CURRICULUM VITAE

WALTER C. LOW, Ph.D.
U.S.A.

PROFESSIONAL ADDRESS

University of Minnesota
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IDENTIFYING INFORMATION

Education

Degree	Institution	Date Degree Granted
B.S.	University of California Santa Barbara, CA	1972
M.S.	University of Michigan Ann Arbor, MI	1974
Ph.D.	University of Michigan Ann Arbor, MI	1979
Postdoctoral Fellow	University of Cambridge Cambridge, U.K.	1979-1980

Academic Appointments

University of Minnesota Medical School, Twin Cities

Department of Neurosurgery
- Professor, with tenure — 1993-present
- Associate Professor, with tenure — 1990-1993

Department of Physiology
- Professor — 1993-2012
- Associate Professor — 1990-1993

Graduate Program in Neuroscience
- Professor — 1993-present

Microbiology, Immunology, and Cancer Biology Graduate program Professor	1993-present
Cancer Center Professor	1995-present
MD/PhD Medical Scientist Training Program	1997-present
Biological Sciences Graduate Program	1999-present
Stem Cell Institute Professor	1999--present
Biomedical Engineering Institute Professor	2002-2007
Institute for Engineering in Medicine Professor	2007-present
NeuroEngineering Center Professor	2007-present
Stem Cell Biology Graduate Program Professor	2008-present
Department of Integrative Biology and Physiology Professor	2012-present
Brain Tumor Program Professor	2014-present
Institutes for Health Informatics Professor	2017-present
Bioinformatics and Computational Biology Graduate Program Professor	2017-present
Comparative and Molecular Biology Graduate Program Professor	2018-present
Biomedical Engineering Graduate Program Professor	2020-present
Molecular, Cellular, Developmental Biology, and Genetics Graduate Program Professor	2021-present

Indiana University School of Medicine, Indianapolis

Department of Physiology and Biophysics
Adjunct Associate Professor 1990-1993

Department of Physiology and Biophysics
Associate Professor, with tenure 1989-1990
Director, Graduate Program in Physiology and Biophysics 1986-1989
Assistant Professor 1983-1989

Neurobiology Graduate Program
Associate Professor, with tenure 1989-1990
Assistant Professor 1983-1989

University of Vermont, Burlington

Department of Physiology and Biophysics
Research Associate 1980-1983

Administrative Appointments

Associate Chair for Research, Department of Neurosurgery,
University of Minnesota Medical School, Twin Cities 1996-2017

Fesler-Lampert Endowed Chair in Aging, University of Minnesota 2009-2010

President, American Society for Neural Therapy and Repair 2005-2006

Director, Neurosurgery Research Laboratories,
University of Minnesota Medical School, Twin Cities 1998-2017

Director, Laboratory for Neural Transplantation and Regeneration,
Department of Neurosurgery, University of Minnesota Medical School,
Twin Cities 1990-1998

Director, NIH/Minnesota Fetal Tissue Bank,
University of Minnesota Medical School, Twin Cities 1992-1994

Director, Low Laboratory for Translational Neuroscience
University of Minnesota Medical School, Twin Cities 1990-present

Director, Graduate Program, Department of Physiology and Biophysics,
Indiana University School of Medicine, Indianapolis, IN 1985-1988

Consulting and Advisory Positions

Consultant, Superior Organoid Technologies, Twin Cities, MN 2018-present

Chief Scientific Officer, Regenevida Division of RCI, St. Paul, MN	2013-2020
Consultant, Genomix, Inc., Minneapolis, MN	2013-present
Board of Directors, Metselex, Connecticut	2011-present
Scientific Advisory Board, Insera Therapeutics, Sacramento, CA	2007-present
Stem Cell Consultant, Saneron CCL, Tampa, FL	2002-present
Consultant, Applied Informatic Solutions, St. Paul, MN	2011-2013
Scientific Advisory Board, SMG Therapeutics, Inc., Connecticut	2006-2009
Stem Cell Consultant, Twin Star Medical, Inc., Minneapolis, MN	2002-2005
Scientific Advisory Board, Genovus, Inc., Minneapolis, MN	1995-1999
Neuroscience Consultant, 3M Corporation, St. Paul, MN	1992-1999
Summer Fellow, Howard Hughes Aircraft Company, Space Communications Division, Los Angeles, CA	1972
Summer Fellow, Research Laboratories, Pacific Gas and Electric Company, Berkeley, CA	1971

