

Dominic Siler MD, PhD

Assistant Professor - Neurotrauma/Neurocritical Care
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EDUCATION

Fellowship	Neurotrauma/Neurocritical Care University of Washington, Seattle, WA	June 2025
Residency	Neurological Surgery Oregon Health & Science University, Portland, OR	June 2024
Fellowship	Neuro-Oncology Oregon Health & Science University, Portland, OR	June 2017
M.D. Ph.D.	Neuroscience Oregon health & Science University, Portland, OR <i>Dissertation title: "Mechanisms of Delayed Microvascular Dysfunction Following Subarachnoid Hemorrhage"</i>	June 2016
B.S.	Biological Science California State University Long Beach, Long Beach, CA	June 2006

Board Eligibility:

Neurosurgery (Current)
Neurocritical Care (Current)

Licenses:

Oregon State Medical License (original 7/1/2016, inactive, PG177599)
Washington State Medical License (original 04/03/2024, Active, MD61529429)
Wisconsin State Medical License (original 4/28/2025, Active, 85718-20)

SCHOLARSHIP

ACTIVE AREAS OF RESEARCH:

- Phase 1 clinical trials of a novel therapeutic drug to reduce delayed cerebral ischemia and improve outcomes in subarachnoid hemorrhage.
- Clinical studies evaluating the role of lipid mediators in secondary injury following traumatic brain injury, subarachnoid hemorrhage and intraparenchymal hemorrhage.
- Identification of novel strategies to improve outcomes for traumatic brain injury at all stages of care including pre-hospital, critical care, acute care, and rehabilitation settings.

GRANTS AND CONTRACTS:

ACTIVE

Adler Giersche Endowed Professorship Fund Award 04/01/2025-04/01/2027

Title: *Clinical Utility of Quantitative Blood Volume Analysis in Severe TBI*

Sponsor: UW Foundation

Role: PI

COMPLETED:

Early Clinical Investigator Award 11/01/2021-10/31/2024

Title: *PET Imaging of Soluble Epoxide Hydrolase in Subarachnoid Hemorrhage*

Sponsor: Medical Research Foundation

Role: PI

Well-Being grant 2/11/2023-06/15/2024

Title: *Vibrancy and Vitality Conference*

Sponsor: OHSU Foundation

Role: Co-PI

Innovative Research Grant 05/01/2022-04/31/2024

Title: *Brown Adipose Tissue Activation by Spinal Cord Stimulation*

Sponsor: International Neuromodulation Society

Role: PI

Trunkey Center Research and Innovation Award 06/01/2022-05/31/2024

Title: *PET Imaging of Soluble Epoxide Hydrolase in Traumatic Brain Injury*

Sponsor: Trunkey Center

Role: PI

Brain Aneurysm Foundation 11/01/2020-10/31/2023

Title: *PET Imaging of Soluble Epoxide Hydrolase in Subarachnoid Hemorrhage*

Sponsor: Brain Aneurysm Foundation

Role: PI

Innovator Grant 07/01/2019-07/01/2020

Title: *A new simulator for minimally invasive hemorrhage evacuation.*

Sponsor: Subcortical Surgery Group

Role Co-PI

5 F30 HL108624-02 04/20/2011-04/19/2016

Title: *Role of P450 Eicosanoids in Brain Microvasculature after Subarachnoid Hemorrhage*

Sponsor: NIH/NHLBI

Role: PI

Brain Aneurysm Foundation 11/01/2010-10/31/2011

Title: *The Protective Effect of P450 Eicosanoids in Subarachnoid Hemorrhage*

Sponsor: Brain Aneurysm Foundation

Role: Co-investigator

HONORS AND AWARDS:

Travel Award: International Winter Eicosanoid Conference	2023
Best Abstract: International Winter Eicosanoid Conference	2020
Student Travel Award: International Winter Eicosanoid Conference	2014
Best of the AHA specialty Conference: ISC 2014	2014
Junior Investigator Travel Award: AHA International Stroke Conference	2014
Heart Research Center Travel Award	2012
Oregon Brain Institute Neurobiology of Disease Fellowship Award	2010-2011
OHSU N.L. Tartar Research Fellowship Award	2010-2011

PUBLICATIONS/CREATIVE WORK:

Peer-reviewed Publications:

