

A. IDENTIFYING DATA

Amit Ayer, MD MBA
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832-451-7474

B. ACADEMIC HISTORY

Colleges and Universities Attended

8/2005-5/2009 B.Sc with Honors (*Life Sciences, Immunology*), Queen's University, Kingston, ON, Canada.
6/2009-5/2013 M.D., Wake Forest University School of Medicine, Winston-Salem, NC.
4/2017-12/2018 MBA (*Health Care Administration, Entrepreneurship*), Northwestern University Kellogg School of Management, Evanston, IL.

Residency and Fellowship Training

7/2013-6/2014 Internship (*Neurological Surgery*)
Northwestern University Feinberg School of Medicine, Chicago, IL.
7/2014-6/2019 Residency (*Neurological Surgery*)
Northwestern University Feinberg School of Medicine, Chicago, IL.
12/2018-4/2019 International Rotation (*Skull Base and Neurooncology*)
Agostino Gemelli Polyclinic, Rome, Italy.
7/2019-6/2020 Chief Residency (*Neurological Surgery*)
Northwestern University Feinberg School of Medicine, Chicago, IL.
7/2020-6/2021 Fellowship (*Stereotactic, Functional Neurosurgery and Epilepsy*)
Stanford University School of Medicine, Palo Alto, CA.

Scholarships and Honors

2005-2009 Dean's List
Faculty of Arts and Sciences, Queen's University. Kingston, ON, Canada.
5/2019 Dean's Distinguished Service Award
Northwestern University Kellogg School of Management. Evanston, IL

Board Certification

2011 USMLE Step I
2012 USMLE Step IICS and Step IICK
2013 USMLE Step III
2017 American Board of Neurological Surgery (*written examination*)

C. EMPLOYMENT

Academic Appointments:

7/2020-6/2021 Clinical Instructor of Neurological Surgery
Stanford University School of Medicine, Stanford, California

Other Appointments:

April 2017 to present Cofounder, Rhaeos, Evanston, Illinois.
April 2018 to present Cofounder, Hubly Surgical, San Francisco, CA.
July 2020 to present Medical Staff, Santa Clara Valley Hospital, Palo Alto, CA.

D. TEACHING AND CLINICAL CARE

Clinical Teaching Responsibilities

7/2017-1/2018 Instructor, Problem Based Learning
Northwestern University Feinberg School of Medicine, Chicago, IL.
6/2019-6/2020 Instructor, Medical Student Neurosurgery Subinternship
Northwestern University Feinberg School of Medicine, Chicago IL.

Other Teaching Experience

04/2012	" <i>The Pediguard Apparatus; Novel Tools for Pedicle Screw Fixation</i> ," Wake Forest University Department of Neurosurgery Grand Rounds. Winston-Salem, NC. April 15, 2012.
05/2012	" <i>Cerebral Abscesses</i> " University of Toronto Department of Neurosurgery Grand Rounds, Toronto, ON. May 5, 2012.
06/2012	" <i>Carotid-Cavernous Fistulas</i> ," University of Miami Department of Neurosurgery Grand Rounds, Miami, FL, June 12, 2012.
09/2012	" <i>Gamma Knife Radiosurgery for Metastases to the Cavernous Sinus</i> ," Columbia University Department of Neurosurgery Grand Rounds, New York, NY, September 15, 2012.
02/2016	" <i>Giant Intracranial Middle Cerebral Artery Aneurysms</i> ," Northwestern University Department of Neurological Surgery Grand Rounds, Chicago, IL, February 15, 2016
05/2017	" <i>Brain Computer Interfaces; Past and Present</i> ," Northwestern University Department of Neurological Surgery Grand Rounds, Chicago, IL, May 12, 2017
05/2018	"Hydrocephalus" lecture to Nurse Practitioner students, Northwestern Memorial Hospital, May 16, 2018

Students / Trainees / Mentorship

2013-2020	Nikhil Murthy, MD, <i>medical student and resident</i> , supervision of research and career development.
2014-2020	Zachary Abecassis, MD, <i>undergraduate and medical student</i> , supervision of research and career development.

