

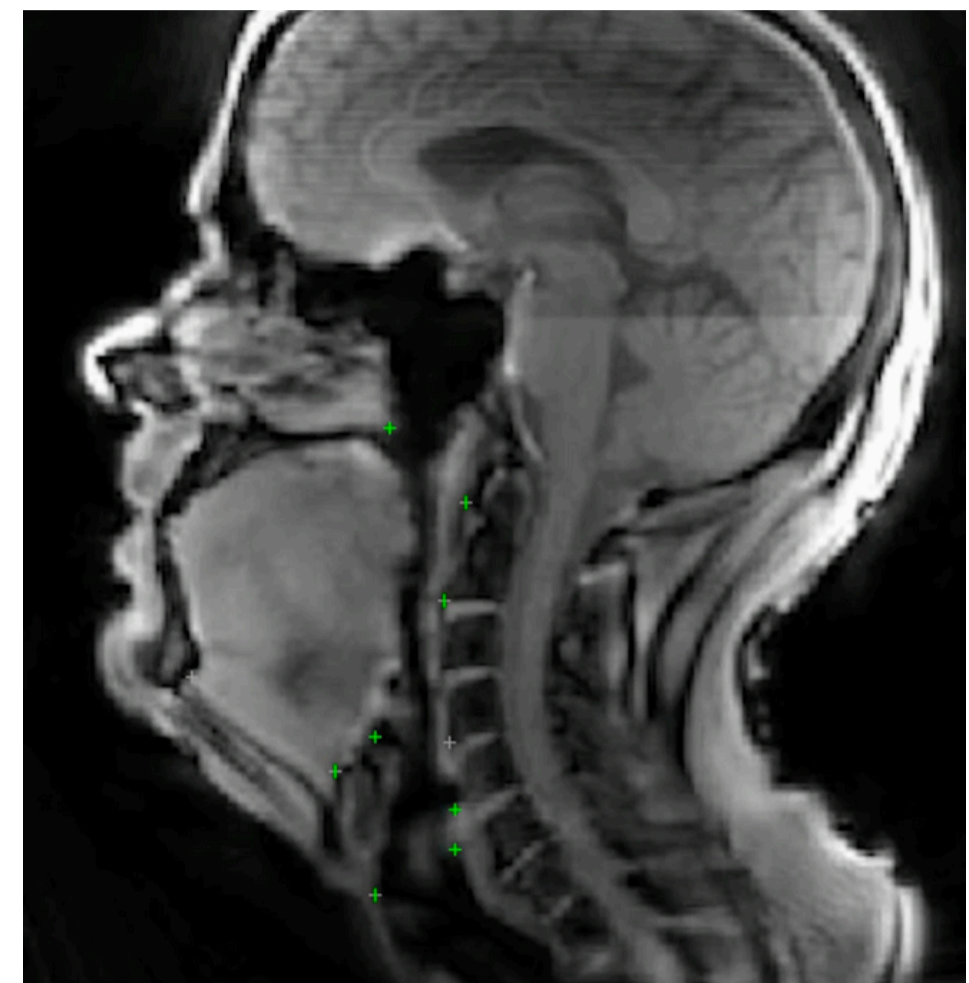


2024 NEWSLETTER

**Imaging, Evaluation, and Treatment
(I-EaT) of Swallowing Research Laboratory**



at Purdue University



A decade of cutting-edge clinical research on swallowing disorders at Purdue!

The faculty and staff of our lab are dedicated to high-level basic and clinical research and improving the health and quality of life of patients with swallowing disorders (also known as dysphagia). The research conducted in our lab focuses on the use of advanced imaging and electrophysiology techniques to understand the neural control of swallowing in the healthy population and following neurological trauma or intervention, developing and evaluating new neurorehabilitation interventions for neurogenic dysphagia, and the development and validation of wearable technologies and telehealth systems to improve access for swallowing care for as many patients as possible.



I-EAT RESEARCH LAB



Scan to access our lab website!

Welcome to the 2024 Newsletter!

2024 marked our lab's 10-year anniversary at Purdue. Therefore, this year, our Newsletter includes some of the most memorable moments/achievements of the past 10 years and highlights our progress this past year.