1. Tan H, Paulk AC, Stedelin B, Cleary DR, Nerison C, Tchoe Y, Brown EC, Bourhis A, Russman S, Lee J, Tonsfeldt KJ, Yang JC, Oh H, Goo Ro Y, Lee K, Ganji M, Galton I, **Siler DA**, et al. Intraoperative application and early experience with novel high-resolution, high-channel-count thin-film electrodes for human microelectrocorticography. *Journal of Neurosurgery*. 2024;140:665-676. doi: <https://doi.org/10.3171/2023.7.JNS23885>
2. Tan H, Bowden SG, **Siler DA**, O'Neill BE, Shahin MN, Fecker AL, Fleming-Sheffels S, Han SJ, Selden NR, Winer J, et al. On-Call Workload Differences in Neurosurgery: Resident Call “Weather” and a Departure from Colored Cloud Labels. *Neurosurgery*. 2024;94.
3. Mazur-Hart DJ, Godil JA, Pang BW, Fecker A, **Siler DA**, Yau S, Obayashi JT, Courtier J, Ryu WHA. Improving Patient Education Using Augmented Reality for Spine Fractures: Feasibility Study and Review of Literature. *Journal of Medical Extended Reality*. 2024;1:84-92. doi: 10.1089/jmxr.2024.0005
4. Cleary DR, Tchoe Y, Bourhis A, Dickey CW, Stedelin B, Ganji M, Lee SH, Lee J, **Siler DA**, Brown EC, et al. Modular Phoneme Processing in Human Superior Temporal Gyrus. *bioRxiv*. 2024. doi: 10.1101/2024.01.17.576120
5. **Siler DA**, Rosen KU, Bowden SG, Powers AY, Liu JJ, Dogan A, Hinson HE, Fleseriu M, Woltjer RL, Cetas JS. Delayed cerebral ischemia associated with surgery for pituitary macroadenomas that express elevated levels of PACAP. *Brain Hemorrhages*. 2023;4:1-5. doi: <https://doi.org/10.1016/j.heest.2022.05.003>
6. **Siler DA**, Cleary DR, Tonsfeldt KJ, Wali AR, Hinson HE, Khalessi AA, Selden NR. Physiological Responses and Training Satisfaction During National Rollout of a Neurosurgical Intraoperative Catastrophe Simulator for Resident Training. *Operative Neurosurgery*. 2023;24.
7. Mota CMD, **Siler DA**, Burchiel KJ, Madden CJ. Acute deep brain stimulation of the paraventricular nucleus of the hypothalamus increases brown adipose tissue thermogenesis in rats. *Neuroscience Letters*. 2023;799:137130. doi: <https://doi.org/10.1016/j.neulet.2023.137130>
8. Bah TM, **Siler DA**, Ibrahim AH, Cetas JS, Alkayed NJ. Fluid dynamics in aging-related dementias. *Neurobiology of Disease*. 2023;177:105986. doi:

<https://doi.org/10.1016/j.nbd.2022.105986>

9. Uluc K, Ambady P, McIntyre MK, Tabb JP, Kersch CN, Nerison CS, Huddleston A, Liu JJ, Dogan A, Priest RA, Rongwei F, Prola Netto J, **Siler DA**, et al. Safety of intra-arterial chemotherapy with or without osmotic blood–brain barrier disruption for the treatment of patients with brain tumors. *Neuro-Oncology Advances*. 2022;4. doi: 10.1093/oaajnl/vdac104
10. Tchoe Y, Bourhis AM, Cleary DR, Stedelin B, Lee J, Tonsfeldt KJ, Brown EC, **Siler DA**, Paulk AC, Yang JC, et al. Human brain mapping with multithousand-channel PtNRGrids resolves spatiotemporal dynamics. *Science Translational Medicine*. 2022;14:eabj1441. doi: 10.1126/scitranslmed.abj1441
11. **Siler DA**, Semonche AM, Samatham R, Liu JJ, Martini RP, Alkayed NJ, Hinson HE, Cetas JS. Eicosanoid ratios are associated with hemorrhage severity and predict development of delayed cerebral ischemia following subarachnoid hemorrhage. *Brain Hemorrhages*. 2022;3:135-142. doi: <https://doi.org/10.1016/j.hest.2022.05.004>
12. **Siler DA**, Larson EW, Ross DA. Minimally Invasive Posterior Cervical Discectomy: Operative Video. *World Neurosurg*. 2022;157:162. doi: 10.1016/j.wneu.2021.10.077
13. Bowden SG, **Siler DA**, Shahin MN, Mazur-Hart DJ, Munger DN, Ross MN, O'Neill BE, Nerison CS, Rothbaum M, Han SJ, et al. Effects of 24-hour versus night-float call schedules on the clinical and operative experiences of postgraduate year 2 and 3 neurosurgical residents. *Neurosurgical Focus*. 2022;53:E12. doi: <https://doi.org/10.3171/2022.5.FOCUS22181>
14. Uluc K, **Siler DA**, Lopez R, Varallyay C, Netto JP, Firkins J, Lacy C, Huddleston A, Ambady P, Neuwelt EA. Long-Term Outcomes of Intra-Arterial Chemotherapy for Progressive or Unresectable Pilocytic Astrocytomas: Case Studies. *Neurosurgery*. 2021;88:E336-E342. doi: 10.1093/neuros/nyaa588
15. Paulk AC, Yang JC, Cleary DR, Soper DJ, Halgren M, O'Donnell AR, Lee SH, Ganji M, Ro YG, Oh H, et al. Microscale Physiological Events on the Human Cortical Surface. *Cereb Cortex*. 2021;31:3678-3700. doi: 10.1093/cercor/bhab040
16. Martini RP, **Siler DA**, Cetas J, Alkayed NJ, Allen E, Treggiari MM. A Double-Blind, Randomized, Placebo-Controlled Trial of Soluble Epoxide Hydrolase Inhibition in Patients with Aneurysmal Subarachnoid Hemorrhage. *Neurocrit Care*. 2021. doi: 10.1007/s12028-021-01398-8
17. Bowden SG, **Siler DA**, Radu S, Woll SCS, Rae AI, Cheaney B, 2nd, Nugent JG, Stedelin B, Cetas JS, Dogan A, et al. Changing Hands: A Rising Role of the Tumor Surgeon in Teaching Sylvian Fissure Dissection. *World Neurosurg*. 2021;146:e86-e90. doi: 10.1016/j.wneu.2020.10.026
18. Cleary DR, **Siler DA**, Whitney N, Selden NR. A microcontroller-based simulation of dural venous sinus injury for neurosurgical training. *J Neurosurg*. 2018;128:1553-1559. doi: 10.3171/2016.12.JNS162165
19. Terker AS, Zhang C, McCormick JA, Lazelle RA, Zhang C, Meermeier NP, **Siler DA**, Park HJ, Fu Y, Cohen DM, et al. Potassium modulates electrolyte balance and blood pressure through effects on distal cell voltage and chloride. *Cell Metab*. 2015;21:39-50. doi: 10.1016/j.cmet.2014.12.006