Membership and Offices in Professional Organizations

American Association for the Advancement of Science, 1974-present
American Heart Association, 1989-present
- Member, Stroke Council, 1992-1995

American Physiological Society, 1990-1996
Cell Transplantation Society, 1993-1997
European Neuroscience Association, 1990-1996
International Brain Research Organization, 1990-1996
International Society of Neuropathology, 1991-1993
Minnesota Academy of Science, 1992-1998
New York Academy of Sciences, 1979-1995
Sigma Xi Scientific Honor Society
- Full Member, I. U. School of Medicine Chapter, 1985-1990
- Associate Member, University of Michigan Chapter, 1978

Society for Neuroscience, 1977-present
- National Chapter, 1977-present
- Voyageurs (Minnesota) Chapter, 1990-1996
- Indianapolis Chapter, 1983-1990
  - President, 1985-1987
  - Executive Committee Member, 1987-1990
- Vermont Chapter, 1980-1983
- Executive Committee Member, 1982-1983
- Michigan Chapter, 1977-1979

American Society for Neural Transplantation and Repair, 1994-Present
Secretary-Elect, 1994-1995
Clinical Practice Committee, 1995-present
President-Elect, 2005-2006

HONORS AND AWARDS FOR RESEARCH WORK, TEACHING, PUBLIC ENGAGEMENT, AND SERVICE

External Sources

American Society for Neural Therapy and Repair, Bernard Sanberg Memorial Award for Research on Brain Repair, 2021
Thorne Stroke Award – Minnesota Medical Foundation, 2003
Congress of Neurological Surgeons, Preuss Award for Brain Tumor Research (Resident: Walter Jean), 1997
American Association of Neurological Surgeons, Preuss Award for Brain Tumor Research (Resident: Margaret A. Wallenfriedman), 1996
Established Investigator Award, American Heart Association, 1990-1995
Congress of Neurological Surgeons, Preuss Award for Brain Tumor Research (Resident: Eric P. Flores), 1994
Rotary Club Honorary "Tree for Tomorrow", Hennepin Parks Foundation, 1993
Nominee, Moore Award for Teaching Excellence, Indiana University and Purdue University at Indianapolis, 1988
Honorable Mention, Weil Award, American Association for Neuropathology, 1987
National Research Service Award, National Heart, Lung, and Blood Institute, 1981-1983
Agan Award, American Heart Association, Vermont Affiliate, 1980-1981
National Science Foundation NATO Fellow, 1979-1980.

National Research Service Award, National Institute of Neurological and Communicative Disorders, and Stroke, 1979
National Institutes of Health, NIGMS, Predoctoral Fellow, 1975-1978
Eta Kappa Nu Engineering Honor Society, 1972
Honors Graduate, University of California, 1972
California State Scholar Award, 1968-1972
University of California Alumni Scholar Award, 1968-1969
Rotarian Scholar Award, 1968-1969
Bank of America Laboratory Sciences Award, 1968
California Scholastic Federation Life Member, 1968
University of California Honors at Entrance, 1968

Biographical Citations

Who's Who in America, 2002, 2005, 2007
Who's Who in Medical Science Education, 2005
Who's Who in Stem Cell Research, 2003
2000 Outstanding Intellectuals of the 21st Century, 2003
American Men and Women of Science, 1982, 2002
Who's Who Among America's Teachers, 2002
Who's Who in Medicine and Healthcare, 1997

Who's Who in American Education, 1992
Who's Who in the World, 1989
Who's Who in the Midwest, 1986
Who's Who in Frontier Science and Technology, 1984

RESEARCH AND SCHOLARSHIP

Current and Past Grants

The following 185 grants have received over $75.5 million in funding for research.