We are immensely thankful to our students and trainees who worked in our lab this past decade, and of course, to all our collaborators, Department, College, & University, the National Institutes of Health, our donors, and all the agencies that have supported our work during this time.

Enjoy our updates and the exciting directions we are taking in 2025!

1. Welcome to our 2024 Newsletter
2. A decade of the I-EaT Lab - Part 1
3. A decade of the I-EaT Lab - Part 2
4. Conferences & Publications 2024
5. Awards & Grants 2024
6. New Grants and Collaborations in 2024
7. Greulich Family Research Gift Updates
8. I-EaT Research Clinic & Lab Culture
9. Service & Advocacy
10. About our Team

A Decade of Innovation and Advancement

I-EaT Lab 2014-2024

How it all started in 2014!

Our first lab space & equipment

LYLES-PORTER HALL - Endoscopy, Fluoroscopy, & sEMG sensors



Our team through the years



A Decade of Innovation and Advancement

I-EaT Lab 2014-2024

SOME OF OUR ACHIEVEMENTS IN NUMBERS IN THE PAST 10 YEARS

Grants

3 NIH R01 Grants
2 NIH R21 Grants
2 Foundation Grants
11 Internal Purdue
Grants
1 Research Gift
1 Teaching Grant
3 Student Grants

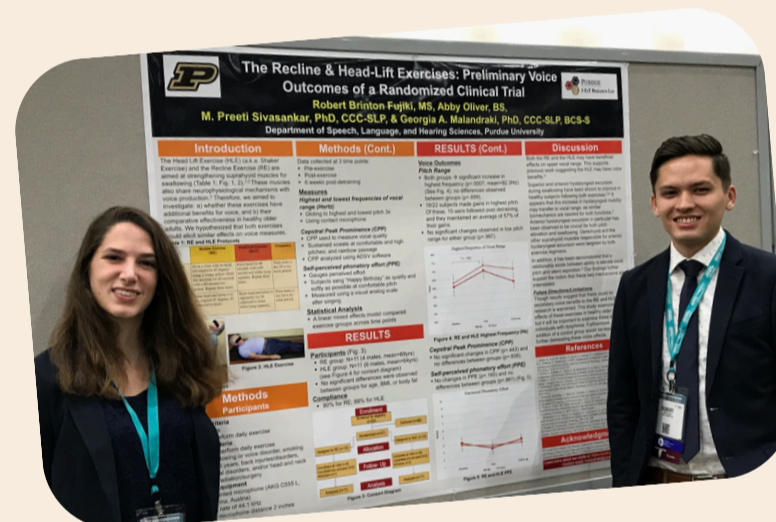


Publications/Products

35 peer-reviewed
6 invited - research
5 invited - clinical
6 book chapters
1 patent issued
2 technologies
disclosed

Presentations

>10 Keynotes
>10 international
invited talks
>40 national invited
talks
>60 peer-reviewed
presentations - most
led by students



Student Awards

5 University
Fellowships
7 National
Scholarships/Awards
>20 Internal Awards

Graduations

2 PhDs
3 MS thesis
3 MS non-thesis
1 Honors undergrad
>20 undergrads



Outreach

Our lab has
participated in >30
outreach events in the
past 10 years
supporting patients,
clinicians, & the
community

