 p.m.	Return transportation to hotel will be provided
6:30 – 8:00 p.m.	Welcome Reception at Mayo Clinic in Phoenix

Friday, March 31, 2023

7:00 a.m. **Registration, Breakfast and Exhibits**

8:00 a.m. **Welcome and Introductions**
David G. Lott, M.D.

8:10 a.m. **Translating Quantitative Laryngology Panel Discussion**
Lana Shekim, Ph.D., Bonnie Martin-Harris, Ph.D.,
Nathan Welham, Ph.D., CCC-SLP, and David G. Lott, M.D.

8:55 a.m. **Q & A**

Abstract Presentations – Session 1: Quantitative Imaging

Moderator:

9:20 a.m. **Sources of Shape and Size Variation of the Human Larynx**
Tobias Riede, Ph.D.

9:30 a.m. **Characterization of Vocal Motor Control Using Laryngeal Kinematics in Individuals with Hyperfunctional Voice Disorders**
Hasini R. Weerathunge, M.S., B.S.

9:40 a.m. **Cross-Sectional Area and Length Changes with a Semi-Occluded Vocal Tract: The Role of the Epilarynx in Human Phonation**
Amanda C. Stark, M.S., CCC-SLP

9:50 a.m. **The Effects of Voice Therapy Maneuvers on Vocal Fold Vibration in Older Adults**
Robin Samlan, Ph.D., CCC-SLP

10:00 a.m. **Vocal Fold Detective Edge Analysis in High-Speed Videoendoscopy During Running Speech in Adductor Spasmodic Dysphonia**
Ahmed M. Yousef, B.Sc., M.Sc.

10:10 a.m. **Characterization of SOVT Efficiency in an Excised Canine Larynx Model**
Charles Farbos de Luzan, Ph.D.

10:20 a.m. **Q & A**

10:30 a.m. **Refreshment Break and Exhibits**

Abstract Presentations – Session 2: Biomedics

Moderator:

10:45 a.m. **Glottal vs Infraglottal Medialization**
Liran Oren, Ph.D.

10:55 a.m. **Vocal Fold Biomechanics, Histology, and Gene Expression after Augmentation in a Recurrent Laryngeal Nerve Injury Model**
Gregory Dion, M.D.

Friday, March 31, 2023 *(continued)*

- 11:05 a.m. **Experimental Investigation of Source-Filter Interaction in a Synthetic Larynx Model**
Christoph Näger, M.Sc.
- 11:15 a.m. **Measurement of Canine Thyroarytenoid Muscle Tone**
Randal Paniello, M.D., Ph.D., F.A.C.S.
- 11:25 a.m. **MRI-Based Finite Element Modeling of Human Larynx with Active Intrinsic Muscles – Posturing and Vibration**
Qian Xue, Ph.D.
- 11:35 a.m. **How Can Vocal Folds Oscillate with a Limited Mucosal Wave?**
Ingo R. Titze, Ph.D.
- 11:50 a.m. **Q & A**
- 12:00 p.m. **Lunch with Mentors**
- 1:15 p.m. **Poster Session I**
- 2:15 p.m. **Keynote Presentation: Vocal Fold Modeling**
Michael H. Krane, Ph.D.
- 2:35 p.m. **Q & A**
- Abstract Presentations – Session 3: Modeling**
Moderator:
- 2:45 p.m. **Evaluation of the One-Dimensional Glottal Flow Model in Predicting Voice Outcomes of Left-Right Asymmetric Vocal Fold Vibrations**
Tsukasa Yoshinaga, Ph.D.
- 2:55 p.m. **FSI Analysis of Aerodynamic and Elasticity Forces During Vocal Fold Vibration**
Liran Oren, Ph.D.
- 3:05 p.m. **Representation of Non-Phonotraumatic Vocal Hyperfunction Through Numerical Modeling**
Carlos Calvache Mora, Ph.D.
- 3:15 p.m. **Two Folds Triangular Body-Cover Model: Muscle Activation as an Imbalance Mechanism**
Jesús Parra, Ph.D. Candidate
- 3:25 p.m. **PhonoSim: A Patient-Specific Computational Modeling Suite for Phono-Surgery**
Haoxiang Luo, Ph.D.

Friday, March 31, 2023 *(continued)*

3:35 p.m. **Pressure-Flow Relationships in Self-Oscillating Poroelastic Vocal Fold Models**
Scott Thomson, Ph.D.

3:45 p.m. **Q & A**

3:55 p.m. **Refreshment Break and Exhibits**

Abstract Presentations – Session IV: Machine Learning

Moderator:

4:10 p.m. **Development of an AI Assisted Data Assimilation Framework for Voice Research**
Xudong Zheng, Ph.D.

4:20 p.m. **Machine Learning Based Estimation of Hoarseness Severity Using Sustained Vowels Recorded During High-Speed Videoendoscopy**
Tobias Schraut, Dipl.-Ing.

4:30 p.m. **Giving Statistical Title Back to Machine Learning: Statistical Power Analysis and Statistical Model Confidence of Machine Learning**
Hamzeh Ghasemzadeh, Ph.D.

4:40 p.m. **Prediction of Breathy Voice Quality by Frequency-Segmented Spectral Power Levels**
Takeshi Ikuma, Ph.D.

4:50 p.m. **Simultaneous Segmentation and Sub-Pixel Localization in Structured Light High-Speed Video Endoscopy**
Jann-Ole Henningson, M.Sc.