2023-2025 Department of Defense, Uniformed Services University
"Microglia Replacement for Treating Traumatic Brain Injury"
$1,990,000 (Co-Principal Investigator)

2023-2024 Graduate Program in Neuroscience, University of Minnesota
Diversity, Equity, and Inclusion Mini Grant
"Recruitment Video for Enhancing Under-Represented Minority Student Representation in the Graduate Program in Neuroscience"
$500 (Co-Principal Investigator)

2023-2025 State of Minnesota, Spinal Cord Injury and Traumatic Brain Injury Research Program. "Generating Exogenic Microglia for Repair in Traumatic Brain Injury"
"$250,000 (Principal Investigator)

2022-2027 National Institutes of Health
R01-AI173804
"Generating Exogenic Organs for Transplantation without the Use of Immunosuppression"
$3,737,166 (Co-Principal Investigator)

2022-2025 National Institutes of Health
RF1 AG077772
"Acute and Long-Term Impact of SARS-CoV2 Infection and its Interaction with APOE on Cognitive Function and Neuropathology in Aging and Alzheimer's Disease".
$3,687,171 (Co-Principal Investigator)

2022-2024 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program. "Gene Therapy for Treating Acute Spinal Cord Injury"
$160,000 (Principal Investigator)

2022-2024 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program. "Combined Effects of TBI and Covid19 on Developing Alzheimer's Disease."
$83,333 (Principal Investigator)

2022-2024 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program. "Impact of Traumatic Brain Injury on Opiate Addiction".

$125,000 (Co-Principal Investigator)

2022-2024 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program. "Targeting Trem2 on Monocytes to Regulate Neuroinflammation following Traumatic Brain Injury".
$125,000 (Co-Principal Investigator)

2022-2023 Randy Shaver Cancer Research Community Fund
"Delivery of Synthetic Zika Virus-Based Peptides for Brain Tumor Vaccine Development"
$43,500 (Principal Investigator)

2021-2023 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program. "Cell Reprogramming for Spinal Cord Regeneration"
$243,000 (Principal Investigator)

2021-2023 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program. "Cell Reprogramming for Traumatic Brain Injury"
$125,000 (Co-Investigator)

2021-2023 Regenerative Medicine Minnesota
"Unlocking Chimeric Competency for Regenerative Medicine"
$250,000 (Principal Investigator)

2021-2023 National Institutes of Health
Discovery and Applied Research for Technological Innovations to Improve Human Health – Alzheimer's Disease Supplement
"Technology to Realize the Full Potential of UHF MRI – Rotating Frame MRI Biomarkers to Monitor Alzheimer's Disease"
P41 EB027061-03S1
$377,216 (Principal Investigator)

2021-2022 Randy Shaver Cancer Research and Community Fund
Zika Virus-Based Immunotherapy for Treating Breast Cancer Metastasis to the Brain"
$25,000 (Principal Investigator)

2020-2022 National Institutes of Health
"Generating Exogenic Hippocampal Neural Cells via Blastocyst Complementation for Transplantation in Alzheimer's Disease"
R01 DK117286-03S1
$385,000 (Co-Principal Investigator)

2020-2021 National Institutes of Health
"Microbial Synthesis of Therapeutic Bile Acids"
R41 NS113732
$422,378 (Co-Principal Investigator)

2020-2021 Randy Shaver Cancer Research and Community Fund
"Zika Virus-Based Immunotherapy for Treating Malignant Brain Tumors: FDA Enabling Studies"

$79,176 (Principal Investigator)

2020-2022 UMN AHC Faculty Research Development Program
"Modeling and Reversing Alzheimer's Pathology via Human Brain Organoids"
$200,000 (Co-Investigator)

2020-2022 State of Minnesota
University of Minnesota–Mayo Clinic Biotechnology Program
"Magnetic Nanodevice Arrays for the Treatment of Neurological Disorders
$913,049 (Co-Investigator)

2020-2021 Legacy of Angels
"Brain Connectome as a Novel Biomarker for Krabbe Disease"
$105,000 (Co- Principal Investigator)

2020-2023 National Institutes of Health
"Training in PharmacoNeeuroImmune Substance Abuse Research"
T32 DA007097
$180,000 (postdoctoral fellow mentor)

