

DR. ROBERT J. MORECRAFT

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Laboratory of Neurological Sciences
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PROFESSIONAL EDUCATION

1980	B.S.	College of New Jersey	Physical Education
1982	M.A.	The University of Iowa	Exercise Science
1989	Ph.D.	The University of Iowa	Anatomy/Exercise Science/Neuroscience

POSTGRADUATE EDUCATION

1989-91	Harvard Medical School	Postdoctoral Fellow in Neurology/Neuroscience
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ACADEMIC APPOINTMENTS

2003-pres.	Professor	Division of Basic Biomedical Sciences, Section of Anatomical and Neurological Sciences, University of South Dakota School of Medicine
1997-2003	Associate Professor	Division of Basic Biomedical Sciences, Section of Anatomical and Neurological Sciences, University of South Dakota School of Medicine.
1991-1997	Assistant Professor	Department of Anatomy and Structural Biology, University of South Dakota School of Medicine.
1985-2020	Adjunct Professor	Advanced Head and Neck Anatomy for Resident Surgeons, Department of Otolaryngology: Head and Neck Surgery, University of Iowa College of Medicine.

HONORS AND ACHIEVEMENTS

2018	Basic Science Faculty Award, USDSM Alumni Relations Council/Class of 1958, Excellence in Teaching.
2009	University of South Dakota President's Award for Research Excellence.
2004	American Society of Biomechanics Presidential Award for Scientific Presentation.
2001	University of South Dakota Physical Therapy Department Contributor of the Year Award.
1998	South Dakota Board of Regents Award for Excellence in Research.
1994	Chester B. McVay Memorial Award for Excellence in Teaching and Research, University of South Dakota School of Medicine.

RESEARCH TRAINING

- 1989-91 Research Fellow: Department of Neurology and Program in Neuroscience, Harvard Medical School, Beth Israel Hospital, Boston, Massachusetts (advisor, M-M. Mesulam, MD).
- 1986-89 Graduate Research Assistant: Departments of Anatomy and Neurology, The University of Iowa College of Medicine, Iowa City, Iowa (advisor, G.W. Van Hoesen, PhD).
- 1987-88 Graduate Research Assistant: Department of Exercise Science, Division of Anatomy, The University of Iowa, Iowa City, Iowa (advisor, J.A. Maynard, PhD).
- 1984-87 Graduate Research Assistant: Department of Orthopedic Surgery: Division of Hand and Microsurgery, The University of Iowa College of Medicine, Iowa City, Iowa (advisor, W.F. Blair, MD).

SCIENTIFIC PUBLICATIONS

- 1) Morecraft RJ, Blair WF and Chang L. Histopathology of Microvenous Repair. Microsurgery, 6:219-228, 1985.
- 2) Mumford J, Morecraft RJ and Blair WF. Anatomy of the Deep Branch of the Median Nerve. Journal of Hand Surgery, 12A:361-365, 1987.
- 3) Blair WF, Percival K and Morecraft RJ. The Distribution of the Deep Branch of the Ulnar Nerve in the Hypotenar Eminence. Clinical Orthopaedics and Related Research, 229:294-301, 1988.
- 4) Morecraft RJ, Blair WF and Maynard JA. Suture Extrusion in Small Arteries and Veins. Scandinavian Journal of Plastic and Reconstructive Surgery, 22:121-126, 1988.
- 5) Brown TD, Blair WF, Gabel RH and Morecraft RJ. The Effects of Episodic Air Hammer Usage on Digital Artery Hemodynamics of Foundry Workers with Vibration White Finger Disease. Journal of Occupational Medicine, 30:853-862, 1988.
- 6) Blair WF, Morecraft RJ, Steyers CL and Maynard JA. A Microvascular Anastomotic Device. Part II: A Histologic Study in Arteries and Veins. Microsurgery, 10:29-39, 1989.
- 7) Blair WF, Morecraft RJ, Brown TD and Gabel RH. Transcutaneous Blood Flow Measurements in Arteries of the Human Hand. Journal of Hand Surgery, 16:169-175, 1991.
- 8) Morecraft RJ and Van Hoesen GW. Cingulate Input to the Primary and Supplementary Motor Cortices in the Rhesus Monkey: Evidence for Somatotopy in Areas 24c and 23c. Journal of Comparative Neurology, 322:471-489, 1992.
- 9) Schatz CR, Geula C, Morecraft RJ and Mesulam M-M. A One-step Cobalt Ferrocyanide Method for the Histochemical Demonstration of Acetylcholinesterase Activity in Neurons, Cortical Fibers,

Plaques and Tangles. Journal of Histochemistry and Cytochemistry, 40:431-434, 1992.

- 10) Morecraft RJ, Geula C and Mesulam M-M. Cytoarchitecture and Neural Afferents of Orbitofrontal Cortex in the Brain of the Monkey. Journal of Comparative Neurology, 323:341-358, 1992.
- 11) Van Hoesen GW, Morecraft RJ and Vogt BA. Connections of the Monkey Cingulate Cortex. In: Vogt BA and Gabriel M (Editors), Neurobiology of Cingulate Cortex and Limbic Thalamus: A Comprehensive Handbook, Boston: Birkhäuser, pp. 249-284, 1993.
- 12) Morecraft RJ, Geula C and Mesulam M-M. Architecture and Connectivity of a Fronto-Cingulo-Parietal Neural Network. Archives of Neurology, 50:279-284, 1993.
- 13) Morecraft RJ and Van Hoesen GW. Granular Frontal Lobe Inputs to the Cingulate (M3), Supplementary (M2) and Primary (M1) Motor Cortices of the Rhesus Monkey. Journal of Comparative Neurology, 337:669-689, 1993.
- 14) Morecraft RJ, Blair WF, Brown TD and Gabel RH. The Acute Effects of Smoking on Digital Artery Blood Flow in Humans. Journal of Hand Surgery, 19:1-7, 1994.
- 15) Morecraft RJ and Van Hoesen GW. Cortical Motor Control. In: Fredericks C and Saladin L (Editors), Pathophysiology of the Motor System: Principles and Clinical Presentations, Philadelphia: F.A. Davis Company, pp. 158-180, 1996.
- 16) Vilensky JA, Gilman S and Morecraft RJ. DC60: An Example of One of the 450 Cases that Compose the Denny-Brown Collection of Primate Lesion Material. Movement Disorders, 11:207-213, 1996.
- 17) Morecraft RJ, Schroeder CM and Keifer J. The Organization of Face Representation in the Cingulate Cortex of the Rhesus Monkey. NeuroReport, 7:1343-1348, 1996.
- 18) Van Hoesen GW, Morecraft RJ and Semendeferi K. Functional Neuroanatomy of the Limbic System and Prefrontal Cortex. In: Fogel BS, Schiffer RD and Rao SM (Editors), Neuropsychiatry, Philadelphia: Williams and Wilkins, pp. 113-143, 1996.
- 19) Morecraft RJ, Louie JL, Schroeder CM and Aramov K. Segregated Parallel Inputs to the Brachial Spinal Cord from the Cingulate Motor Cortex in the Monkey. NeuroReport, 8:3933-3938, 1997.
- 20) Vilensky JA, Morecraft RJ, Gilman S and Cook JA. Mouth-feeding in Monkeys after Sensorimotor System Lesions: An Analysis based upon the Denny-Brown Collection. Behavioral Brain Research, 94:311-315, 1998.
- 21) Morecraft RJ and Van Hoesen GW. Convergence of Limbic Lobe Input to the Cingulate Motor Cortex in the Rhesus Monkey. Brain Research Bulletin, 45:209-232, 1998.
- 22) Vilensky JA, Barnhart SW, Gilman S, Cook JA and Morecraft RJ. Disorders of Proprioceptive Responses in Monkeys after Cerebellar Lesions: An Analysis using the Denny-Brown Collection. Journal of the Neurological Sciences, 163:111-118, 1999.