Hospital or Affiliated Institution Appointment

2020-Present	Clinical Instructor, Stanford University School of Medicine. Palo Alto, CA.
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Hospital and Health Care Organization Service Responsibilities

9/2010-5/2011	Marketing Manager; <i>Delivering Equal Access to Care Clinic</i> , Winston-Salem, NC.
6/2017-7/2018	McGaw House Staff Association; <i>Neurosurgical Representative</i>

E. PUBLIC AND PROFESSIONAL SERVICE

Community Service Related to Professional Work

2019	"Hydrocephalus Day" Keynote Speaker for the Pediatric Hydrocephalus Foundation United States Congress, Washington DC, May 7, 2019
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Professional Societies

2013-Present	Member, American Association of Neurological Surgeons
2013-Present	Member, Congress of Neurological Surgeons
2018-Present	Member, Hydrocephalus Association

International Health Experience

2010	Intern, World Literacy of Canada Mau, Uttar Pradesh, India
2011	Peer Educator, Queen's Medical Outreach Kibera, Nairobi, Kenya

F. POST-DEGREE HONORS AND AWARDS

11/2017	Northwestern University Clinical and Translational Sciences Dixon Translational Sciences Innovation and Young Investigator Grant (\$35,000 award) Coinvestigator: Matthew Potts, MD.
12/2018	Pediatric Hydrocephalus Foundation Research Grant (\$10,000 award)
12/2018	Stanley Manne Children's Research Institute Visionary Award (\$75,000 award) Coinvestigator: Tord Alden, MD.

10/2018	Finalist, Innovator of the Year Congress of Neurological Surgeons Annual Meeting. Houston, TX.
4/2019	Health and Wearable Device Speed Pitch Winner South by Southwest. Austin, TX.
5/2019	Cisco Global Problem Solver Prize (\$100,000 award) Rice Business Plan Competition. Houston, TX.
5/2019	Texas Medical Center X Prize (\$25,000 award) Rice Business Plan Competition. Houston, TX.
10/2019	Pediatric Hydrocephalus Foundation Research Grant (\$20,000 award)

G. OTHER STUDY AND RESEARCH OPPORTUNITIES

Present/Pending:

2019-Present	Funder: FDA (P50FD006428) (\$25,000 award) Title: <i>Southwest National Pediatric Device Consortium Pediatric Device Prize</i> Role: Co-PI
2019-Present	Funder: NSF (STTR) (\$224,999.00 award) Title: <i>Hardware and Software Development for Noninvasive, Wireless Flow Sensors for Patients with Hydrocephalus</i> Role: Clinical Consultant

H. BIBLIOGRAPHY

Peer-reviewed Articles (12 total, 1 in press)