Conferences & Publications in 2024

International Presentations

Keynote

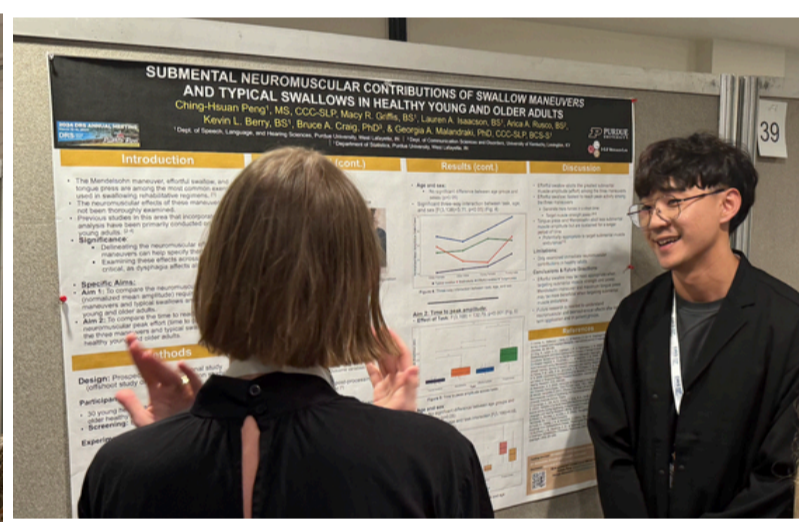
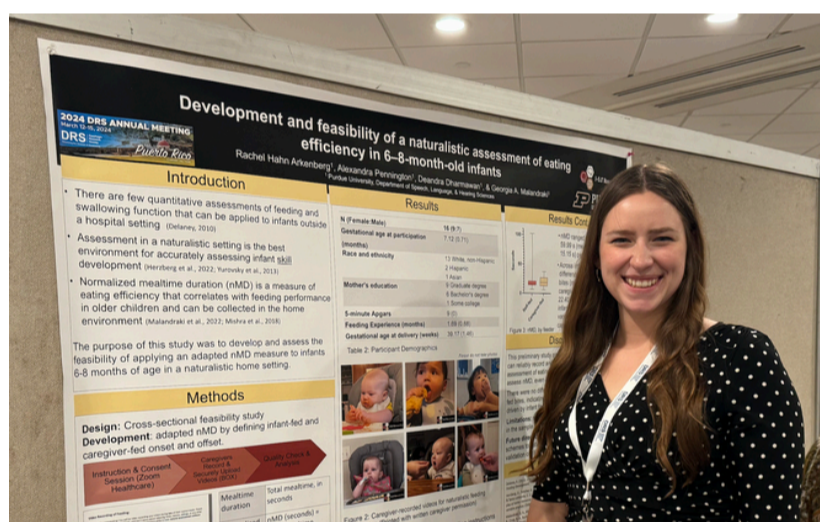
Malandraki, G.A. (2024). Billions of Neurons in your Pocket: Harnessing the Power of Neuroscience to Improve Pediatric Feeding Disorders Treatment (Keynote) (Virtual, April 2024). 2024 International Pediatric Feeding Conference, Feeding Matters.

Peer-Reviewed

Bosshardt, A., Malandraki, G.A., & Sutton, B. (2024). SimulScan and Partial Least Squares: Linking speech and swallowing dynamics to brain function. International Society for Magnetic Resonance in Medicine, Singapore.



Top: Dr. Malandraki & Dr. Sutton at the 2024 Dysphagia Research Society (DRS) Meeting
Bottom: Rachel Hahn Arkenberg & Freddie Peng presenting their posters at the same meeting



National Presentations

Keynotes / Invited Lectures (selected)

Malandraki, G.A. (2024). Telehealth for Dysphagia Care: Meeting the Needs of Older Individuals with Dysphagia who Live in Rural Areas (Keynote). Defining Dysphagia for the Aging Population (NIH-supported conference), Philadelphia, USA.

Peng, C-H, & Malandraki, G.A., (2024). Increasing our understanding of neuromuscular contributions in swallowing rehabilitation: Validation and first data from a new wearable sEMG biofeedback system. Indiana Speech Language Hearing Association Convention, Indianapolis, IN.

Hahn Arkenberg, R., & Malandraki, G.A., (2024). How do babies and children learn? Examining feeding with skills-based assessment. Indiana Speech Language Hearing Association Convention, Indianapolis, IN.

Peer-Reviewed (selected)

Albert, S.W., Castillo-Allendes, A., Curtis, J.A., Griffin, L., Hoffman, B., Hoffman, M.R., Hunter, E.J., Kelchner, L.N., Khosravani, H., Malandraki, G.A., Pandian, V., Roldan-Vasco, S., Rosen, T., Smithard, D.G., Stinnett, S., Suiter, D.M., Welden, K., Starmer, H.M., & Rameau A. (2024). Expert consensus statement on acoustic metrics for screening for swallowing dysfunction in older adults: A Delphi study. Fall Voice Conference, Phoenix, AZ.