- 23) Gilman S, Vilensky JA, Morecraft RJ and Cook JA. Denny-Brown's Views on the Pathophysiology of Dystonia. Journal of the Neurological Sciences, 167:142-147, 1999.
- 24) Morecraft RJ, Rockland KS and Van Hoesen GW. Localization of Area Prostriata and its Projection to the Cingulate Motor Cortex in the Rhesus Monkey. Cerebral Cortex, 10:192-203, 2000.
- 25) Morecraft RJ, Louie JL, Herrick J and Morecraft-Stilwell KS. Cortical Innervation of the Facial Nucleus in the Non-Human Primate: A New Interpretation of the Effects of Stroke and Related Subtotal Brain Trauma on the Muscles of Facial Expression. Brain, 124:176-203, 2001.
- 26) Morecraft RJ and Yeterian EH. Prefrontal Cortex. In: Ramachandran VS (Editor), Encyclopedia of the Human Brain, Vol. 4. San Diego: Academic Press, Volume 4, pp. 11-26, 2002.
- 27) Morecraft RJ, Herrick J, Stilwell-Morecraft KS, Louie JL, Ottenbacher J, CM Schroeder and Schoolfield M. Localization of Arm Representation in the Corona Radiata and Internal Capsule in the Non-Human Primate. Brain, 125:176-198, 2002.
- 28) Morecraft RJ and Van Hoesen GW. Functional Neuroanatomy of Limbic Structures and Some Relationships with Prefrontal Cortex. In: Schiffer RD and Rao SM Fogel BS (Editors), Neuropsychiatry, 2nd Ed., Philadelphia: Lippincott Williams and Wilkins, pp. 294-327, 2003.
- 29) Ding S-L, Morecraft RJ and Van Hoesen G.W. The Topography, Cytoarchitecture and Cellular Phenotypes of Cortical Areas that form the Cingulo-Parahippocampal Isthmus and Adjoining Retrocalcarine Regions in the Monkey. Journal of Comparative Neurology, 456:184-201, 2003.
- 30) Baker RS, Anderson AM Morecraft RJ and Smith CD. A Functional Magnetic Resonance Imaging Study in Patients with Benign Essential Blepharospasm. Journal of Neuro-Ophthalmology, 23:11-15, 2003.
- 31) Morecraft RJ, Cipolloni PB, Stilwell-Morecraft KS, Gedney M and Pandya DN. Cytoarchitecture and Cortical Connections of the Posterior Cingulate and Adjacent Somatosensory Fields in the Rhesus Monkey. Journal of Comparative Neurology, 469:37-69, 2004.
- 32) Heckers S, Weiss A, Deckersbach T, Goff D, Morecraft RJ and Bush G. Consistent Activation of Pre-supplementary Motor but not Anterior Cingulate Cortex during Cognitive Interference in Schizophrenia. American Journal of Psychiatry, 161:707-715, 2004.
- 33) Morecraft RJ, Stilwell-Morecraft KS and Rossing W. The Motor Cortex and Facial Expression: New Insights from Neuroscience. The Neurologist, 10:235-249, 2004.
- 34) Okun MS, Bowers D, Springer U, Shapira NA, Malone D, Rezai AR, Nuttin B, Heilman KM, Morecraft RJ, Rasmussen SA, Greenburg BD, Foote KD and Goodman WK. What's in a Smile? Intra-operative Observations of Contralateral Smiles Induced by Deep Brain Stimulation. Neurocase, 10:271-279, 2004.
- 35) Darling WG, Peterson CR, Herrick JL, McNeal D, Stillwell-Morecraft KS and Morecraft RJ. Measurement of Coordination of Object Manipulation in Non-Human Primates. Journal of Neuroscience Methods, 154:38-44, 2006.

- 36) Morecraft RJ, McNeal D, Stilwell-Morecraft KS, Gedney M, Ge J, Schroeder CM and Van Hoesen GW. Amygdala Interconnections with the Cingulate Motor Cortex in the Rhesus Monkey. Journal of Comparative Neurology, 500:134-165, 2007.
- 37) Morecraft RJ, McNeal D, Stilwell-Morecraft KS, Dvanajscak Z, Ge J, Schnider P. Localization of Arm Representation in the Cerebral Peduncle of the Non-Human Primate. Journal of Comparative Neurology, 504: 149-167, 2007.
- 38) Pizzimenti MA, Darling WG, Rotella D, McNeal D, Herrick JL, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Measurement of Reaching Kinematics and Prehensile Dexterity in Non-human Primates. Journal of Neurophysiology, 98:1015-1029, 2007.
- 39) Nagamoto-Combs K, McNeal DW, Morecraft RJ, Combs CK. Prolonged Microgliosis in the Rhesus Monkey Central Nervous System after Traumatic Brain Injury. Journal of Neurotrauma, 24:1729-1752, 2007.
- 40) McNeal DW, Ge, J, Herrick, JL, Stilwell-Morecraft KS and Morecraft RJ. Characterization of some Morphological Parameters of Orbicularis Oculi Motor Neurons in the Monkey. Neuroscience, 151:12-27, 2008.
- 41) Buckwalter JA, Parvizi J, Morecraft RJ and Van Hoesen GW. Thalamic Projections to the Posteromedial Cortex in the Macaque. Journal of Comparative Neurology, 507:1709-1733, 2008.
- 42) Morecraft RJ and Tanji J. Cingulofrontal Interactions and Cingulate Skeletomotor Areas. In: Vogt BA (Editor), Cingulate Neurobiology and Disease: Infrastructure, Diagnosis, Treatment, New York: Oxford University Press, pp. 113-144, 2009.
- 43) Vogt BA and Morecraft RJ. Cingulate Gyrus. In: Squire L (Editor), The New Encyclopedia of Neuroscience, Amsterdam: Elsevier, pp. 722-725, 2009.
- 44) Morecraft RJ, Ugolini G, Lanciego JL, Wouterlood FG, Pandya DN. Classic and Contemporary Neural Tract Tracing Techniques. In: Johansen-Berg H and Behrens T (Editors), Diffusion MRI: From Quantitative Measurement to In-Vivo Neuroanatomy, Amsterdam: Elsevier, pp. 273-308, 2009.
- 45) Darling WG, Pizzimenti MA, Rotella D, Peterson CR, Ge J, McNeal DW, Stilwell-Morecraft KS, Morecraft RJ. Volumetric Effects of Motor Cortex Injury on Recovery of Dexterous Movement. Experimental Neurology, 220:90-108, 2009.
- 46) McNeal DW, Darling WG, Ge J, Stilwell-Morecraft KS, Pizzimenti MA, Rotella D, Peterson CR, Morecraft RJ. Selective Long-term Reorganization of the Corticospinal Projection from the Supplementary Motor Cortex Following Recovery from Lateral Motor Cortex Injury. Journal of Comparative Neurology, 518:586-621, 2010.
- 47) Nagamoto-Combs K, Morecraft RJ, Darling WG, Combs CK. Long-Term Gliosis and Molecular Changes in the Cervical Spinal Cord of the Rhesus Monkey after Traumatic Brain Injury. Journal of Neurotrauma, 27:565-585, 2010.

- 48) Darling WG, Pizzimenti MA, Rotella DL, Hynes SM, Ge J, Stilwell-Morecraft KS, Vanadurongvan T, McNeal D, Solon-Cline KM, Morecraft RJ. Minimal Forced Use Therapy without Constraint Stimulates Spontaneous Use of the Impaired Upper Extremity following Motor Cortex Injury. Experimental Brain Research, 202:529-542, 2010.
- 49) Qiu M, Darling WG, Morecraft RJ, Ni CC, Rajendra J, Butler AJ. White Matter Integrity is a Stronger Predictor of Motor Function than BOLD Response in Patients with Stroke. Neurorehabilitation and Neural Repair, 25:275-284, 2011.
- 50) Darling WG, Pizzimenti MA, Morecraft RJ. Recovery of Function following Motor Cortex Injury in Non-human Primates: Experimental Implications for Human Stroke Patients. Journal of Integrative Neuroscience, 10:353-384, 2011.
- 51) Darling WG, Pizzimenti MA, Hynes SM, Headley G, Rotella DL, Ge J, Stilwell-Morecraft KS, McNeal DW, Morecraft RJ. Volumetric Effects of Motor Cortex Injury on Recovery of Ipsilesional Dexterous Movement. Experimental Neurology, 231:56-71, 2011.
- 52) Morecraft RJ, Stilwell-Morecraft KS, Cipolloni PB, Ge J, McNeal D, Pandya DN. Cytoarchitecture and Cortical Connections of the Anterior Cingulate and adjacent Dorsomedial Frontal Motor Cortex in the Rhesus Monkey, Brain Research Bulletin, 87: 457-497, 2012.
- 53) Darling WG, Helle N, Pizzimenti MA, Rotella DL, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Laterality affects Recovery of Contralateral Hand Motor Function following Motor Cortex Injury in Rhesus Monkeys, Experimental Brain Research, 228:9-24, 2013.
- 54) Morecraft RJ, Ge J, Stilwell-Morecraft KS, McNeal DW, Pizzimenti MA, Darling WG. Terminal Distribution of the Corticospinal Projection from the Hand/Arm Region of the Primary Motor Cortex to the Cervical Enlargement in Rhesus Monkey, Journal of Comparative Neurology, 521:4205-4235, 2013.
- 55) Morecraft RJ, Ugolini G, Lanciego JL, Wouterlood FG, Pandya DN. Classic and Contemporary Neural Tract Tracing Techniques. In: Johansen-Berg H and Behrens T (Editors), Diffusion MRI: From Quantitative Measurement to In Vivo Neuroanatomy, 2nd Edition, Amsterdam: Elsevier, Academic Press, pp. 359-399, 2014.
- 56) Morecraft RJ, Stilwell-Morecraft KS, Solon-Cline KM, Ge J, Darling WG. Cortical Innervation of the Hypoglossal Nucleus in the Non-Human Primate (*Macaca mulatta*), Journal of Comparative Neurology, 522:3456-3484, 2014.
- 57) Darling WG, Morecraft RJ, Rotella DL, Pizzimenti MA, Ge J, Stilwell-Morecraft KS, Zhang H, Soliman H, Seecharan D, Edwards I, McNeal DW, Nudo RJ, Cheney PD. Recovery of Precision Grasping after Motor Cortex Lesion does not require Forced use of the Impaired Hand in *Macaca mulatta*, Experimental Brain Research, 232: 3929-3938, 2014.
- 58) Morecraft RJ, Ge J, Stilwell-Morecraft KS, McNeal DW, Hynes SM, Pizzimenti MA, Rotella DL, Darling WG. Vulnerability of the Medial Frontal Corticospinal Projection Accompanies Combined Lateral Frontal and Parietal Cortex Injury in Rhesus Monkey, Journal of Comparative Neurology,

523:669-697, 2015.