20. **Siler DA**, Martini RP, Ward JP, Nelson JW, Borkar RN, Zuloaga KL, Liu JJ, Fairbanks SL, Raskin JS, Anderson VC, et al. Protective role of p450 epoxygenic eicosanoids in subarachnoid hemorrhage. *Neurocrit Care*. 2015;22:306-319. doi: 10.1007/s12028-014-0011-y
21. **Siler DA**, Berlow YA, Kukino A, Davis CM, Nelson JW, Grafe MR, Ono H, Cetas JS, Pike M, Alkayed NJ. Soluble Epoxide Hydrolase in Hydrocephalus, Cerebral Edema, and Vascular Inflammation After Subarachnoid Hemorrhage. *Stroke*. 2015;46:1916-1922. doi: 10.1161/STROKEAHA.114.008560
22. **Siler DA**, Gonzalez JA, Wang RK, Cetas JS, Alkayed NJ. Intracisternal administration of tissue plasminogen activator improves cerebrospinal fluid flow and cortical perfusion after subarachnoid hemorrhage in mice. *Transl Stroke Res*. 2014;5:227-237. doi: 10.1007/s12975-014-0329-y
23. Martini RP, Ward J, **Siler DA**, Eastman JM, Nelson JW, Borkar RN, Alkayed NJ, Dogan A, Cetas JS. Genetic variation in soluble epoxide hydrolase: association with outcome after aneurysmal subarachnoid hemorrhage. *J Neurosurg*. 2014;121:1359-1366. doi: 10.3171/2014.7.JNS131990
24. Davis CM, **Siler DA**, Alkayed NJ. Endothelium-derived hyperpolarizing factor in the brain: influence of sex, vessel size and disease state. *Womens Health (Lond)*. 2011;7:293-303. doi: 10.2217/whe.11.26
25. Gelderblom M, Leyboldt F, Steinbach K, Behrens D, Choe CU, **Siler DA**, Arumugam TV, Orthey E, Gerloff C, Tolosa E, et al. Temporal and spatial dynamics of cerebral immune cell accumulation in stroke. *Stroke*. 2009;40:1849-1857. doi: 10.1161/STROKEAHA.108.534503
26. Tang SC, Lathia JD, Selvaraj PK, Jo DG, Mughal MR, Cheng A, **Siler DA**, Markesbery WR, Arumugam TV, Mattson MP. Toll-like receptor-4 mediates neuronal apoptosis induced by amyloid beta-peptide and the membrane lipid peroxidation product 4-hydroxynonenal. *Exp Neurol*. 2008;213:114-121. doi: 10.1016/j.expneurol.2008.05.014
27. Tang SC, Arumugam TV, Xu X, Cheng A, Mughal MR, Jo DG, Lathia JD, **Siler DA**, Chigurupati S, Ouyang X, et al. Pivotal role for neuronal Toll-like receptors in ischemic brain injury and functional deficits. *Proc Natl Acad Sci U S A*. 2007;104:13798-13803. doi: 10.1073/pnas.0702553104
28. Kleve CD, **Siler DA**, Syed SK, Eldon ED. Expression of 18-wheeler in the follicle cell epithelium affects cell migration and egg morphology in *Drosophila*. *Dev Dyn*. 2006;235:1953-1961. doi: 10.1002/dvdy.20820