Bosshardt, A., Malandraki, G.A., Pearson, W., Arnold, P., & Sutton, B. (2024). Developing Improved Visualization of the Swallow in SimulScan: Simultaneous Functional MRI and Dynamic Imaging of Swallowing with MRI. Dysphagia Research Society Meeting, San Juan, PR.

Debnath, S., Rogus-Pulia, N., Malandraki, G.A., & Boudouris, B.W. (2024). Bioinspired Saliva-gels: an Improved Potential Xerostomia Relief Solution. Dysphagia Research Society Meeting, San Juan, PR.

PUBLICATIONS & PATENTS 2024

- Hahn Arkenberg, R., Mitchell, S.S., Venkatraman, A., Sivasankar, M.P., Pearson, W., & **Malandraki, G.A.** (accepted, minor revision). Maximum vocal pitch elevation and swallowing: A secondary data analysis supporting additional shared mechanisms and potential treatment targets. Journal of Speech, Language, & Hearing Research.
- Kantarcigil, C., Smith, R.F., Martin-Harris, B., Arrese, L., & **Malandraki, G.A.** (accepted). Asynchronous Telehealth for Dysphagia Management: Evidence, Possibilities, & Practical Examples. Perspectives of the ASHA Special Interest Groups, SIG18.
- Lazarus, C.L. & **Malandraki, G.A.** (in press). Oropharyngeal Dysphagia in Adults. In Kountakis, S.E. (Ed.), Encyclopedia of Otolaryngology, Head and Neck Surgery. Springer.
- Kantarcigil, C. & **Malandraki, G.A.** (2024). Motor Learning in Dysphagia Rehabilitation. In Mourão, L. F. (Ed.), Reabilitação das disfagias orofaríngeas: Aplicabilidade Clínica dos Conceitos do Condicionamento Muscular e Aprendizado Motor, pp. 140-181. Editora Langage, Brazil.

New PATENT ISSUED

US Patent number:
12,114,982; 10/15/2024

C.H. Lee & G.A. Malandraki
(co-inventors)



Awards & Grants in 2024

Awards Received by Lab Students - We have the BEST students!



Big congratulations to Rachel Hahn Arkenberg (top), Vaishnavi Krishna (bottom right) and to Freddie Peng (bottom left) for all their 2024 awards!

Ching-Hsuan (Freddie) Peng

- Ringel Student Research Award, Department of Speech, Language, & Hearing Sciences

Vaishnavi Krishna

- Indiana Lions McKinney Club Research Award

Rachel Hahn Arkenberg

- Defended her dissertation and obtained her PhD!
- Purdue University Bilsland Dissertation Fellowship
- 3rd place in Purdue University HHS College 3 min thesis competition

Awards & Honors Received by Our Lab Director (Dr. Malandraki)

- Selected on the cohort of the 2024 HERS Leadership Institute
- Purdue University Seed for Success Acorn Award
- Ruth and M.D. Steer Outstanding Teacher Award, SLP Graduate Instructor, Department of Speech, Language, & Hearing Sciences, Purdue University

RESEARCH GRANTS

CONTINUED RESEARCH GRANTS - PROGRESS

We have been continuing 2 of our collaborative NIH-funded studies and we are happy to share exciting updates

NIH NINDS R01 (PI: Troche; site PI: Malandraki)

- **Rehabilitation of Airway Protection in Parkinson's Disease: Comparing in-person and telehealth service delivery models**
 - We are at the mid-point of data collection in this longitudinal RCT (year 3 of 5)
 - Data analysis is ongoing