- 59) Morecraft RJ, Stilwell-Morecraft KS, Ge J, Cipolloni PB, and Pandya DN. Cytoarchitecture and Cortical Connections of the Anterior Insula and adjacent Somatomotor Fields in the Rhesus Monkey, Brain Research Bulletin, 119:52-72, 2015.
- 60) Morecraft RJ, Ge J, Stilwell-Morecraft KS, McNeal DW, Hynes SM, Pizzimenti MA, Rotella DL, Darling WG. Frontal and Frontoparietal Injury Differentially affect the Ipsilateral Corticospinal Projection from the Non-Lesioned Hemisphere in Monkey (*Macaca mulatta*), Journal of Comparative Neurology, 524:380-407, 2016.
- 61) Darling WG, Pizzimenti MA, Rotella DL, Hynes SM, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Sensorimotor Cortex Injury Effects on Recovery of Contralateral Dexterous Movements in *Macaca mulatta*, Experimental Neurology, 281:37-52, 2016.
- 62) Morecraft RJ, Binnesbose A, Stilwell-Morecraft KS, Ge J. Localization of Orofacial Representation in the Coronal Radiata, Internal Capsule and Cerebral Peduncle in *Macaca Mulatta*, Journal of Comparative Neurology, 525:3429-3457, 2017.
- 63) Darling WG, Ge J, Stilwell-Morecraft KS, Rotella DL, Pizzimenti MA, Morecraft RJ. Hand Motor Recovery following Extensive Frontoparietal Cortical Injury is accompanied by Upregulated Corticoreticular Projections in Monkey, Journal of Neuroscience, 38:6323-6339, 2018.
- 64) Morecraft RJ, Ge J, Stilwell-Morecraft KS, Rotella DL, Pizzimenti MA, Darling WG. New Corticopontine Connections in the Primate Brain: Contralateral Projections from the Arm/hand area of the Precentral Motor Region, Frontiers in Neuroanatomy, 12:68 (1-17), 2018.
- 65) Totten D, Novik L, Christe K, Lemoy M-J, Roberts J, Carmena J, Morecraft R, Ganguly K. An Automated Behavioral Apparatus to Assess Distal Forelimb Function in Non-Human Primates. BioRxiv 396572 (1-26), 2018.
- 66) Morecraft RJ, Ge J, Stilwell-Morecraft KS, Rotella DL, Pizzimenti MA, Darling WG. Terminal Organization of the Corticospinal Projection from the Lateral Premotor Cortex to the Cervical Enlargement (C5-T1) in Rhesus Monkey, Journal of Comparative Neurology, 527:2761-2789, 2019.
- 67) Darling WG, Pizzimenti MA, Rotella DL, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Changes in Ipsilesional Hand Motor Function Differ after Unilateral Injury to Frontal versus Frontoparietal Cortices in *Macaca mulatta*, Experimental Brain Research, 238:205-220, 2020.
- 68) Khanna P, Totten D, Novik L, Roberts J, Morecraft R, Ganguly K. Low-frequency Stimulation enhances Co-Firing and Dexterity after Stroke. Cell, 184:912-930, 2021.
- 69) Darling WG, Pizzimenti MA, Rotella DL, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Greater Reduction in Contralesional Hand use after Frontoparietal than Frontal Motor Lesions in *Macaca Mulatta*. Frontiers in Systems Neuroscience, 15:592235 (1-16), 2021.
- 70) Morecraft RJ, Stilwell-Morecraft KS, Ge J, Kraskov A, Lemon RN. Lack of Somatotopy among

Corticospinal Fibers passing through the Primate Craniovertebral Junction and Cervical Spinal Cord: Pathoanatomic Substrate of Central Cord Syndrome and Cruciate Paralysis. Journal of Neurosurgery, 136:1395-1409, 2022.

- 71) Ganguly K, Khanna P, Morecraft R, Lin DJ. Modulation of Neural Co-firing to Enhance Network Transmission and Improve Motor Function after Stroke. Neuron, 110:2363-2385, 2022.
- 72) Lemon RN, Morecraft RJ. The Evidence against Somatotopical Localization of Function in the Primate Corticospinal Tract. Brain, 146:1791-1803, 2023.
- 73) Morecraft RJ, Ge J, Stilwell, Morecraft KS, Lemon RN, Ganguly K, Darling WG. Terminal Organization of the Corticospinal Projection from the Rostral Primary Motor Cortex (M1r or Old M1) Hand/Arm Region to the Cervical Enlargement (C5-T1) in Rhesus Monkey. Journal of Comparative Neurology, 531:1996-2018, 2023.
- 74) Griffin S, Khanna P, Choi H, Thiesen K, Novik L, Morecraft R, Ganguly K. Ensemble Reactivations during Brief Rest Drive Fast Learning of Sequences. Nature, 638:1034-1042, 2025.
- 75) Darling WG, Pizzimenti MA, Rotella DL, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Long-term Forced-use Therapy after Sensorimotor Cortex Lesions Restores Contralesional Hand Function and Promotes its Preference in *Macaca mulatta*. Experimental Brain Research, 243:35 (1-19), 2025.
- 76) Khanna P, Farrokhi B, Choi H, Griffin S, Heimbuch I, Novik L, Thiesen K, Morrison J, Morecraft R, Ganguly K. Separable Global and Local Beta Burst Dynamics in Motor Control of Primates. eLife, 14:RP107473, 2025.
- 77) Choi H, Kim J, Khanna P, Griffin S, Novik L, Morecraft RJ, Morrison JH, Ganguly K. Restoration of temporal separability between beta and movement ensemble co-firing with motor recovery. Neuron, 113:4263-4277, 2025.
- 78) Morecraft RJ, Ge J, Stilwell-Morecraft KS, Rotella DL, Pizzimenti MA, Darling WG. Long-Term Hand Rehabilitation after Sensorimotor Cortical Injury Promotes Massive Upregulation of Corticospinal Terminations from Spared Supplementary Motor Cortex in *Macaca mulatta*, Journal of Comparative Neurology, 534: e70123 (1-27), 2026.
- 79) Aparicio F, Ghuman H, Khanna P, Barati S, Morecraft R, Krist C, Ganguly K. Conserved Role of Primary Motor Cortex in the Control of Prehension in Mice and Macaques. Submitted for Review.

FINANCIAL RESOURCES FOR RESEARCH

Received major NIH grant funding for 27 years.

- 1) University of South Dakota: School of Medicine Parsons Award, "The neural connections of the primate cingulate motor area" (**\$9,000**). August 1991 - July 1993.