2019-2022 National Institutes of Health
"Stem Cells for Treating Acute Stroke"
R42 NS112070
$444,454 (Principal Investigator)

2019-2020 National Institutes of Health
"Novel Highly Regenerative and Scalable Progenitor Cell Exosomes for Treating Stroke"
R41 NS105263
$385,923 (Co-Investigator)

2019-2020 National Institutes of Health
"High Density Multielectrode Arrays with Spatially Selective Unidirectional and Rotating Fields for Investigation of Neural Networks – in Alzheimer's Disease"
U01 NS103569-S1
$334,020 (Co-Principal Investigator)

2019-2021 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program.
"Spinal Cord Regeneration by Cell Reprogramming in Chronic Spinal Cord Injury"
$151,000 (Principal Investigator)

2019-2020 Institute for Engineering in Medicine, University of Minnesota
"Orientation Selective Activation of Neural Circuits of the Limbic System Involved in Alzheimer's Disease".
$60,000 (Principal Investigator)

2019-2020 Randy Shaver Cancer Research and Community Fund
"Enhancing Zika Virus-Based Therapies for Treating Malignant Brain Tumors"
$50,000 (Principal Investigator)

2019-2020 Biomedical Research Awards for Interdisciplinary New Science (BRAINS), University of Minnesota
"Analysis of Stem Cell-derived Extracellular Vesicle Targeting to Sites of Tissue Damage and Cancer".
$75,000 (Co-Investigator)

2019-2022 National Institutes of Health
"Training in PharmacoNeuroImmune Substance Abuse Research"
T32 DA007097
$180,000 (pre-doctoral fellow mentor)

2018-2019 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program.
"Training Transplanted Spinal Neuronal Progenitors Cells (SNPCS) to Function after Chronic Spinal Cord Injury".
$125,000 (Co-Principal Investigator)

2018-2019 State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Research Program.
"Optogenetics for Corticospinal Tract Stimulation in Combination with Transplanted Spinal Neuronal Progenitor Cells After Spinal Cord Injury"
$125,000 (Co-Principal Investigator)

2018-2020 Regenerative Medicine Minnesota
"Neuroprotection Using Human Extremely Low Gestational Age Neonate-Derived Umbilical Cord Blood Stem Cells in Neonatal Hemorrhagic Brain Injury"
$247,593 (Co-Investigator)

2018-2019 Randy Shaver Cancer Research & Community Fund
"Zika Virus-Based Therapy for Treating Malignant Brain Tumors – Mechanisms of Action"
$30,000 (Principal Investigator)

2018-2019 Institute for Engineering in Medicine, University of Minnesota
"Large Scale and High Resolution Magnetic Array for Brain Stimulation and Recording"
$35,000 (Co-Investigator)

2018-2022 National Institutes of Health
"A Novel Stem Cell-Based Approach for Generating Non-Human Primate Liver in Pigs"
R01 DK117286
$2,021,184 (Principal Author – removed as Principal Investigator because of conflict of interest for dual role as Chief Scientific Officer of Regenivda)

2018-2019 National Institutes of Health
MN-REACH: "Treatment of Malignant Brain Tumors with the Zika Virus as a Vaccine Adjuvant and Oncolytic Virus"
U01 HL127479

$50,000 (Principal Investigator)

2018-2020 National Institutes of Health
"Functional Proteomics of Aging"
T32 AG029796
$120,000 (postdoctoral fellow mentor)

2018-2019 HRK Foundation
"Immunotherapy for NF1"
$30,000 (principal investigator)

2017-2021 National Institutes of Health
"High Density Multielectrode Arrays with Spatially Selective Unidirectional and Rotating Fields for Investigation of Neural Networks"
U01 NS103569
$3,456,055 (Co-Investigator)

2017-2019 National Institutes of Health
MN-REACH Program: "Midbrain Organoid-Derived Product for Treatment of Parkinson's Disease"
U01 HL127479
$115,000 (Co-Investigator)