Collaborator & PI
Dr. Troche
from TCCU



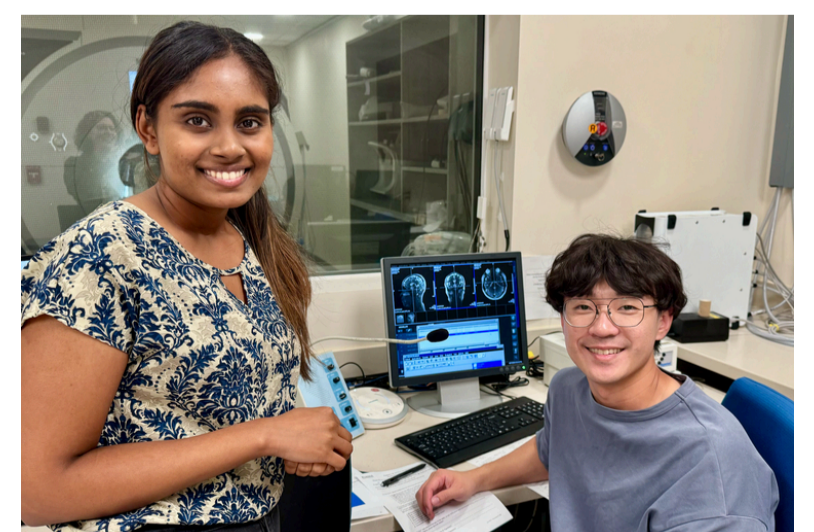
Our Research SLP, Emily Bible-Ramsey, working on the NINDS R01 study

NIH NIA R01 (M-PIs: Malandraki & Sutton)

- **SimulScan: Simultaneous functional and dynamic MRI for evaluating swallowing across age and in neurogenic dysphagia**
 - We are in year 2 of 5 in this study and data collection is ongoing
 - Our first technical paper is in preparation



Collaborator
Dr. Sutton
from UIUC



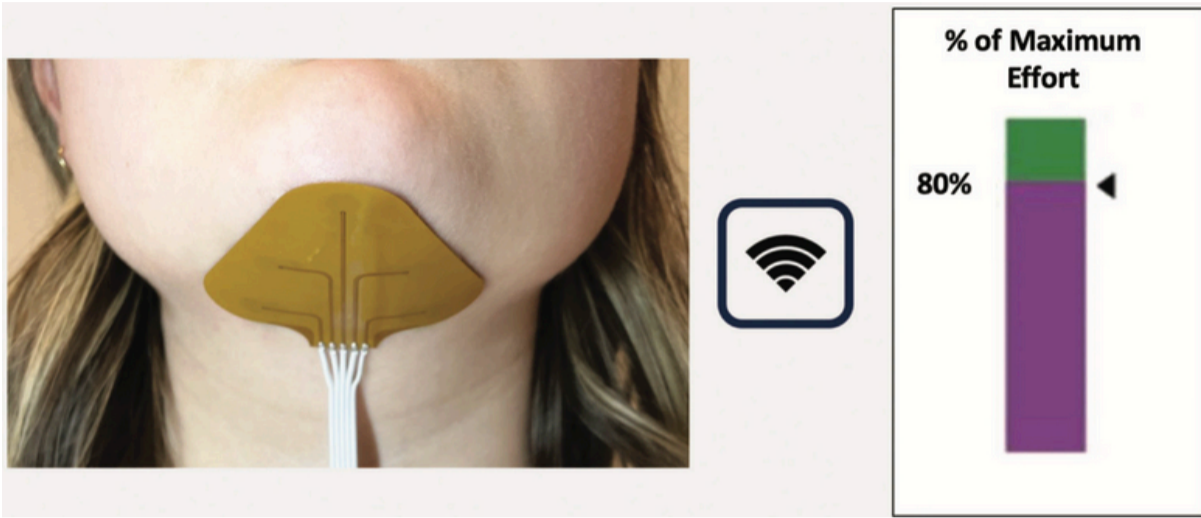
Our PhD students, Freddie and Vaish, collecting SimulScan data for our NIA R01

New Grants & Collaborations in 2024

We are excited to announce two new research grants in 2024!

