

# **William L. Gross, MD PhD**

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## FACULTY APPOINTMENTS

## **Current Appointments:**

Associate Professor of Anesthesiology	Medical College of Wisconsin	2024 – present
Secondary appointment in Neurology	Medical College of Wisconsin	2019 – present
Secondary in Biophysics & Biomed. Eng.	Medical College of Wisconsin	2022 – present
Co-Director, Anesthesiology Clinomics	Medical College of Wisconsin	2024 – present

#### **Prior Appointments:**

Director, Med. Student Anesth. Clerkship	Medical College of Wisconsin	2021 – 2025
Assistant Professor of Anesthesiology	Medical College of Wisconsin	2019 – 2024
Instructor, Anesthesiology	Medical College of Wisconsin	2018 – 2019

EDUCATION

Neuroanesthesiology Fellow	Medical College of Wisconsin	7/2018 – 6/2019
Resident, Anesthesiology	Medical College of Wisconsin	7/2014 – 6/2018
Post-doctoral Research Fellow	Medical College of Wisconsin	7/2013 – 7/2014
Resident, Neurosurgery	The Ohio State University	7/2012 – 6/2013
M.D.	Medical College of Wisconsin	8/2005 – 5/2012
Ph.D., Biophysics	Medical College of Wisconsin	7/2007 – 6/2010

*Emphasis on Neuroscience and MRI, mentored by Dr. Jeffrey Binder, MD*

## *Dissertation: "Using fMRI to Improve Outcome in the Surgical Treatment of Temporal Lobe Epilepsy."*

B.A., Psychology University of Wisconsin, Milwaukee 8/2001 – 5/2004

## ADDITIONAL TRAINING & CERTIFICATIONS

### **Additional Training:**

### **Certifications:**

Board certified American Board of Anesthesiology 3/5/20 – present  
Basic PTE, Testamer National Board of Echocardiography 12/2/2020

## GRANTS AWARDED

## **Brain-to-text computer interfaces as a precursor for artificial speech restoration in aphasia**

Co-I (PI: Anderson)

2024 – 2026

AHW Momentum 5520801 | \$250,000 total funds

# Decoding mental concept identities using electrocorticography

PI

2023 – 2026

NIDCD R21 DC021013 | \$585,000 total funds

<b>Center for Aphasia Research and Recovery</b>	
<i>Co-I (PI: Binder)</i>	<b>2022 – 2024</b>
AHW PPG Pilot AHW004327   \$250,000 direct funds	
<b>Defining the Neural Dynamics of Concept Retrieval Using Electrocorticography</b>	
<i>PI</i>	<b>2020 – 2022</b>
Supported by NIH NCATS KL2 TR001438   \$279,400 direct funds	
<b>Localizing critical areas for concept identification with fMRI</b>	
<i>PI</i>	<b>2021 – 2022</b>
AHW CNRP Seed Grant Award   \$20,000 direct funds	

## PUBLICATIONS

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- Anderson AJ, Fernandino L, **Gross WL**, Rey HG, Binder JR. (2025) Neural decoding of autobiographical mental image features with a general semantic model. *Nat Commun*; 16(1):11208. doi:10.1038/s41467-025-65541-1. PMID:41387573.
- Pillay S, Maruska B, Butts AM, Saber M, **Gross WL**. (2025) The Differential Effects of Propofol and Dexmedetomidine on Intraoperative Neuropsychological Testing During Awake Craniotomies. *World Neurosurg*; 202:124400. doi:10.1016/j.wneu.2025.124400. PMID:40850667.
- Gross WL**, Swanson SJ, Helfand AI, Pillay SB, Humphries CJ, Raghavan M, et al.. (2025) Predicting memory decline from left temporal lobe epilepsy surgery using preoperative fMRI: a multicenter study. *Neuroimage Clin*; 46:103804. doi:10.1016/j.nicl.2025.103804. PMID:40424645.
- Pillay SB, **Gross WL**, Janecek JK, Binder JR, Oleksy AJ, Swanson SJ. (2023) Reliable change on the selective reminding test in a series of left-hemisphere language dominant patients with right temporal lobe epilepsy. *Epilepsy Behav*; 138:109004. doi:10.1016/j.yebeh.2022.109004. PMID:36473300.
- Youssofzadeh V, Conant L, Stout J, Ustine C, Humphries C, **Gross WL**, et al.. (2022) Late dominance of the right hemisphere during narrative comprehension. *Neuroimage*; 264:119749. doi:10.1016/j.neuroimage.2022.119749. PMID:36379420.
- Pillay SB, **Gross WL**, Heffernan J, Book DS, Binder JR. (2022) Semantic network activation facilitates oral word reading in chronic aphasia. *Brain Lang*; 233:105164. doi:10.1016/j.bandl.2022.105164. PMID:35933744.
- Gross WL**, Helfand AI, Swanson SJ, Conant LL, Humphries CJ, Raghavan M, et al.. (2022) Prediction of Naming Outcome With fMRI Language Lateralization in Left Temporal Epilepsy Surgery. *Neurology*; 98(23):e2337-e2346. doi:10.1212/WNL.0000000000200552. PMID:35410903.
- Gross WL**, Sacho RH. (2021) Intracranial Vascular Procedures. *Anesthesiol Clin*; 39(1):1-18. doi:10.1016/j.anclin.2020.10.001. PMID:33563374.
- Binder JR, Tong JQ, Pillay SB, Conant LL, Humphries CJ, Raghavan M, et al.. (2020) Temporal lobe regions essential for preserved picture naming after left temporal epilepsy surgery. *Epilepsia*; 61(9):1939-1948. doi:10.1111/epi.16643. PMID:32780878.
- Youssofzadeh V, Stout J, Ustine C, **Gross WL**, Conant LL, Humphries CJ, et al.. (2020) Mapping language from MEG beta power modulations during auditory and visual naming. *Neuroimage*; 220:117090. doi:10.1016/j.neuroimage.2020.117090. PMID:32593799.
- Swanson SJ, Conant LL, Humphries CJ, LeDoux M, Raghavan M, Mueller WM, et al.. (2020) Changes in description naming for common and proper nouns after left anterior temporal lobectomy. *Epilepsy Behav*; 106:106912. doi:10.1016/j.yebeh.2020.106912. PMID:32179500.
- Gross WL**, Lauer KK, Liu X, Roberts CJ, Liu S, Gollapudy S, et al.. (2019) Propofol Sedation Alters Perceptual and Cognitive Functions in Healthy Volunteers as Revealed by Functional Magnetic Resonance Imaging. *Anesthesiology*; 131(2):254-265. doi:10.1097/ALN.0000000000002669. PMID:31314747.