- 2) University of South Dakota: Alumni Foundation Faculty Development Award, "A new and highly sensitive method for tracing efferent neuronal connections in the monkey central nervous system: phaseolus vulgaris leucoagglutinin" (**\$5,064**). February 1992 - February 1993.
- 3) University of South Dakota School of Medicine: Alumni Foundation Faculty Development Award, "Intracellular injection of Lucifer Yellow for determining the local synaptic organization of neural connections" (**\$6,040**). March 1993 - April 1994.
- 4) National Science Foundation - EPSCOR: "Single cell mapping of membrane receptor clusters and synaptic contacts on rubrospinal neurons" (**\$135,298**). July 1995 - June 1998.
- 5) National Institutes of Health – NINDS R29 (First/New Investigator) 33003: "Medial temporal lobe input to the descending motor pathways in the primate motor cortex" (**\$533,302**). March 1997 - February 2003.
- 6) National Institutes of Health – NINDS R15 36397: "Mechanisms of motor recovery after subtotal brain injury" (**\$103,486**). May 1997 - April 2001.
- 7) University of South Dakota: Office of Research Proposal Incentive Program, "Upper motor neuron innervation of the facial muscles in the non-human primate" (**\$2,500**). April 1997 - March 1998.
- 8) Benign Essential Blepharospasm Research Foundation: "Cortical control of the upper facial musculature: Organization of central systems with etiological potential to induce involuntary facial spasms" (**\$117,522**). January 1998 - December 2002.
- 9) National Science Foundation EPSCOR: Undergraduate Research Stipend, Program of Biological Response to Stress (**\$2,500**). May 1998 - September 1998.
- 10) South Dakota Health Research Foundation: "Identifying neural mechanisms underlying motor recovery in patients with subtotal brain injury: A neuroimaging analysis of the Sioux Valley Hospital Stroke Unit database" (**\$10,000**). July 1999 - June 2001.
- 11) National Institutes of Health - NINDS: Competitive Infrastructural Development Award (**\$50,000**). June 2000.
- 12) National Science Foundation EPSCOR: Undergraduate Research Stipend, Program of Biological Response to Stress (**\$2,500**). May 2000 - September 2000.
- 13) National Institutes of Health COBRE: "Mechanisms underlying focal cranial-cervical dystonias" (**\$1,186,099**). October 2000 – September 2005.
- 14) University of South Dakota: Graduate Student Research Grant (**\$500**). November 1999- July 2000.
- 15) National Science Foundation EPSCOR: Undergraduate Research Stipend, Program of Biological Response to Stress (**\$3,500**). May 2001 - September 2001.
- 16) University of South Dakota School of Medicine, Medical Student Research Fellowship (**\$2,500**),

May 2002 – August 2002.

- 17) National Institutes of Health - NINDS: Regional Equipment Grant Award from the Chicago Institute of Rehabilitation, "Three-dimensional force recordings to measure movement coordination and motor recovery following brain lesions. (**\$5,065**). January 2003.
- 18) University of South Dakota School of Medicine, Medical Student Research Fellowship (**\$3,000**), May 2003 – August 2003.
- 19) South Dakota School of Medicine NIH - COBRE Pilot Grant Award (**\$11,328**). February 2003 – January 2004.
- 20) South Dakota School of Medicine NIH - COBRE Pilot Grant Award (**\$5,000**). February 2004 – January 2005.
- 21) South Dakota School of Medicine NIH - COBRE Grant Supplement Award (**\$12,254**). June 2004.
- 22) National Institutes of Health – NINDS R01 NS046367: "Mechanisms of motor recovery after subtotal brain injury" (**\$1,676,216**). February 2004 – May 2009.
- 23) University of South Dakota School of Medicine, Medical Student Research Fellowship (**\$3,000**). May 2004 – August 2004.
- 24) National Science Foundation: Undergraduate Research Stipend, Program of Biocomplexity (**\$3,000**). May 2004 - September 2004.
- 25) South Dakota Governor's Advisory Council for Spinal Cord and Traumatic Brain Injury Research. "Structural, molecular and behavioral mechanisms underlying motor recovery in the acute phase of traumatic brain injury". (**\$251,661**). July 2005 – June 2008.
- 26) South Dakota School of Medicine COBRE Pilot Grant Award (**\$15,000**). "Genomic analysis of spinal cord response to traumatic brain injury". February 2008 – January 2009.
- 27) South Dakota Governor's Advisory Council for Spinal Cord and Traumatic Brain Injury Research. "Structural, molecular and behavioral mechanisms underlying motor recovery in the acute phase of traumatic brain injury". (**\$77,654**). July 2008 – June 2009.
- 28) South Dakota School of Medicine COBRE Pilot Grant Award (**\$15,000**). "Central nervous system mechanisms underlying forced use therapeutic rehabilitation of upper extremity movement following cortical injury". February 2009 – January 2010.
- 29) National Institutes of Health – NINDS R56 NS046367: "Mechanisms of motor recovery after subtotal brain injury" (**\$430,845**). June 2009 – May 2010.
- 30) National Institutes of Health – NINDS R01 NS046367: "Mechanisms of motor recovery after subtotal brain injury" (**\$1,555,809**). June 2010 – May 2014.

- 31) University of South Dakota School of Medicine, Medical Student Research Fellowship sponsoring Adam Binneboese. (**\$5,000**), May 2010 – August 2010.
- 32) National Institutes of Health – NINDS R01 NS046367 Supplement: Awarded to "Mechanisms of motor recovery after subtotal brain injury" (**\$61,597**). June 2012 – May 2013.
- 33) National Institutes of Health – NINDS R01 NS097450: Rehabilitation mechanisms of hand motor recovery after sensorimotor cortex injury (**\$1,668,224**). July 2016- April 2022.
- 34) National Institutes of Health – NINDS R01 NS097450 Supplement: "Rehabilitation mechanisms of hand motor recovery after sensorimotor cortex injury" (**\$118,227**). June 2017- May 2020.
- 35) National Institutes of Health- NINDS R01 NS 112424: "Modulating low-frequency cortical population dynamics to augment motor function after stroke" (**\$3,196,569**). April 2020-March 2025.

SCIENTIFIC ABSTRACTS

- 1) Blair WF, Morecraft RJ and Percival K. The Relationship of the Deep Branch of the Ulnar Nerve to the Hypothenar Muscles. Orthopaedic Transactions, 10:205, 1986.
- 2) Blair WF, Morecraft RJ and Percival K. The Relationship of the Deep Branch of the Ulnar Nerve to the Hypothenar Muscles. Proceedings of the American Association for Hand Surgery. Journal of Hand Surgery, 11:448, 1986.
- 3) Mumford J, Blair WF and Morecraft RJ. The Thenar Branch of the Median Nerve. Proceedings of the American Association for Hand Surgery. Journal of Hand Surgery, 11:448, 1986.
- 4) Mumford J, Blair WF and Morecraft RJ. The Thenar Branch of the Median Nerve. Orthopaedic Transactions, 11:257, 1987.
- 5) Brown TD, Blair WF, Gabel RH and Morecraft RJ. Vibration Induced Hemodynamic Changes in Digital Arteries Following Usage of a Pneumatic Hammer. Biomechanics Symposium, AMD Vol 1, 49-52, 1987.
- 6) Brown TD, Blair WF, Gabel RH and Morecraft RJ. Digital Artery Hemodynamic Response to Episodic Air Hammer Usage in Workers with Vibration Syndrome. Transactions of the Orthopaedic Research Society, p 425, 1988.
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- 76) Totten D, Carmena JM, Morecraft R, Ganguly K. A System for Testing Epidural Stimulation to Enhance Stroke Recovery in Non-Human Primates. IEEE Engineering in Medicine and Biology Society, Honolulu, Hawaii, 2018.

- 77) Darling WG, Stilwell-Morecraft KS, Ge J, Rotella DL, Pizzimenti M, Morecraft RJ. Forced-use Therapy after Sensorimotor Cortex Lesions Restores Contralateral Hand Preference in *Macaca mulatta*. Society for Neuroscience, San Diego, California, 492.07, 2018.
- 78) Totten D, Carmena JM, Morecraft RJ, Ganguly K. Perilesional Recordings and Epidural Stimulation in a Non-human Primate Stroke Model. Society for Neuroscience, San Diego, California, 662.13, 2018.
- 79) Khanna P, Totten D, Morecraft RJ, Ganguly K. Perilesional Motor and Somatosensory Cortex Dynamics with Recovery of Dexterous Function after Cortical Strokes in Non-human Primates. Society for Neuroscience, Chicago, Illinois, 135.18, 2019.
- 80) Darling WG, Pizzimenti MA, Rotella DL, Ge J, Stilwell-Morecraft KS, Morecraft RJ. Forced-use Therapy Influences Recovery of Upper Limb Motor Function after Sensorimotor Cortex Lesions in *Macaca mulatta*. Society for Neuroscience, Chicago, Illinois, 581.4, 2019.
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- 83) Khanna P, Heimbuch IS, Choi H, Novik L, Thiesen K, Morecraft RJ, Ganguly K. Cortical-subcortical Beta Band Interactions with Motor Recovery from Stroke. Society for Neuroscience, San Diego, California, 514.04, 2022.
- 84) Choi H, Kim J, Khanna P, Novik L, Thiesen K, Morecraft RJ, Ganguly K. Bistability of Beta Oscillations and Movement-related Population Spiking in Motor Areas. Society for Neuroscience, San Diego, California, 514.07, 2022.
- 85) Lemon RN, Stilwell-Morecraft KS, Ge J, Kraskov A, Morecraft RJ. Lack of Somatotopy in the Primate Lateral Corticospinal Tract: Implications for our Understanding of Incomplete Spinal Injury. 2022 Network Meeting of the International Spinal Research Trust, London, United Kingdom, 2022.
- 86) Khanna P, Farrokhi B, Heimbuch IS, Choi H, Thiesen K, Morecraft RJ, Ganguly K. Synchronous and Isolated Beta Burst Dynamics following Recovery from Stroke in Primates. Society for Neuroscience, Washington D.C., 414.9, 2023.
- 87) Lemon RN, Stilwell-Morecraft KS, Ge J, Kraskov A, Morecraft RJ. Lack of Somatotopy in the Macaque Lateral Corticospinal Tract: Implications for Understanding of Human Spinal Cord Injury. The Physiological Society: Neurophysiological Basis of Human Movement, Kings College, London, UK, C33, 2023.
- 88) Griffin S, Khanna P, Ganguly K, Choi H, Novik L, Thiesen K, Morecraft RJ. Ensemble

Reactivations during Brief Rest Periods Drive Fast Sequence Learning in Non-Human Primates. Computational and Systems Neuroscience (Cosyne) Conference, Lisbon, Portugal, 2024.