NIH-NIA R01 (PI: Malandraki)

- **Impact of wearable biofeedback for the rehabilitation and tele-rehabilitation of neurogenic dysphagia**
 - **Aim:** To determine the efficacy of sEMG biofeedback (using i-Phagia) as an adjunct to swallow therapy on improving swallowing in patients with chronic stroke or Parkinson’s disease
 - **Collaborators:** Dr. Bruce Craig, Dr. Jessica Huber, Jaime Bauer Malandraki, Kevin Berry, Shelley Reichelt, Dr. Christopher James, Nina Shahin, Bill Pearson
 - **Status:**
 - Hiring and preparation in process
 - Recruitment and data collection to begin in the spring/summer



The i-Phagia biofeedback system that is used in our new randomized clinical trial

Purdue College of Health and Human Sciences Health of the Forces Pilot Grant (PI: Malandraki, co-PI: Lin)

- **Remote monitoring of eating safety and efficiency: an AI integrated validation approach to improve Veterans’ wellbeing**
 - **Aim:** To integrate machine learning within our sensors system in order to develop a remote swallow safety and efficiency monitoring device.
 - **Collaborators:** Guang Lin, Jaime Bauer Malandraki
 - **Status:** Data collection and analysis in progress



Our PhD student, Vaish, collecting data for the Sensors AI Health of the Forces Pilot grant



Dr. Arianna LaCroix



Dr. Jiyeon Lee



Dr. Georgia Malandraki

New Collaborative Data Repository

Our lab joined the Purdue Aphasia Brain Injury Communication and Cognition Lab (ABC) (PI: LaCroix) and the Purdue Aphasia Lab (PI: Lee) in their effort to create an Aphasia and Dysphagia Data Repository (ADDR). This repository will help researchers across our labs to recruit participants for studies and will allow the community to help with research focused on stroke.

Interested in joining our registry? Scan the QR code on the right to join and we will contact you for future studies.



Greulich Family Research Gift Award & Endowment Updates

In 2022, David (Dave) C. Greulich established the Greulich Family Research Gift to our lab and the Deanna M. Greulich, RN Memorial Endowment. This generous gift and endowments were made in honor of Deanna (Dee) M. Greulich, his beloved wife of 53 years.

Dee was a Registered Nurse for decades, retiring in 2007. Throughout her long career, Dee's caring touch helped to heal countless individuals as she blended skill with a compassionate heart. Despite her extensive healing experience, Dee suffered from dysphagia (likely secondary to three cervical surgeries she had in the past) which, unfortunately, remained un-diagnosed for several years. Despite her frequent complaints about swallowing difficulties, their severity was often minimized or misunderstood.

In Dee's memory, and in an effort to help improve dysphagia identification/diagnosis and treatment, her husband, Dave (a proud Purdue alumnus) and her family generously offered a research gift and a memorial endowment to our team and the SLHS Department. Since then, our team honors Dee's memory in all of our work related to our sensors projects. Our relationship with Dave and his family was recently showcased by a wonderful media article in the Purdue Alumnus magazine.



Deanna & David Greulich on their 50th anniversary



“A Gift of Love” the story of David Greulich by Kat Braz

SCAN the Code to read this story!



The lab members loved meeting with Dave and getting to update him about the progress of our studies!

David C. Greulich & Deanna M. Greulich Research Gift Award

In support of research activities within the I-EaT Lab at Purdue (Director: Malandraki)
Total Amount of gift: \$150,000 (over 5 years)

Deanna M. Greulich, RN Memorial Endowment

In support of students involved in research activities within the Purdue Department of Speech, Language, & Hearing Sciences
Total amount of endowment: \$100,000 (lifetime)

THANK YOU to the Greulich family for their continuous support!

I-EaT Research Clinic News & Lab Culture

THE PURDUE I-EAT CLINIC

The Purdue I-EaT Clinic serves adult and pediatric populations with difficulties in swallowing that may have occurred, for example, as a result of a stroke, traumatic brain injury, treatment for head and neck cancer, or because of disorders/diseases such as Parkinson's disease, cerebral palsy, inflammatory myopathies, and multiple sclerosis, among others. The in-house clinic features cutting-edge assessment and treatment equipment. Our clinical faculty consists of one of the best multidisciplinary teams of dysphagia experts in the state.

2024 I-EAT CLINIC UPDATES

The Purdue I-EaT Clinic is led by our Clinical Director and Board Certified Specialist in Swallowing and Swallowing Disorders, Jaime Bauer Malandraki.

- We provided comprehensive evaluations, treatments, and consultations to more than 18 patients this past year.
- 10 graduate SLP students rotated for their clinical placements through the Clinic.