1. **Ayer A**, Campbell A, Appelboom G, Hwang BY, McDowell M, Piazza M, Feldstein NA, Anderson RC. *The sociopolitical history and physiological underpinnings of skull deformation*. Neurosurg Focus. 2010 Dec;29(6):E1. PMID: 21121715
2. Hwang BY, Appelboom G, **Ayer A**, Kellner CP, Kotchetkov IS, Gigante PR, Haque R, Kellner M, Connolly ES. *Advances in neuroprotective strategies: potential therapies for intracerebral hemorrhage*. Cerebrovasc Dis. 2011;31(3):211-22. PMID: 21178344
3. **Ayer A**, Velez R, Sliesoraitis S. *Necrobiotic Cavitory Pulmonary Nodules: A Case Report*. J. Pulmon. Resp. Med. 2012, 2(4):1-2
4. Guzzo C, **Ayer A**, Basta S, Banfield BW, Gee K. *IL-27 Enhances LPS-Induced Proinflammatory Cytokine Production via Upregulation of TLR4 Expression and Signaling in Human Monocytes*. J. Immunol. 2012 Jan 15, 188;864-73. PMID: 22156348.
5. **Ayer A**, Hwang BY, Appelboom G, Connolly ES. *Clinical Trials for Neuroprotective Therapies in Intracerebral Hemorrhage: A New Roadmap from Bench to Bedside*. Transl. Stroke Res. 2012. Aug 14. PMID: 24323830
6. Abecassis IJ, Adel JG, **Ayer A**, Batjer HH. *A Ruptured Infectious Intracranial Aneurysm with a Combined Fungal and Bacterial Etiology*. Clin Neurol Neurosci. 2013. Sep 1. PMID: 24034820
7. **Ayer A**, Page BR, Lucas JT, Bourland D, Oliver ER, Tatter SB, Ellis TL, Chan MD. *Cavernous Sinus Metastases Treated with Gamma Knife Stereotactic Radiosurgery*. J Radiosurg SBRT. 2014. 3(2);131-137. PMID: 29296394
8. Schumacher AJ, Lall RR, Lall RR, Nanney AD, **Ayer A**, Sejpal S, Liu BP, Marymont M, Lee P, Bendok BR, Kalapurakal JA, Chandler JP. *Low-Dose Gamma Knife Radiosurgery for Vestibular Schwannomas: Tumor Control and Cranial Nerve Function Preservation after 11 Gy*. J Neurol Surg. 2016. PMID: 28180036
9. Krishnan S*, Ray T*, **Ayer A***, Ma Y, Gutruf P, Lee K, Lee J, Wei C, Feng X, Ng B, Abecassis ZA, Murthy NK, Stankiewicz I, Freudman J, Stillman J, Kim N, Young G, Goudeseune C, Ciraldo J, Tate MC, Huang Y, Potts MB, Rogers JA. *Epidermal electronics for noninvasive, wireless, quantitative assessment of ventricular shunt function in patients with hydrocephalus*. Science Translational Medicine. 2018 Oct;10(465). PMID: 30381410
10. Abecassis ZA, Hopkins B, Win P, Yemeni K, Karras CL, Frankel HG, **Ayer A**, Dahdaleh NS. *Impact of medical student involvement on outcomes following spine surgery: A single center analysis of 6485 patients*. J Clin Neurosci. 2019 Aug 16. PMID: 31427233

11. Krishnan SR, Arafa HM, Kwon K, Deng Y, Su CJ, Reeder JT, Freudman J, Stankiewicz I, Chen HM, Loza R, Mims M, Mims M, Lee K, Abecassis Z, Banks A, Ostojich D, Patel M, Wang H, Börekçi K, Rosenow J, Tate M, Huang Y, Alden T, Potts MB, **Ayer AB**^{**}, Rogers JA^{**}. *Continuous, noninvasive wireless monitoring of flow of cerebrospinal fluid through shunts in patients with hydrocephalus*. NPJ Digit Med. 2020 Mar 6;3:29. doi: 10.1038/s41746-020-0239-1. PMID: 32195364.
12. Abecassis ZA, **Ayer A**, Rehmani K, Murthy NK, Templer J, Tate MC. *Analysis of risk factors and clinical sequelae of direct electrical cortical stimulation–induced seizures and afterdischarges in patients undergoing awake mapping*. J Neurosurg. 2020. PMID: 32442979

Book Chapters (1 total)

1. **Ayer A**, Arnaut O, Reddy CD, Ganju A. In: *Peripheral Nerve Grafting and Harvesting Techniques. Atlas of Neurosurgical Techniques; Spine and Peripheral Nerves*. Fessler RG, Sekhar LN. Chapter 146; pp 928-931. Thieme. 2016. ISBN: 9781626233881

Abstracts (12 Total)