2017-2019 Regenerative Medicine Minnesota
"Production of Dopamine Neurons – A Cellular Product for Treating Parkinson's Disease".
$100,000 (Principal Investigator)

2017-2018 Randy Shaver Cancer Research Foundation
"Harnessing the Zika Virus to Target Malignant Brain Tumors"
$25,000 (Principal Investigator)

2016-2018 Regenerative Medicine Minnesota
"Generating Human Neural Stem Cells and Progenitor Cells in a Porcine Model Through Blastocyst Complementation"
$250,000 (Co-Investigator)

2016-2018 Academic Health Center, University of Minnesota
"Generating Human Pancreas in Gene Edited Pigs"
$200,000 (Co-Principal Investigator)

2016-2018 Minnesota Partnership Infrastructure Fund, State of Minnesota
"3-Dimensional Nanoscale Resolution Microscope for Understanding Human Disease Processes".
$1,059,320 (Co-Investigator)

2016-2018 Grant-in-Aid program, University of Minnesota
"Modulating Macrophages to Enhance Neurogenesis in Alzheimer Disease"
$30,000 (Co-Investigator)

2016-2017 Institute for Engineering in Medicine, University of Minnesota

"Generating Exogenic Human Liver and Hepatocytes"
$35,000 (Co-Investigator)

2015-2018 Academic Health Center, University of Minnesota
"Development and Application of MRI Methods to Quantify Brain Energy Impairment and Drug Responses in Neurodegenerative Disorders"
$200,000 (Co-investigator)

2015-2016 Stem Cell Institute, Adjacent Possible Research Grant Program, Univ. Minnesota
"Interrogating Human Stem Cells for Engineering Human Organs/Cells via Blastocyst Complementation"
$73,467 (principal investigator)

2015-2016 Institute for Engineering in Medicine, University of Minnesota
"Generating Human Hematopoietic Cells in the Pig as a Biological Incubator"
$24,573 (principal investigator)

2015-2016 Institute for Engineering in Medicine, University of Minnesota
"Genesis Project for Organ, Tissue, and Cell Engineering"
$59,994 (principal investigator)

2015-2016 Wallin Neuroscience Discovery Fund, University of Minnesota
"Creating Young Blood to Rejuvenate Old Brains"
$125,000 (principal investigator)

2015-2018 Department of Defense
"Exogenic Human Heart in Gene-Edited Animals"
$2,340,480 (co-investigator)

2015-2018 National Institutes of Health
"Minnesota Craniofacial Research Training Program"
T90 DE022732
$180,000 (postdoctoral fellow mentor)

2014-2016 National Institutes of Health
"Image-Guided Transcranial Focused Ultrasound Therapy for Neurological Disorders"
R21-NS087887
$392,169 (co-principal investigator)

2014-2016 Stem Cell Institute, Adjacent Possible Res. Grant Program, Univ. of Minnesota
"Creating Human Dopamine Neurons in Human-Pig Chimeras for Parkinson Disease"
$50,000 (principal investigator)

2014-2016 MnDRIVE Program, University of Minnesota
"DNA Nanotechnology – Developing and Analyzing a New Tool for Sensing and Targeting Disease"
$500,000 (co-investigator)

2014-2015 Center for AIDS Research, University of Minnesota

"Creating Humanized Mice from the Inside-Out to Test the Feasibility of using the CCR5-delta32 Mutation to Treat HIV Infection"
$12,000 (co-principal investigator)

2014-2015 Institute of Engineering in Medicine, University of Minnesota
"Organ, Tissue, and Cell Engineering"
$20,000 (principal investigator)

2014-2015 ReGenex
"AAV Mediated Gene Transfer to the CNS for MPS II"
$367,416 (co-investigator)

2014-2015 Sangamo
Targeted IDUA and IDS expression for MPS I and MPS II
$277,270 (co-investigator)

2013-2014 Office of the VP for Research, University of Minnesota
Research Infrastructure Investment Program, "Single-Cell Genomics"
$228,763 (co-principal investigator)

2013-2014 Institute of Engineering in Medicine, University of Minnesota
"Nanotechnology Development and Applications for Clinical Neuroscience"
$75,000 (co-principal investigator)