- 89) Heimbuch IS, Khanna P, Novik L, Morecraft RJ, Ganguly K. Cross-area Dynamics during Reach-to-Grasp Control and Recovery. Society for Neuroscience, San Diego, CA, 287.14/H33, 2024.
- 90) Ganguly K, Choi H, Kim J, Khanna P, Griffin S, Morecraft R. Disentanglement of Preparatory and Movement Dynamics with Motor Recovery in Primates. Brain Stimulation: Basic, Translational and Clinical Research in Neuromodulation. 6th International Brain Stimulation Conference, Kobe, Japan, FS2B.3, 2025.

TEACHING EXPERIENCE

Taught > 4,000 University of South Dakota professional health care graduate students (first year MD, PA, PT and OT) of which > 2000 were first year MD students. Taught > 800 Second year Resident Head and Neck Surgeons, at the University of Iowa Department of Otolaryngology: Head and Neck Surgery.

- 2017-pres. Human Gross Anatomy for Medical Students. Head and Neck Unit. Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 2017-pres. Human Gross Anatomy for Physician Assistant, Physical Therapy and Occupational Therapy Students. Head and Neck Unit. Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 2014 -2015 Neuroscience for Medical, Graduate, Physical Therapy and Physician Assistant Students. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 2010-pres. Neurobiology of Disease. Brain Injury Section. Graduate Studies Program. The University of South Dakota, Sanford School of Medicine, Vermillion, South Dakota.
- 2002-2003 Physical Rehabilitation. Cortical Motor Recovery Section. Physical Therapy Program. The University of South Dakota Division of Allied Health, Vermillion, South Dakota.
- 2000-2012 Director, Human Gross Anatomy for Medical, Physician Assistant, Physical Therapy and Occupational Therapy Students. Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 1995-1999 McKennon Hospital Lecture Series in Psychiatry. Section on Advanced Behavioral Neuroscience. Resident Training Program, Department of Psychiatry. The University of South Dakota School of Medicine, Sioux Falls, South Dakota.

- 1995-2015 Gross Anatomy Review Workshop for Licensed Physical Therapy and Occupational Therapy Professionals. Section on Motor and Sensory Neural Systems: Basic Principles and Pathophysiology. Division of Basic Biomedical Sciences and Department of Physical Therapy. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 1994-2001 Pathophysiology I for Physician Assistants. Section on Neuroanatomy. Physician Assistant Program. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 1994-2002 Neuroanatomy for Medical, Graduate and Physical Therapy Students. Sections on Limbic System and Cerebral Cortex. Department of Anatomy and Structural Biology. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 1991-1994 Molecular Biology of the Cell. Nervous Tissue Unit. Interdepartmental Graduate Program. The University of South Dakota School of Medicine, Vermillion, South Dakota.
- 1991-2016 Human Gross Anatomy for Medical, Physician Assistant, Physical Therapy and Occupational Therapy Students. Head and Neck Unit. Department of Anatomy and Structural Biology/ Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine, Vermillion.
- 1990-1991 Human Nervous System and Behavior for Medical, Dental and Graduate Students. Department of Anatomy. Harvard Medical School, Boston, Massachusetts.
- 1990-1991 Cambridge Hospital Lecture Series in Psychiatry. Section on Basic Neuroanatomy. Department of Neurology. Harvard Medical School, Boston, Massachusetts.
- 1985-2020 Advanced Head and Neck Anatomy for Resident Surgeons (Adjunct Faculty). Department of Otolaryngology: Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa.
- 1985-89 Graduate Teaching Assistant: Medical and Graduate Neuroscience. Department of Anatomy. The University of Iowa College of Medicine, Iowa City, Iowa.
- 1983-84 Graduate Teaching Assistant: Gross Anatomy for Physicians, Physician Assistants and Graduate Students. Department of Anatomy. The University of Iowa College of Medicine, Iowa City, Iowa.
- 1983 Graduate Teaching Assistant: Advanced Anatomy and Kinesiology. Department of Exercise Science. The University of Iowa, Iowa City, Iowa.
- 1981-83 Graduate Teaching Assistant: Physical Education Skills. Department of Physical Education. The University of Iowa, Iowa City, Iowa.
- 1979-80 Student Teacher: Health and Physical Education. Department of Health and Physical

Education. Johnson Elementary School (Princeton), Princeton High School (Princeton), Steinert-Hamilton High School East (Hamilton), New Jersey.

INVITED PRESENTATIONS

- 1) Department of Neurology. Harvard Medical School, Boston, Massachusetts, December 1988.
- 2) Department of Anatomy. The University of Iowa College of Medicine, Iowa City, Iowa, February 1989.
- 3) Department of Neurology. Harvard Medical School, Cambridge Hospital Lecture Series in Psychiatry, Cambridge, Massachusetts, January 1989.
- 4) Department of Anatomy and Structural Biology. The University of South Dakota School of Medicine, Vermillion, South Dakota, February 1991.
- 5) Department of Neurology. Harvard Medical School, Longwood Area Seminars in Behavioral Neurosciences, Boston, Massachusetts, April 1991.
- 6) Department of Otolaryngology-Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa, July 1992.
- 7) Department of Physiology and Pharmacology. The University of South Dakota School of Medicine, Vermillion, South Dakota, March 1993.
- 8) Department of Biology. The University of South Dakota, Vermillion, South Dakota, April 1993.
- 9) Department of Otolaryngology-Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa, July 1993.
- 10) Department of Anatomy. Fort Wayne Center for Medical Education, Indiana University School of Medicine, Fort Wayne, Indiana, August 1993.
- 11) Department of Anatomy. Michigan State University School of Medicine, East Lansing, Michigan, October 1993.
- 12) Department of Anatomy. The University of Iowa College of Medicine, Iowa City, Iowa, April 1994.
- 13) Department of Otolaryngology-Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa, July 1994.
- 14) Department of Otolaryngology-Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa, July 1995.
- 15) Department of Otolaryngology-Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa, July 1996.

- 16) Department of Anatomical Sciences. The University of Oklahoma Health Sciences Center, 17) Oklahoma City, Oklahoma, January 1997.
- 17) Department of Anatomy and Cell Biology. The University of North Dakota School of Medicine and Health Sciences, Grand Forks, North Dakota, January 1997.
- 18) Department of Neurology - Great Plains Chapter of Neuroscience Nurses. The University of South Dakota School of Medicine, Sioux Valley Hospital, Sioux Falls, South Dakota, March 1997.
- 19) Department of Anatomy and Cell Biology. The University of Iowa College of Medicine, Iowa City, Iowa, April 1997.
- 20) Department of Otolaryngology-Head and Neck Surgery. The University of Iowa College of Medicine, Iowa City, Iowa, July 1997.
- 21) Department of Neurology. The University of Iowa College of Medicine, Iowa City, Iowa, July 1997.
- 22) Department of Physical Therapy. The University of South Dakota School of Medicine, Vermillion, South Dakota, September 1997.
- 23) Undergraduate Honors Student Recruiting Program. University of South Dakota, Vermillion, South Dakota, November 1997.
- 24) Department of Occupational Therapy. The University of South Dakota, Dakota Hospital, Vermillion, South Dakota, December 1997.
- 25) Department of Cell Biology and Anatomy. Louisiana State University Medical Center, Shreveport, Louisiana, March 1998.
- 26) National Science Foundation EPSCoR Coalition Annual Meeting. Special Presentation to Congressional Delegation and Staff. Capitol Hill, Washington D.C., March 1998.
- 27) Department of Biology. The University of South Dakota, Vermillion, South Dakota, March 1998.
- 28) MeritCare Clinic Department of Neurology - Adult and Pediatric Programs in Brain Injury Rehabilitation. The University of North Dakota School of Medicine and Health Sciences, Fargo, North Dakota, November 1998.
- 29) Undergraduate Honors Student Recruiting Program. University of South Dakota, Vermillion, South Dakota, November 1998.
- 30) Benign Essential Blepharospasm Research Foundation 17th Annual Movement Disorder Conference. Presenter and Panelist. Program Director: Dr. Alan B. Scott, Director of The Smith-Kettlewell Eye Institute of San Francisco. Asilomar Conference Center, Monterey Peninsula, Monterey, California, September 1999.