Scan to access
the clinic's
website!



LAB CULTURE

HAPPY THOUGHTS JAR

- Throughout the year, lab members write down fun memories that happened in the lab and place them in a jar. At the end of the year, the lab gathers for a dinner celebration and each member takes turns reading a portion of the Happy Thoughts. The Jar started 8 years ago and has continued to be a beloved tradition in our lab.

LAB GATHERINGS & ACTIVITIES

- Throughout the year, our lab engages in several social activities and gatherings to celebrate successes, release stress, and support each other. Enjoy some photos of our gatherings this past year!

SECRET SANTA

- For the end of year Holidays, lab members participate in a fun game of Secret Santa where they are assigned another lab member to get a gift for. The assignments are a secret until gifts are revealed at the end-of-the-year lab outing!

Connect with our social media platforms below to learn more about us!



Twitter

@IEaTLab



Facebook

I-EaT Swallowing
Laboratory



Instagram

@ieat.lab



Service & Advocacy in 2024

This year we also wanted to highlight our continued efforts to support our profession through dedicated service and advocacy

In addition to our commitment to research, education, and clinical service, our team is equally committed to helping our professional community locally, nationally, and internationally. Here are some highlights of our efforts to advocate for our profession, continue helping clinicians across the globe, disseminating easily digestible knowledge, and serving others in 2024!



Our lab director, Dr. Malandraki, is the co-leader (with Dr. Allison Schaser) of the Greater Lafayette Parkinson's Disease Support and Educational Group, continuing the work of Dr. Jessica Huber



We participated in the DRS Dash for Dysphagia to raise funds for dysphagia research!



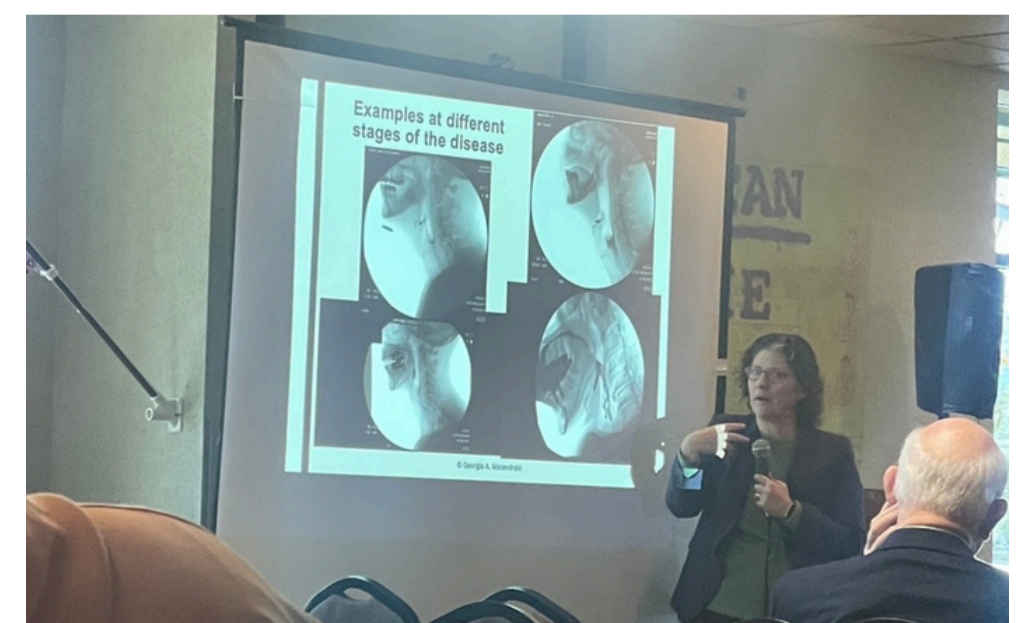
"The best way to find yourself is to lose yourself in the service of others."
Mahatma Gandhi

Our team also presented at various community outreach events, like an educational online webinar and the Parkinson's Symposium and Caregiver Conference for the Parkinson Awareness Association of Central Indiana, and educational seminars at Westminster Village, in West Lafayette, IN.