- Liu X, Lauer KK, Ward BD, Roberts CJ, Liu S, Gollapudy S, et al.. (2019) Regional entropy of functional imaging signals varies differently in sensory and cognitive systems during propofol-modulated loss and return of behavioral responsiveness. *Brain Imaging Behav*; 13(2):514-525. doi:10.1007/s11682-018-9886-0. PMID:29737490.
- Pillay SB, **Gross WL**, Graves WW, Humphries C, Book DS, Binder JR. (2018) The Neural Basis of Successful Word Reading in Aphasia. *J Cogn Neurosci*; 30(4):514-525. doi:10.1162/jocn\_a\_01214. PMID:29211656.
- Liu X, Lauer KK, Ward BD, Roberts CJ, Liu S, Gollapudy S, et al.. (2017) Fine-Grained Parcellation of Brain Connectivity Improves Differentiation of States of Consciousness During Graded Propofol Sedation. *Brain Connect*; 7(6):373-381. doi:10.1089/brain.2016.0477. PMID:28540741.
- Pillay SB, Binder JR, Humphries C, **Gross WL**, Book DS. (2017) Lesion localization of speech comprehension deficits in chronic aphasia. *Neurology*; 88(10):970-975. doi:10.1212/WNL.0000000000003683. PMID:28179469.
- Liu X, Lauer KK, Douglas Ward B, Roberts C, Liu S, Gollapudy S, et al.. (2017) Propofol attenuates low-frequency fluctuations of resting-state fMRI BOLD signal in the anterior frontal cortex upon loss of consciousness. *Neuroimage*; 147:295-301. doi:10.1016/j.neuroimage.2016.12.043. PMID:27993673.
- Binder JR, Pillay SB, Humphries CJ, **Gross WL**, Graves WW, Book DS. (2016) Surface errors without semantic impairment in acquired dyslexia: a voxel-based lesion-symptom mapping study. *Brain*; 139(Pt 5):1517-26. doi:10.1093/brain/aww029. PMID:26966139.
- Fernandino L, Humphries CJ, Seidenberg MS, **Gross WL**, Conant LL, Binder JR. (2015) Predicting brain activation patterns associated with individual lexical concepts based on five sensory-motor attributes. *Neuropsychologia*; 76:17-26. doi:10.1016/j.neuropsychologia.2015.04.009. PMID:25863238.
- Fernandino L, Binder JR, Desai RH, Pendl SL, Humphries CJ, **Gross WL**, et al.. (2016) Concept Representation Reflects Multimodal Abstraction: A Framework for Embodied Semantics. *Cereb Cortex*; 26(5):2018-34. doi:10.1093/cercor/bhv020. PMID:25750259.
- Gross WL**, Binder JR. (2014) Alternative thresholding methods for fMRI data optimized for surgical planning. *Neuroimage*; 84:554-61. doi:10.1016/j.neuroimage.2013.08.066. PMID:24021837.
- Langford J, **Gross WL**. (2011) Psychosis in the context of sodium oxybate therapy. *J Clin Sleep Med*; 7(6):665-6. doi:10.5664/jcsm.1478. PMID:22171207.
- Binder JR, **Gross WL**, Allendorfer JB, Bonilha L, Chapin J, Edwards JC, et al.. (2011) Mapping anterior temporal lobe language areas with fMRI: a multicenter normative study. *Neuroimage*; 54(2):1465-75. doi:10.1016/j.neuroimage.2010.09.048. PMID:20884358.
- Gross WL (2010). Using fMRI to Improve Outcome in the Surgical Treatment of Temporal Lobe Epilepsy. PhD dissertation, Medical College of Wisconsin.
- Nielson KA, Seidenberg M, Woodard JL, Durgerian S, Zhang Q, **Gross WL**, et al.. (2010) Common neural systems associated with the recognition of famous faces and names: an event-related fMRI study. *Brain Cogn*; 72(3):491-8. doi:10.1016/j.bandc.2010.01.006. PMID:20167415.
- Gross WL**, Greene AJ. (2007) Analogical inference: the role of awareness in abstract learning. *Memory*; 15(8):838-44. doi:10.1080/09658210701715469. PMID:18033621.
- Greene AJ, **Gross WL**, Elsinger CL, Rao SM. (2007) Hippocampal differentiation without recognition: an fMRI analysis of the contextual cueing task. *Learn Mem*; 14(8):548-53. doi:10.1101/lm.609807. PMID:17690338.
- Greene AJ, **Gross WL**, Elsinger CL, Rao SM. (2006) An fMRI analysis of the human hippocampus: inference, context, and task awareness. *J Cogn Neurosci*; 18(7):1156-73. doi:10.1162/jocn.2006.18.7.1156. PMID:16839289.