- 31) South Dakota Physical Therapy Association Annual Meeting, Ramcoda Inn, Sioux Falls, South Dakota, September 1999.
- 32) Department of Ophthalmology and Department of Anatomy and Neurobiology. The University of Kentucky College of Medicine, Lexington, Kentucky, March 2000.
- 33) South Dakota Speech, Language and Hearing Association Annual Conference. Ramcoda Inn, Sioux Falls, South Dakota, March 2000.
- 34) Benign Essential Blepharospasm Research Foundation 18th Annual Movement Disorder Conference. Presenter and Panelist. Program Director: Dr. Robert S. Baker, Robert L. Bergen Professor of Ophthalmology. The University of Kentucky College of Medicine, Lexington, Kentucky, August 2000.
- 35) National Institutes of Health Focal Dystonia Brainstorming Session. Co-sponsored by NIH and BEBRF. Program Director: Dr. Mark Hallett, Clinical Director NINDS and Chief of the Medical Neurology Branch of NIH. National Institutes of Health, Bethesda, Maryland, November 2000.
- 36) Department of Pharmaceutical Sciences, College of Pharmacy. South Dakota State University, Brookings, South Dakota, March 2001.
- 37) Benign Essential Blepharospasm Research Foundation 19th Annual Movement Disorder Conference. Presenter and Panelist. Program Director: Dr. Mark Stacey, Director of the Muhammad Ali Parkinson's Research Center, Barrow Neurological Institute, Scottsdale, Arizona, August 2001.
- 38) Department of Neurology, Edith Nourse Rogers Memorial Veterans Hospital, Bedford, Massachusetts, March, 2002.
- 39) Integrative Neuroscience Research Program, Department of Biomedical Sciences and Department of Physical Therapy, Marquette University, Milwaukee, Wisconsin, October, 2003.
- 40) Department of Pharmacology, Physiology and Therapeutics. Foundations of Biomedical Science Seminar Series. University of North Dakota School of Medicine, Grand Forks, North Dakota, April, 2004.
- 41) Department of Pediatrics, University of South Dakota School of Medicine, Sioux Falls, South Dakota, December, 2005.
- 42) Department of Anatomy and Cell Biology, University of North Dakota School of Medicine, United Hospital Lecture Hall, Grand Forks, North Dakota, January, 2006.
- 43) Department of Neurology, Maryland Parkinson's Disease and Movement Disorder Center, University of Maryland, Baltimore, Maryland, February 2006.
- 44) The Governor's Advisory Council for Spinal Cord and Traumatic Brain Research, SCI/TBI Educational Symposium, Sioux Falls, South Dakota, November 2006.
- 45) National Institute of Neurological Disorders and Stroke and the Benign Essential Blepharospasm

Research Foundation Brainstorming Session on Cranial Cervical Dystonia. Program Director: Dr. Mark Hallett, Houston, Texas, September 2006.

46) Movement Disorder Society 11th International Congress of Parkinson's Disease and Movement Disorders, Istanbul, Turkey, June, 2007.

47) Organization for Human Brain Mapping 13th Annual Meeting, Chicago, Illinois, June 2007.

48) University of Kansas Medical Center, Department of Molecular and Integrative Physiology, Landon Center on Aging, Kansas City, Kansas, February, 2008.

49) The University of Trieste, University Rehabilitation Hospital, BRAIN Institute, Architecture of the Primate Cortex: A Symposium in Honor of Professor von Economo, Trieste, Italy, March 2008.

50) University of Oklahoma College of Medicine, University of Oklahoma Health Sciences Center, Oklahoma Center for Neuroscience, Oklahoma City, Oklahoma, November 2008.

51) Forty Second Annual Winter Conference on Brain Research, Special Panel on Facial Processing in Neurological Disorders, Copper Mountain, Colorado, January 2009.

52) Organization for Human Brain Mapping 15th Annual Meeting, San Francisco, California, June 2009.

53) Second Congress of the International Society of Intraoperative Neurophysiology, Dubrovnik, Croatia, November 2009.

54) University of Kansas Medical Center, Department of Molecular and Integrative Physiology, Landon Center on Aging, Kansas City, Kansas, February, 2012.

55) Sunset Manor Avera Health Care Facility, Long-term Rehabilitation Care: Brain Injury Unit, Irene, South Dakota, April, 2013.

56) South Dakota Regional Blepharospasm and Dystonia Patient Support Group, Sioux Falls, South Dakota, April, 2015.

57) John H. and Amy Bowles Lawrence Foundation Symposium, Research Frontiers in Cerebrovascular Disease and Disorders, University of South Dakota Sanford School of Medicine, Sioux Falls, South Dakota, October, 2015.

58) Department of Neurology and Neurophysiology, Spinal Cord Injury Center, Balgrist University Hospital, University of Zurich, Switzerland, March 2022.

CONTINUING EDUCATION

The Behavior of Neurology. Department of Neurology. Harvard Medical School, Omni Parker Hotel, Boston, Massachusetts. December 1989.

Longwood Area Seminars in Behavioral Neurosciences. Department of Neurology. Harvard Medical School, Boston, Massachusetts. October 1989 - April 1990.

The Behavior of Neurology. Department of Neurology. Harvard Medical School, Omni Parker Hotel, Boston, Massachusetts. December 1990.

Longwood Area Seminars in Behavioral Neurosciences. Department of Neurology. Harvard Medical School, Boston, Massachusetts. October 1990 - April 1991.

Grant Proposal Writing Workshop. Western Iowa Tech Community College. Sioux City, Iowa. May 3-5, 1993.

Teaching Effectively- Two-Way Video Workshop. Picture Tel Corporation of Boston and The University of South Dakota School of Medicine. Sioux Falls, South Dakota. March 14-15, 1996.

Regional Project, West Small Business Innovation Research (SBIR) Conference, Sioux Falls, South Dakota. September 25, 1997.

Benign Essential Blepharospasm Research Foundation International Scientific and Medical Symposium, Asilomar Conference Center, Monterey, California, September 17-19, 1999.

Benign Essential Blepharospasm Research Foundation International Scientific and Medical Symposium. The University of Kentucky College of Medicine, Lexington, Kentucky, August 25-27, 2000.

National Institutes of Health Focal Dystonia Brainstorming Session. Co-sponsored by NIH and BEBRF. November 15-17, 2000.

Benign Essential Blepharospasm Research Foundation International Scientific and Medical Symposium. Muhammad Ali Parkinson's Research Center, Barrow Neurological Institute, Scottsdale, Arizona, August 17-19, 2001.

Maximizing the Teaching Moment. Sponsored by The University of South Dakota School of Medicine, Ramcoda Inn Conference Center, Rapid City, South Dakota, June 6, 2002.

Toolbox for Clinical Teaching: Faculty Development Workshop, The University of South Dakota Sanford School of Medicine, Ramcoda Inn Conference Center, Rapid City, South Dakota, June 8, 2006.

Structural Brain Mapping Educational Course. Organization for Human Brain Mapping 13th Annual Meetings, Chicago, Illinois, June 10, 2007.

Forty Second Annual Winter Conference on Brain Research, Copper Mountain, Colorado, January 2009.

Second Congress of the International Society of Intraoperative Neurophysiology, Dubrovnik, Croatia, November 2009.

PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science
American Association of Clinical Anatomists
Anatomical Society of Great Britain and Ireland
Iowa Microbeam Society
Society for Neuroscience

PROFESSIONAL ACTIVITIES

Editorial Board Member:

Frontiers in Neuroanatomy, 2007- present.
Journal of Comparative Neurology, 2015- present.

Scientific Paper Peer Reviewer:

American Journal of Physical Anthropology
Annals of Neurology
Annals of Otology, Rhinology and Laryngology
Behavioral Brain Research
Behavioral and Brain Sciences
Behavioral Neuroscience
Brain
Brain Research
Cerebral Cortex
Clinical Anatomy
F1000Research
Frontiers in Neuroanatomy
Frontiers in Neuroscience
Journal of Cognitive Neuroscience
Journal of Comparative Neurology
Journal of Human Evolution
Journal of Neurology, Neurosurgery and Psychiatry
Journal of Neuroscience
NeuroRehabilitation and Neural Repair
Journal of Neurophysiology
Nature Communications
NeuroImage
Neuroscience
Neuroscience Letters
Stroke

Grant Reviews:

National Science Foundation (external reviewer).
Scottish Hospital Endowments Research Trust (external reviewer).
Grinnell College, Harris Faculty Fellowship (external reviewer).