5:00 p.m. **Short-Term Prediction of Disease Symptoms Severity of Parkinson's Disease**
Daria Hemmerling, M.Sc.

5:10 p.m. **Q & A**

5:20 p.m. **Closing Comments and Town Hall**

5:30 p.m. **Adjourn**

Saturday, April 1, 2023

- 7:00 a.m. **Registration, Breakfast and Exhibits**
- 8:00 a.m. **Announcements**
Stephanie R.C. Zacharias, Ph.D., CCC-SLP
- 8:05 a.m. **Quantitative Laryngology: Don't Forget About the Swallow!**
Panel Discussion
Peter C. Belafsky, M.D., Ph.D., Ashli K. O'Rourke, M.D., and
Jessica W. Gregor, M.S., CCC-SLP
- 8:50 a.m. **Q & A**

Abstract Presentations – Session V: Quantitative Swallow and Ambulatory Voice Monitoring Moderator:

- 9:05 a.m. **Quantitative Analysis of Swallowing Using Time-Dependent Bolus Tracking**
Andreas Kist, Ph.D.
- 9:15 a.m. **Applying Bioinformatic Methods to Temporality Quantification of Swallowing Kinematics in Ultrasonographic Examinations**
Wilson Yiu Shun Lam, M.S.
- 9:25 a.m. **Effects of Semi-Occluded Vocal Tract Exercises (SOVTE) on Swallowing-Related Kinematics**
Adrián Castillo-Allendes, M.Sc., SLP
- 9:35 a.m. **Quantifying Ambulatory Voicing-Resting Behaviors Reveals Subtypes in Patients with Phototraumatic Vocal Hyperfunction**
Hamzeh Ghasemzadeh, Ph.D.
- 9:45 a.m. **Ambulatory Monitoring of Subglottal Pressure Estimated From Neck-Surface Vibration in Individuals With and Without Voice Disorders**
Daryush D. Mehta, Ph.D.
- 9:55 a.m. **Q & A**
- 10:05 a.m. **Refreshment Break and Exhibits**

Abstract Presentations – Session VI: Quantitative Imaging Moderator:

- 10:25 a.m. **Phonation Onset In An In-Vivo Canine Hemi Larynx Model: 3D Movement Patterns of the Medial Surface**
Patrick Schlegel, Ph.D.
- 10:35 a.m. **Videostroboscopy vs High-Speed Laryngeal Imaging; Factors Influencing Ratings of Laryngeal Oscillation**
Robert Brinton Fujiki, Ph.D., CCC-SLP

Saturday, April 1, 2023 *(continued)*

- 10:45 a.m. **A Novel Approach to High-Speed Transoral Fiberoptic Phonoscopy of the Glottis**
Michael H. Tyc, Ph.D.
- 10:55 a.m. **Experimental Comparison of Intraglottal Flow Fields Between Excised Canine Larynges and Multi-Layered Synthetic Vocal Folds**
Jacob Michaud, Ph.D.
- 11:05 a.m. **Influence of the Vocal Fold Kinematic Parameters on the Kymographic Waveform**
Jan G. Svec, Ph.D.
- 11:15 a.m. **Voice Efficiency for Different Voice Qualities Combining Sound Signals and Numerical Modeling of 3D MRI Vocal Tract Models**
Louisa Traser, M.D.
- 11:25 a.m. **Q & A**
- 11:35 a.m. **Lunch**
- 12:50 p.m. **Poster Session II**
- 1:50 p.m. **Keynote Presentation: Regenerative Medicine / Tissue Engineering**
Nathan Welham, Ph.D., CCC-SLP
- 2:10 p.m. **Q & A**

Abstract Presentations – Session VII: Tissue Engineering / Regenerative Medicine

Moderator:

- 2:20 p.m. **Contribution of Resident Commensal and Pathogenic Microbial Communities on Vocal Fold Mucosal Integrity and Function**
Vlasta Lungova, Ph.D.
- 2:30 p.m. **Piezo1-Expressing Vocal Fold Epithelia Modulate Remodeling Via Effects on Self-Renewal and Cytokeratin Differentiation**
Alexander Foote, Ph.D., CCC-SLP
- 2:40 p.m. **Development of Murine Larynx and Vocal Folds at Single-Cell Resolution**
Tadeas Lunga, MUDr.
- 2:50 p.m. **Microbial Gut-Larynx Axis and Laryngeal Immunity**
Ran An, Ph.D.
- 3:00 p.m. **Shape Design and Functional Evaluation of Scaffold Shapes for Reconstruction of Partial Laryngectomy Defects**
Juergen Neubauer, Ph.D.

Saturday, April 1, 2023 *(continued)*

- 3:10 p.m. **Fibrous Biomimetic Basement Membranes for Enhanced Wound Healing**
Dina M. Gadalla, Ph.D.
- 3:20 p.m. **Q & A**
- 3:30 p.m. **Refreshment Break and Exhibits**
- 3:45 p.m. **Panel Discussion: Future of Quantitative Laryngology Science**
Lana Shekim, Ph.D., Nathan Welham, Ph.D., CCC-SLP,
Michael H. Krane, Ph.D., Peter C. Belafsky, M.D., M.P.H.,
Ashli K. O'Rourke, M.D., Jessica W. Gregor, M.S., CCC-SLP
- 5:00 p.m. **Closing Comments and Adjourn**
- 6:30 p.m. **Reception and Awards Dinner**
Musical Instrument Museum