## INVITED LECTURES

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### Toward an Implanted Language Neuroprosthesis for Severe Aphasia

Visiting professor, University of Madison Dept. of Anesthesiology Grand Rounds

2/7/2024

### Beyond Wernicke's – Advancing our Approach to Preventing Language Deficits

Invited lecture, University of Washington, Seattle

6/8/2021

## TEACHING & MENTORING

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### PhD Mentees & Committees

Dewan Imran Ahmed (Mentee)	MCW, Biomed. Eng.	2026 – present
Alex Skitowski (Mentee)	MCW, Biophysics	2024 – present
Aleksandra Winiarz (Committee)	MCW, Biophysics	2021 – present
Stephen Mazurchuk (Committee)	MCW, Biophysics	Graduated 2024

*Dissertation: "An Experiential Account of Semantic Category Organization in the Brain"*

Alexander Helfand (Committee)	MCW, Biophysics	Graduated 2020
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*Dissertation: "Toward a gold standard: An outcomes-based assessment of fMRI-based methods for probing language laterality in the brain"*

### Postdoctoral Fellows

Sunil Mathew, PhD	MCW, Anesthesiology	2025 – present
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### Student Mentees (Residents & Graduate)

Michelle Kassel (PhD)	UWM	2018 – 2019
Kevin Beitz (Resident)	MCW	2019 – 2023
Pooria Bakheshi (Resident)	MCW	2020 – 2021
Saagar Sheth (Resident)	MCW	2021 – 2025
Marcus Cooley (Resident)	MCW	2022 – 2026

### Medical Students

Ying Qiu Zhou	MCW	2013 – 2014
Ipsit Shah	MCW	2021 – 2024
Ashley Perry	MCW	2021 – 2025
Benjamin Maruska	MCW	2021 – 2024

### Curriculum Development

Fusion Curriculum	MCW (Anesthesiology)	2021 – 2024
Adjunct Faculty	Carroll University	9/2013 – 5/2014

*PTH 560 - Pathology, PTH 405 - Neuroscience*

## AWARDS

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Fellow Teacher of the Year MCW Anesthesia Residents 2018–2019

Outstanding Medical Student Teacher MCW 2018, 2020

Supportive Faculty Award MCW Dept. of Anesthesiology 2020–2021

Outstanding Educational Leader Award MCW 2025

## PROFESSIONAL SOCIETIES

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Society for Neuroscience in Anesthesia and Critical Care	since 2018
American Society of Anesthesiologists	since 2014
Congress of Neurological Surgeons	2012 – 2014
American Association of Neurological Surgeons	2009 – 2014

**JOURNAL REVIEWS / STUDY SECTIONS**

NIH, Special Emphasis Panel: Language, Cognition, and Motor; ZRG1 BP-G(91)	1/2026
NIH, Neurotechnology and Vision Study Section; NV-C(15)	6/2025
NIH, Language and Communications Study Section; LCOM (Early Career Rev.)	2/2024
Journal of Neurosurgical Anesthesia (Editorial Board Member)	7/2023 – 7/2025
Journal of Neurosurgical Anesthesia (Reviewer)	since 5/2020
NeuroImage (Reviewer)	since 3/2020