Selected Abstracts

Siler DA, Mazur-Hart D, Alkayed NJ. GPR39 as a dual eicosanoid receptor in subarachnoid hemorrhage. 2023 Winter Eicosanoid Conference Baltimore MD

Siler DA, Nota C, Morrison S, Burchiel KJ, Madden C. Stimulation of the Paraventricular Nucleus Activates Brown Adipose Tissue via Local GABA Release: A Novel Target for the Treatment of Obesity 2022 Congress of Neurological Surgeons San Francisco CA

Siler DA , Cetas JS, Alkayed NJ, Hinson HE. PET imaging of Soluble Epoxide hydrolase in Subarachnoid Hemorrhage. 2021 Brain Aneurysm Foundation Research Symposium. Scottsdale AZ

Siler DA, Martini RP, Cetas JS, Alkayed NJ, Treggiari MM. Subarachnoid Hemorrhage and Soluble Epoxide Hydrolase Inhibition: A Randomized, Placebo-Controlled Pilot Trial. 2021 Winter Eicosanoid Conference Virtual

Siler DA, Cleary D, Tonsfeldt K, Han SJ, Selden NR Transforming Neurosurgery Education: Roll-Out of a National Immersive Operative Simulator. 2020 American Association of Neurological Surgeons Conference Virtual

Siler DA, Powers A, Liu JJ, Dogan A, Fleserio M, Woltjer R, Cetas JS. Increased Risk of Delayed Cerebral Ischemia in Patients Following Resection of Pituitary Macroadenomas; the Role of Pituitary Adenylate Cyclase-Activating Peptide. 2018 Congress of Neurological Surgeons. San Francisco, CA

Siler DA, Martini R, Ward J, Nelson J, Borkar R, Liu J, Raskin J, Fairbanks S, Zuloaga K, Wang RK, Alkayed NJ, Cetas JS. P450 eicosanoids as predictors and therapeutic targets for subarachnoid hemorrhage. 2014 Winter Eicosanoid Conference. Baltimore, MD

Siler DA, Gonzalez JA, Wang RK, Cetas JS, Alkayed NJ. Intracisternal administration of tissue plasminogen activator improves cerebrospinal fluid flow and cortical perfusion after subarachnoid hemorrhage in mice. 2014 AHA International Stroke Conference. San Diego, CA

Siler DA, Gonzalez JA, Wang RK, Cetas JS, Alkayed NJ. Intracisternal administration of tissue plasminogen activator improves cerebrospinal fluid flow and cortical perfusion after subarachnoid hemorrhage in mice. 2013 Neuroscience. San Diego, CA

Siler DA, Heinricher MM, Wang RK, Alkayed NJ, Cetas JS. Soluble Epoxide Hydrolase Gene Deletion is Protective against Delayed Microvascular Vasospasm in a Mouse Model of Subarachnoid Hemorrhage. 2012 AHA International Stroke Conference, New Orleans, LA

Invited Conference Presentations:

Siler DA, Morrison SF, Madden, CM, Burchiel KG. Brown Adipose Tissue Activation by Spinal Cord Stimulation. International Neuromodulation Society Conference. Vancouver, BC May 16th 2024

Siler DA, Martini MM, Treggiari MM, Alkayed NJ. Soluble Epoxide Hydrolase Inhibitors for Subarachnoid Hemorrhage. Winter Eicosanoid Conference. Baltimore, MD October 15th 2023

Siler DA, Martini MM, Treggiari MM, Alkayed NJ. Soluble Epoxide Hydrolase Inhibition to treat Subarachnoid Hemorrhage. Neurocritical Care society meeting San Antonio TX October 17th 2022

Siler DA, Martini MM, Treggiari MM, Alkayed NJ. Soluble Epoxide Hydrolase Inhibitors for Subarachnoid Hemorrhage. International Stroke Conference. New Orleans, LA February 9th 2022

SERVICE

Membership in Professional Societies:

2012-current American Heart Association - Member # 179569140

2013-current	Society for Neuroscience
2016-current	Congress of Neurological Surgeons
2016-current	American Association of Neurological Surgeons
2022-current	National Neurotrauma Society
2022-current	Neurocritical Care Society

Ad Hoc Review Activities

2014-present	Reviewer, <i>Neurocritical Care</i>
2023-Present	Reviewer, <i>Neurosurgery</i>
2023-Present	Reviewer, <i>Experimental Neurology</i>
2024-Present	Reviewer, <i>Brain Hemorrhages</i>
2025-Present	Reviewer, <i>The Neurohospitalist</i>