Professional Committee Service:

- 1) Research Committee. The University of South Dakota School of Medicine. 1992 - 1995.
- 2) Chairperson Search Committee. Department of Microbiology. The University of South Dakota School of Medicine. 1992 - 1996.
- 3) University Committee on Intellectual Property. The University of South Dakota. August 1993 - June 1996.
- 4) LCME Accreditation Self-Study Subcommittee. Department of Anatomy and Structural Biology. The University of South Dakota School of Medicine. 1994.
- 5) Minority Health Affairs Committee. The University of South Dakota. August 1994 - 2000.
- 6) Inter-campus Coordinating Committee for the Howard Hughes Medical Institute Undergraduate Research Program. The University of South Dakota. March 1995 - July 1998.
- 7) Ad Hoc Committee on the Reorganization of the Medical School Ph.D. Program. The University of South Dakota School of Medicine. March 1996 - August 1996.
- 8) Steering Committee on the Reorganization of the Medical School Ph.D. Program. The University of South Dakota School of Medicine. August 1996 - April 1997.
- 9) Admissions Committee. Department of Physical Therapy. The University of South Dakota Allied Health Program. September 1996 – October 2008.
- 10) Enrollment Selection Committee for the Howard Hughes Medical Institute Undergraduate Research Program. The University of South Dakota. February 1997 - July 1998.
- 11) Objective Structured Clinical Examination Test Construction Subcommittee. The University of South Dakota School of Medicine. October 1997 - August 1998.
- 12) Office of Research Internal Grant Review Panel. The University of South Dakota Office of Research. The University of South Dakota. October 1997 – October 2006.
- 13) Radiation Safety Committee. The University of South Dakota. December 1997 - June 1999.
- 14) Undergraduate Research Council. The University of South Dakota. December 1998 -2001.
- 15) Graduate Science Research Forum Programming Committee. The University of South Dakota.

February 1999 – 2002.

16) New Vermillion Medical School Building Subcommittee on Teaching Space: Gross Anatomy Representative. The University of South Dakota School of Medicine. May 2000 – August 2000.

17) Neuroscience Faculty Search Committee. The University of South Dakota School of Medicine. December 2000 – 2004.

18) Mission Based Management Subcommittee on Research. The University of South Dakota School of Medicine. January 2001 – March 2001.

19) Course Directors Subcommittee on Medical Student Curricular Development. February 2001 – 2005.

20) Deeded Body Program Memorial Service Committee, Chair. Founding group of Medical Gross Anatomy Memorial Service. University of South Dakota School of Medicine. June 2003-October 2003.

21) Chair Search Committee. Department of Physical Therapy. The University of South Dakota Allied Health Program. September 2002 – September 2003.

22) Faculty Council. The University of South Dakota School of Medicine. July 2003 – May 2006.

23) Faculty Search Committee. Department of Physical Therapy. The University of South Dakota Allied Health Program. October 2003 –December 2005.

24) Tenure and Promotion Committee. The University of South Dakota School of Medicine. Special Appointment by Dean of Medical School, October 2005.

25) Development Committee for Scientific Writing Course, The Division of Basic Biomedical Sciences, The University of South Dakota School of Medicine, 2006-2007.

26) Pre-tenure Committee for Dr. Pat Manzerra. University of South Dakota School of Medicine. 2007 - 2009.

27) Pre-tenure Committee for Dr. Brian Burrell. University of South Dakota School of Medicine. 2007 - 2009.

28) Faculty Search Committee: Specialists Position. Department of Physical Therapy. The University of South Dakota Allied Health Program. August 2007 – June 2009.

29) Faculty Search Committee: Generalist Position. Department of Physical Therapy. The University of South Dakota Allied Health Program. August 2007 – July 2009.

30) Medical Student Longitudinal Advisory Committee. The University of South Dakota School of Medicine. August 2007 – January 2013.

31) MD/PhD Program Admissions Committee. The University of South Dakota School of Medicine.

March 2008 – August, 2013.

32) Tenure and Promotion Committee. The University of South Dakota School of Medicine. September 2008 – November 2013.

33) Medical School First Year Course Directors Committee. The University of South Dakota School of Medicine. September 2009 – December 2010.

34) Medical Student Research Committee. The University of South Dakota School of Medicine. December 2009 – August 2012.

35) Ad hoc Committee for Curricular Reform. The University of South Dakota School of Medicine. December 2009 – February 2011.

36) Faculty Search Committee: Functional Magnetic Imaging Specialists Position. Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine. April 2010 – August 2012.

37) Review Subcommittee for the 2010 Presidents Research Awards. The University of South Dakota. May 2010 – September 2010.

38) Medical Foundations I, Curriculum Committee. The University of South Dakota School of Medicine. April 2011 – May 2016.

39) Faculty Search Committee: Medical Gross Anatomy Position. Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine. October 2011 – November 2012.

40) Faculty Search Committee: Undergraduate Anatomy and Physiology Position. Division of Basic Biomedical Sciences. The University of South Dakota School of Medicine. October 2012 – April 2013.

41) Faculty Search Committee: Neuro-Rehabilitation Position. Department of Physical Therapy. The University of South Dakota Allied Health Program. April 2013 – July 2013.

42) Primary Review Committee on Faculty Promotion for Dr. Carlos Tellaria, University of South Dakota School of Medicine. August 2013.

43) Medical and Allied Health Neuroscience Block, Curriculum Committee. The University of South Dakota School of Medicine. January 2014 – January 2015.

44) PhD Thesis Committee, External Examiner. Thesis Title: Morphology of parietal sulci: intraparietal sulcus, anterior parietal sulcus of intermediate Jensen, and postcentral sulcus with relation to somatic sensory representations. Veronika Zlatkina, Integrated Neuroscience Program, Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada. January 2015 - December 2016.

45) Internal Grant Reviewer CBBR: Graduate Student Research Award Applications. The University of South Dakota School of Medicine. November 2015.

- 46) Pre-tenure Committee for Dr. Samuel Sathyanesan. University of South Dakota School of Medicine. April-May 2016. Primary
- 47) Tenure and Promotion Committee. The University of South Dakota School of Medicine. March 2015 – December 2018.
- 48) MD/PhD Program Admissions Committee. The University of South Dakota School of Medicine. July 2017 – June 2018.
- 49) Primary Review Committee on Faculty Promotion to Full Professor for Dr. Yi-Fan Lee, University of South Dakota School of Medicine. October, 2019.
- 50) Ad Hoc Teaching Evaluation Appeal Committee, University of South Dakota School of Medicine. December 2019 – February 2020.
- 51) Primary Review Committee on Faculty Promotion to Full Professor for Dr. Victor Huber, University of South Dakota School of Medicine. September, 2021.
- 52) MD/PhD Program Admissions Committee. The University of South Dakota School of Medicine. May 2023 – June 2026.
- 53) Primary Review Committee on Faculty Promotion to Associate Professor for Dr. Jose Pietri, University of South Dakota School of Medicine. September, 2023.
- 54) Pre-tenure Committee for Dr. Luye Qin. University of South Dakota School of Medicine. April 2025 – September 2025.
- 55) University Honorary Degrees Committee. The University of South Dakota. April 2025 – June 2026.

State Government Committee Service:

- 1) Governor's Advisory Council for Spinal Cord/Traumatic Brain Injury Research, State of South Dakota, Office of the Governor, Executive Order 2004-07. April 2004 – November 2004.

General University Service/Appointments:

- 1) Radiation Protection Officer. Department of Anatomy and Structural Biology, The University of South Dakota School of Medicine. 1991 - 1997.
- 2) Departmental Safety Officer. Department of Anatomy and Structural Biology, The University of South Dakota School of Medicine. 1991 - 1997.
- 3) Varsity Football, Volunteer Defensive Back Coach, University of South Dakota Coyotes. 1995.

4) Objective Structured Clinical Examination, University of South Dakota School of Medicine. 1997 - 1999.

5) Undergraduate Honors Student Recruiting Program. Medical School Representative. 1997 - 1999.

Community/Public Service:

1) Austin Elementary School, Vermillion, South Dakota. Presentation on "Safety and the Bones of the Human Body" for Ms. Tieszen's kindergarten students. November 1994.

2) Vermillion Middle School, Vermillion, South Dakota. Presentation of "Nervous System Structure and Function" for all 7th grade science classes. April 1994, April 1995, April 1996, March 1997, April 1998, May 1999, April 2000.

3) Vermillion High School, Vermillion, South Dakota. Diversified Occupation Outreach Program. Director/supervisor for Laurel Schamber's neuroscience laboratory rotation. October 1996.

4) Vermillion High School, Vermillion, South Dakota. Senior Career Day: "Presentation of Vocational Opportunities in Research". March 1997, March 1999, March 2000.

5) Austin Elementary School, Vermillion, South Dakota. Dissection of the Eye and Presentation on "Safety and the Central Nervous System" for Ms. Farland's second grade students. April 1997.