2012-2014 National Institutes of Health
"AAV-mediated Gene Transfer to the CNS for MPS I"
R41 DK094539, $211,009
(Co-Investigator)

2012-2013 Masonic Cancer Center, University of Minnesota
"Validation of Novel Prognostic Biomarkers for Serous Ovarian Cancer"
$25,000 (co-investigator)

2011-2012 AOSpine, "Transplantation of Human Induced Pluripotent Stem Cells for Spinal Cord Injury in the Adult Rat", $30,000 (co-investigator)

2011-2012 International Organization of Glutaric Aciduria
"Cord Blood Stem Cells for the Treatment of
Glutaric Aciduria", $10,000 (principal investigator)

2011-2016 National Institutes of Health
"Gene Therapy for Metabolic Disorders"
PO1 HD32652,
$7.2 million
(Director, Core B; co-investigator, Project II)

2011-2012 National Institutes of Health
"SampleJet Dual Mode Automated Sample Changer with a Liquid Handler 215 and Temperature Control",
S10 RR031545, $138,850
(co-investigator)

2010-2014	National Institutes of Health "Fate of Neural Stem Cells During Viral Encephalitis", R01 NS065817 $1,510,000 (co-investigator)
2010-2012	National Institutes of Health "Lenti Gene Therapy for Mucopolysaccharidosis" R41 DK085944, $364,704 (co-investigator)
2010-2013	Cancer Experimental Therapeutics Initiative (CETI), University of Minnesota TASC #90033, "Dendritic Cell Vaccine for Treating Brain Tumors – Phase I Clinical Trial", $293,282 (FDA IND sponsor, and co-principal investigator)
2009-2011	Innovation Grant, University of Minnesota "Biomarker Analysis System" $158,700 (principal investigator)
2009-2010	Fesler-Lampert Award, "Aging of Inducible Pluripotent Stem Cells" $40,000 (principal investigator)
2008-2013	National Institutes of Health "Functional Proteomics of Aging" T32 AG02976, $875,000 (steering committee member)
2008-2010	National Institutes of Health "Transgenic Mice for the Visualization of Dopamine Neurons in vivo" R03-NS060059, $150,000 (principal investigator)
2008-2010	National Institutes of Health "Transplantation of Umbilical Cord Blood Stem Cells in Ischemic Brain Injury" R41-NS056626, $96,315 (principal investigator)
2008-2010	National Institutes of Health, "Assessment of Brain Iron and Neuronal Integrity using Novel T1r and T2r MRI" R21-NS05913, $344,579 (co-investigator)
2008-2010	Academic Health Center, University of Minnesota, Translational Research Grant, "Immunotherapy for Brain Tumor Stem Cells" TRG #08-02, $167,500 (principal investigator)
2008-2010	Gateway Foundation, "Immunotherapeutic Targeting of Brain Tumor Stem Cells – A Phase I/IIB Clinical Trial" $300,000 (Co-Principal Investigator)
2008-2009	HRK Foundation, "Inducible Pluripotent Stem Cells for Neurofibromatosis" $80,000 (co-investigator)
2007-2008	Institute for Engineering in Medicine, Center for Medical Devices, University of Minnesota, "Microfluidics for Brain Tumor Stem Cells", $50,000 (principal investigator)

2007-2009 Childrens' Cancer Research Fund, "Dendritic Cell Vaccine for Treating Brain Tumors – A Phase I Clinical Trial", $150,000 (co-principal investigator)

2007-2009 Academic Health Center, University of Minnesota, "Neural Stem Cell Response to Viral Encephalitis", $200,000 (co-investigator)

2007-2008 Minnesota Medical Foundation, University of Minnesota, "Correction of Hurler Syndrome with Multipotent Stem Cells", $25,000 (co-investigator)

2007-2008 Institute for Engineering in Medicine, University of Minnesota, "Neural Tissue Engineering Interest Group", $5,000 (principal investigator)

2007-2012 National Institutes of Health
"Minnesota Craniofacial Research Training Program"
T32 DE007288, $5,605,000 (preceptor)