Presentation at Westminster Village

Freddie, Dr. Malandraki, Lauren, Mallory, and Anna all had a great time interacting with community members at Westminster Village!



Presentation at Parkinson's Symposium and Caregiver Conference with PAACI

Dr. Malandraki was the keynote speaker and presented about Swallowing Function & Optimizing Eating in PD

Current Core Lab Team

Director:

Georgia A. Malandraki, PhD, CCC-SLP, BCS-S

Core Doctoral Students:

Freddie (Ching Hsuan) Peng, MS, CCC-SLP

Vaishnavi Krishna, MA, CCC-SLP

Lab Manager:

Anna Szlembarski, BS

Undergraduate Students:

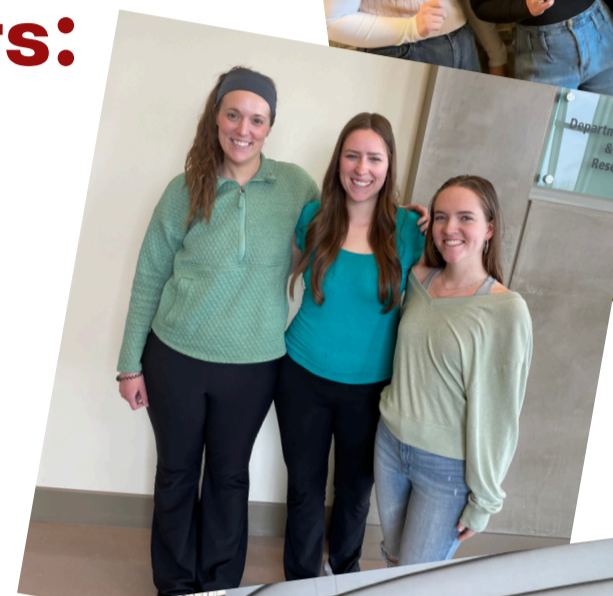
Sasha Flores

Deandra Dharmawan

Hannah Cosgray

Jacqueline Zelic

Lia Gosselin



Research SLPs:

Jaime Bauer Malandraki, MS, MS, CCC-SLP, BCS-S

Emily Bible-Ramsey, MS, CCC-SLP

Shelley Reichelt, MS, CCC-SLP

Recent Alumni: Where are they now?



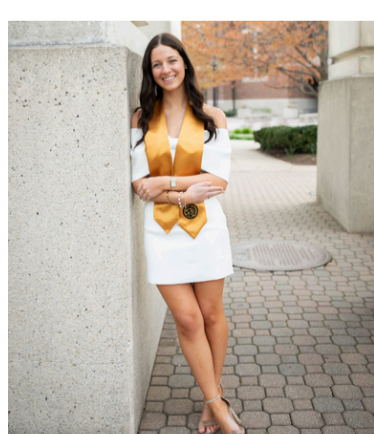
Dr. Rachel Hahn Arkenberg, PhD, CCC-SLP

Rachel graduated with her PhD in May and is working as an Assistant Professor at Butler University in Indianapolis, Indiana.



Ellie Jensen, BS:

Ellie graduated in May and is currently a graduate student at Purdue University.



Mallory Leonard, BS:

Mallory graduated in May and is currently a graduate student at Massachusetts General Hospital IHP in Boston.

ADDITIONAL 2024 HIGHLIGHTS

- Our PhD student Rachel Hahn Arkenberg graduated! Congratulations, Dr. Arkenberg!
- We participated in the very successful 10th SLHS Anniversary in LYLE event in November!
- Dr. Malandraki gave the Keynote talk at the International Feeding Matters Conference!
- Dr. Malandraki was appointed as the Graduate Program Director of Purdue SLHS.

NEWEST ADDITIONS!

This year we welcomed three new members: Vaishnavi Krishna, who is our newest PhD student; Lia Gosselin, who is an undergraduate student in BME, and Jacqueline Zelic, who is an undergraduate student in pharmaceutical sciences.

**To learn more about our lab, our work,
and our current studies, email us at
swallowinglab@purdue.edu or**

visit: <https://www.purdue.edu/i-eatlab/>



Scan to access our lab website!