1. Guzzo C, **Ayer A**, Che Mat NF, Gee K. *Interleukin-27 induces TLR-4 Expression in Human Monocytes via JAK/STAT and NF- κ B Signaling Pathways*. Canadian Health Science Research Forum; Infectious Disease and Global Health. June 2-4, 2010. Winnipeg, MB., Canada
2. Guzzo C, **Ayer A**, Che Mat NF, Gee K. *Interleukin-27 induced TLR-4 expression is mediated by JAK/STAT signaling and NF- κ B activation in human monocytes*. Canadian Society for Immunology, April 2010. Niagara Falls, ON, Canada
3. Ortega-Gutierrez S, Amaro-Delgado S, Szeder V, Linares G, Vibbert M, Lay C, Choi A, Ko S-B, **Ayer A**, Gilmore E, Kellner S, Claassen J, Lee K, Mayer S, Schmidt M, Badjatia N. *Tracheostomy after subarachnoid hemorrhage; predictors at admission and associated risk factors*. Neurocritical Care Society 8th Annual Meeting. September 2010. San Francisco, CA
4. Smith TR, Nanney AD, **Ayer A**, Cybulski GR. *The Meaningful Use of Health Information Technology to Increase Value of Neurosurgical Care*. Neurosurgical Society of America. 2014. St. Andrews, NB
5. Abecassis Z, **Ayer A**, Templer J, Tate MC. *Intraoperative Seizure Risk Factors Associated with Direct Cortical Stimulation: A Single Center Study*. Feinberg School of Medicine AOSC. November 2016. Chicago, IL
6. **Ayer A**, Abecassis ZA, Nanney T. *The argument for anterior cervical discectomy and fusion. Current Techniques in the Treatment of Cranial and Spinal Disorders*. October 2016. Broomfield, CO
7. Krishnan S, Ray T, Mickle M, **Ayer A**, Gutruf P, Gereau R, Rogers JA. *Soft, Bio-Integrated Thermal Electronics for Neuroscience and Neurosurgery*. Materials Research Society. April 2018. Phoenix, AZ
8. **Ayer A**, Krishnan S, Ray T, Abecassis ZA, Murthy N, Potts MB, Rogers JA. *Thermal biosensors in the assessment of ventricular shunt failure*. American Association of Neurological Surgeons. April 2018. New Orleans, LA
9. Abecassis ZA, **Ayer A**, Templer JW, Tate MC. *Risk factors and consequences of intraoperative seizures associated with direct cortical stimulation during awake craniotomy*. Congress of Neurological Surgeons. October 2018. Houston, TX
10. Rosenow JM, Versteeg CS, Suresh AK, **Ayer A**, Miller LE, Bensmaia SJ. *Chronic single-neuron recordings from the cuneate nucleus: surgical methodology*. Congress of Neurological Surgeons. October 2018. Houston, TX
11. Suresh AK, **Ayer A**, Rosenow JM, Miller LE, Bensmaia S. *Sensory Computations in the Cuneate Nucleus of Macaques*. Oral Presentation. Nanosymposium. Society for Neuroscience. October 2019. Chicago, IL.
12. **Ayer A**, Krishnan SR, Kaur G, Murthy NK, Ordon M, Karras CL, Abecassis ZA, Rosenow JM, Tate MC, Alden TD, Potts MB, Rogers JA. *Wireless, noninvasive thermal sensors for the continuous monitoring of ventricular shunt function in pediatric and adult patients*. Congress of Neurological Surgeons. October 2019. San Francisco, CA.

Patents (2 total)

1. *Wireless and Noninvasive Epidermal Electronics*
Inventors: Rogers JA, **Ayer A**, Ray T, Gutruf P, Krishnan S.
Provisional. Serial No: 62/650,826. March 30, 2018
2. *System and Method for Integrated Surgical Guide-Hub and Drill with Guided Drilling and Plunge Protection*
Inventors: **Ayer A**, Andrews ND, Grage CM, Parekh NH.
Provisional. Serial No: PCT/US19/63820. November 28, 2019.