2007-2010 National Institutes of Health
"Stroke and Stem Cells"
K12 BIRCWH, (sponsoring mentor) – Award declined,

2007-2009 National Institutes of Health
"Concurrent Immune Stimulation and Inhibition of Angiogenesis for Glioma Therapy",
1R21 NS055738-01, $150,000 (co-investigator)

2006-2012 National Institutes of Health
"Translational Research in Neurobiology of Disease"
T32 DA022616, $1.4 million (Director and principal investigator)

2006-2011 National Institutes of Health
"Skeletal Muscle Plasticity Post Stroke"
K08 HD049459, $541,188 (sponsoring mentor)

2006-2007 National Institutes of Health, "American Society for Neural Transplantation and Repair Conference", R13-NS055615, $20,000 (co-principal investigator)

2006-2008 Biomedical Engineering Institute, University of Minnesota, "Neural Tissue Engineering and Devices Interest Group", $44,000 (principal investigator)

2006-2007 Graduate School Grant-in-Aid, University of Minnesota, "Development of Cord Blood Stem Cells for the Treatment of Ischemic Heart Injury"; $24,000 (principal investigator)

2006-2007 Chemical Biology Initiative, University of Minnesota, "Supercomputing Workstation for High Throughput Analyses of Chemical Libraries", $10,000 (co-investigator)

2005-2006 Bob Allison Ataxia Research Center, University of Minnesota, "Differentiation of Neural Stem Cells into Cerebellar Cells in Experimental Ataxia", $74,560 (principal investigator)

2005-2006 Biomedical Engineering Institute, University of Minnesota, "Neural Tissue Engineering and Devices", $50,570 (principal investigator)

2005-2006 Academic Health Center, Faculty Seed Grant, University of Minnesota, "Differentiation of Bone Marrow Derived Stem Cells into Auditory Progenitor Cells"; $25,000 (co-investigator)

2005-2007 National Institutes of Health
"Hemorrhagic Brain Injury Repair with Human Cord Blood"
R43-NS050889, $158,569 (principal investigator)

2004-2007 National Institutes of Health
"Correction of Hurlers Syndrome by Multipotent Stem Cells"
R01-NS48606, $1,257,700 (co-investigator)

2004-2005 National Institutes of Health
Brainstorm Award, "Sleeping Beauty Transposons for Cancer Gene Therapy",
5P30CA077598, $50,000, (co- principal investigator)

2004-2009 National Institutes of Health
"Gene Therapy for Metabolic Disorders"
PO1-HD-32652-09, $5.5 million (co-investigator, Project II; director, Core G)

2004-2005 Michael Charles Winery Foundation, "Stem Cells and Glutaric Aciduria",
$10,000, (principal investigator)

2003-2008 National Institute of Health
"Predoctoral Training of Neuroscientists"
T32-GM08471, (preceptor)

2002-2005 National Institutes of Health
"Umbilical Cord Stem Cells Supplement "
R01-NS40831-02S2, $50,000 (principal investigator).

2002-2005 National Institutes of Health
"Human Embryonic Stem Cells Supplement "
R01-NS40831-02S1, $50,000 (principal investigator).

2002-2005 National Institutes of Health
"Minority Supplement for Stem Cells and Ischemic Brain Injury"
R01-NS40831-02S1, $120,130 (principal investigator)

2002-2007 National Institute of Health
"Minnesota Craniofacial Research Training Program"
T32-DE007288 (preceptor)

2002-2005 National Institutes of Health,
"In vivo Delivery of Nucleic Acids by Anionic Liposomes"
R21-NS-43191, $290,000 (co-investigator)

2002-2003 Bobby Allison Ataxia Research Center, “Transplantation of Adult Stem Cells in Experimental Ataxia”, $64,275 (principal investigator)

2001-2004 American Heart Association, National Chapter
“Repair Ischemic Brain Injury with Bone Marrow Derived Stem Cells”
$214,500; (principal investigator).