6) Jolley Elementary School, Vermillion, South Dakota. "Hearing and the Auditory System", "Bones of the Human Body" for third and fourth grade students. February 1998.

7) Jolley Elementary School, Vermillion, South Dakota. "Safety and the Central Nervous System", "Bones of the Human Body" for third and fourth grade students. May 1998, January 1999.

8) Saint Agnes Elementary School, Vermillion, South Dakota. "Bones and the Human Body", Mrs. Crowley's preschool and first grade students. January 1999.

9) Austin Elementary School, Vermillion, South Dakota. "Safety and Nutrition of the Human Skeletal System" for first grade students. December 2000.

10) Vermillion Middle School, Vermillion, South Dakota. Presentation of "Nervous System Structure and Function" for all 6th grade science classes. April 2001.

11) Vermillion Boys Youth Baseball League, Head Coach/Assistant Coach. Summer 2002-2009.

12) Boy Scouts of America, Assistant Webelos Leader (Den 1), Cub Scout Pack 165, Vermillion, South Dakota. September 2003 – February 2005.

13) Boy Scouts of America, Assistant Scout Master, Boy Scout Troop 66, Vermillion, South Dakota. February 2005 – September 2011.

14) Vermillion High School, Vermillion, South Dakota, Presentation of "Nervous System in Brain

Disorders and Recovery". 12th grade Anatomy and Physiology course. January 2006.

15) Vermillion Babe Ruth Baseball Team, Head Coach. Summer 2010.

16) Lawrence Brothers Science Camp, 6th, 7th and 8th grade participants. The University of South Dakota, Presentation on Brain Control of Movement and Brain Protection, July 15, 2015.

Student Supervision:

Anne Marie Cross, N.I.H. Minority Student Research Apprentice Program. University of South Dakota School of Medicine. June - July 1992, June - July 1993.

Barbara Brockevelt, Ph.D. Thesis Committee Member. Department of Anatomy and Structural Biology. University of South Dakota School of Medicine. 1991 - 1998.

Jessica Whiteblume, N.I.H. Minority Student Research Apprentice Program. University of South Dakota School of Medicine. June - July 1994.

Clinton Schroeder, Department of Biology Undergraduate Research Assistant. University of South Dakota. December 1994 - May 1996.

Jenifer Louie, Howard Hughes Medical Institute Undergraduate Research Assistant in Experimental Biology and Biometrics. The University of South Dakota. August 1995 - January 1997.

Eric Kelts, Senior Medical Student Clerkship: Research Project in Neurology. University of South Dakota School of Medicine. 1995 - 1996.

Desere McKee, Ph.D. Thesis Committee Member. Department of Anatomy and Structural Biology, The University of South Dakota School of Medicine. 1995 - 1996.

Clinton Schroeder, Howard Hughes Medical Institute Undergraduate Research Assistant in Experimental Biology and Biometrics. University of South Dakota. June 1996 - July 1998.

Alicia Whitebear, N.I.H. Minority Student Research Apprentice Program. The University of South Dakota School of Medicine. June - July 1996.

Konstantin Avramov, Howard Hughes Medical Institute Undergraduate Research Assistant in Experimental Biology and Biometrics. The University of South Dakota. June 1997 – December 2000.

Gina Ann Good Crow, N.I.H. Minority Student Research Apprentice Program. University of South Dakota School of Medicine. June - July 1997.

Margaret M. Fritz, N.I.H Short-term Training for Minority Students Program. University of South Dakota School of Medicine. April - July 1998.

Jenifer Louie, Masters Thesis Committee Supervisor. University of South Dakota School of Medicine. August 1997 - July 1999.

Patrick J. Ronan, Ph.D. Thesis Committee Member. Department of Biology. The University of South Dakota. August 1997 – April 2000.

Anne Marie Cross, N.I.H Short-term Training for Minority Students Program. The University of South Dakota School of Medicine. April - July 1999.

Matt Schoolfield, Medical Student Research Fellowship Program. The University of South Dakota School of Medicine. April 1999 – April 2000.

Alexia Gillen, Undergraduate Honors Program Thesis Committee Supervisor. May 1999 – May 2000.

Alexia Gillian, Graduate Student Research Award Supervisor. Department of Communication: Division of Speech and Hearing. November 2000 – July 2002.

Jonovan Ottenbacher, Undergraduate Research Assistant, USDSM Medical Student Alumni Scholar. September 1998 – September 2001.

Wayne Stone, N.I.H Short-term Training for Minority Students Program. University of South Dakota School of Medicine. April - September 2001.

Travis Dirks, Medical Student Research Fellowship Program. University of South Dakota School of Medicine. May 2002 – August, 2004.

David McNeal, Predoctoral Graduate Student, PhD Thesis Supervisor, Division of Basic Biomedical Sciences, The University of South Dakota School of Medicine. August 2002- August 2008.

Katie Degan, Undergraduate Research Assistant, Honors Program Thesis Advisor, USDSM Medical Student Alumni Scholar. September 2002 – May 2004.

Peter Pelegrin, Medical Student Research Fellowship Program. University of South Dakota School of Medicine. May 2003 – August, 2003.

Zeljko Dvanajscak, Undergraduate Research Assistant, Honors Program Thesis Advisor, University of South Dakota. October 2003 – May 2007.

Nicholas Torbert, Undergraduate Research Assistant. University of South Dakota. January 2004 – May 2005.

Jeffery Kennedy, Undergraduate Research Assistant. University of South Dakota. January 2001- August 2003.

Jeffery Kennedy, Medical Student Research Fellowship Program. The University of South Dakota School of Medicine. May 2004 – September, 2004.

Kathryn Cline, Graduate Student, Masters Degree Thesis Supervisor, Division of Basic Biomedical Sciences .University of South Dakota School of Medicine. August 2005- December 2007.

Chris Jensen, Undergraduate Research Assistant. University of South Dakota. January 2006 – September 2008.

Tyler Vanaduorongvan, Medical Student Research Fellowship Program. University of South Dakota School of Medicine. May 2007 – September, 2007.

Tyler Vanaduorongvan, Predoctoral Graduate Student, MD/PhD Thesis Committee. University of South Dakota School of Medicine. June 2008 – December 2010.

Chris Jensen, Undergraduate Honors Program Thesis Committee Supervisor. University of South Dakota. September 2008 – May 2009.

Richard Knutson, Undergraduate Research Assistant. University of South Dakota, September 2009 – May 2010.

Adam Binneboese, Medical Student Scholarship Pathways Program, Research Pathway. University of South Dakota School of Medicine. June 2011 – May 2015.

Torrie Summers, Basic Biomedical Science PhD Program. Thesis Committee Member. University of South Dakota. September 2012 – December 2014.

Abby Wolf, Undergraduate Honors Program. Thesis Committee Supervisor. University of South Dakota. January 2013 – May 2014.

Bikash KC, Basic Biomedical Science MS program. Thesis Committee Member. University of South Dakota. September 2013 – December 2016.

Veronika Zlatkina, Integrated Neuroscience Program, Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada. Member, PhD Thesis Committee, External Examiner. January 2015 - December 2015.

Neeraj Kumar Tiwari, Basic Biomedical Science PhD program. Thesis Committee Member, University of South Dakota School of Medicine. October 2015 – December 2019.

Taylor Bosch, Basic Biomedical Science PhD program. Thesis Committee Member. University of South Dakota School of Medicine. November 2015 – May 2019.

Sam Critzer, MD/PhD program. Thesis Committee Member, University of South Dakota School of Medicine. June 2019 – December, 2020.

Eric Graack, Basic Biomedical Science MS program. Thesis Committee Member, University of South Dakota School of Medicine. June 2019 – September 2021.

Anthony Restaino, MD/PhD program. Thesis Committee Member, University of South Dakota School of Medicine. June 2019 – May 2023.

Clair Kittock, MD/PhD program. Thesis Committee Member, University of South Dakota School of

Medicine. April 2021 – December 2023.

Sarah Faber, Basic Biomedical Science MS program. Thesis Committee Member. University of South Dakota School of Medicine. December 2023 – May 2024.

Destiny Brockhaus, Biomedical and Translational Science PhD program. Thesis Committee Member. University of South Dakota School of Medicine. April 2025 – January 2026.

ADDITIONAL HONORS AND ACHIEVEMENTS

Finalist, Graduate Teaching Assistant of the Year, The University of Iowa, 1988.

Varsity and Junior Varsity Football and Basketball, College of New Jersey.

President (2 term), Phi Epsilon Kappa, College of New Jersey.

Varsity Football (starting defensive back), Basketball (forward: member of the 1975 Group IV State Basketball Champions) and Track (high-jump), Woodbridge High School, New Jersey.

Eagle Scout, Boy Scouts of America.

Scout of the Year, Troop 52, Fords, New Jersey, Thomas Edison Council, Boy Scouts of America.