2001-2005 National Institutes of Health
“Neuroectoderm Differentiation from Mesenchymal Stem Cells”
R01-HL-69137, $1,160,000 (co-principal investigator)

2001-2005 National Institutes of Health
“Neural Transplantation of Mesenchymal Stem Cells for Cellular Repair and Gene Therapy”
F31-NS43121, $140,000; (fellowship sponsor).

2001-2006 National Institutes of Health
“Stem Cells and Ischemic Brain Injury”
R01- NS40831, $975,000; (principal investigator)

2001-2003 National Institutes of Health
“Correction of Neural Abnormalities in Hurler Syndrome by Multipotent Bone Marrow Derived Stem Cells”
$126,000 (consultant)

2001-2003 Academic Health Center, University of Minnesota, “Stem Cells and the Nervous System”; FRD-01-10; $198,015; (principal investigator)

2001-2002 Parkinson’s Disease Foundation, "Conversion of Human Adult Bone Marrow Stem Cells into Dopamine Neurons"; $34,700; (principal investigator)

2001-2002 University of Minnesota, Biomedical Genomics Center Grant, “Gene Expression in Nerve Growth and Repair”, $9,750, (principal investigator).

2000-2001 Medtronic, “Test of the Feasibility of Delivering DNA/RNA Chimeraplasts to the Central Nervous System: Potential New Indications for the Medtronic Neurological Drug Delivery Business”; $29,780 (co-investigator).

2000-2001 Minnesota Medical Foundation, “Cryostat for Histological Analyses of Transplanted Stem Cells”; $13,000; (principal investigator)

2000-2001 Academic Health Center, Faculty Seed Grant, “Converting Bone Marrow Stem Cells into Cholinergic Neurons”; $25,000; (principal investigator)

2000-2004 National Institutes of Health
"Gene Therapy for Metabolic Disorders";
P01-HD-32652-05, $4,412,238; (co-investigator)

2000-2002 American Heart Association
“Repair of Hemorrhagic Brain Injury with Bone Marrow-Derived Stem Cells”
$97,320; (principal investigator).

1999-2002	National Institutes of Health "The Cholinergic System in Transgenic Alzheimer Mice" $37,500, (fellowship sponsor)
1999-2000	National Institutes of Health Brainstorm Award,"Tracking of Brain Tumor Antigen-Specific CD4+ T Cells Following the Administration of Cancer Vaccines" 5P30CA077598, $25,000 (principal investigator).
1999-2001	Minnesota Medical Foundation, "Laser Doppler System for Measurement of Cerebral Blood Flow in Ischemic Brain Injury", $13,000 (co-investigator).
1999-2000	Academic Health Center, University of Minnesota "Porcine Cytomegalovirus: A Risk for Xenotransplantation"; $169,022 (co-investigator)
1998-2001	Academic Health Center, University of Minnesota, Funding for a Center for Molecular and Cell Therapy; $1.5 million (co-investigator)
1998-2000	Cancer Center, University of Minnesota, Advanced Therapies Initiative, "Designing Peptides that Inhibit Tumor Growth in the Brain", $260,000 (co-principal investigator).
1998-2000	Graduate School, University of Minnesota, Interdisciplinary Programs, "Establishment of a Center for Molecular and Cell Therapy"; $100,000 (co-investigator)
1998-2000	University of Minnesota, Academic Health Center Strategic Initiative Program, "Parkinson's Disease and Movement Disorders"; $40,000 (principal investigator).
1998-1999	Medtronic, Inc., "DBS Systems for Subthalamic Thalamic Stimulation for the Treatment of Parkinson's Disease"; $100,000 (principal investigator).
1998-1999	Minnesota Medical Foundation, "Development of Dendritic Cell-Based Vaccines for the Treatment of Brain Tumors"; $8,000; (principal investigator)
1998-2001	National Institutes of Health, NIMH "Transplantation of Human Striatal Progenitor Cells in Experimental Huntington's Disease" F30-MH12157; $37,500; (fellowship sponsor)
1997-2000	National Institutes of Health, NIMH “Cerebellar Transplants into SCA1 Transgenic Mice” F31-MH-11640; $39,024; (fellowship sponsor).
1996-1998	Immunex, Inc., “Localized Peripheral GM-CSF Infusions for the Treatment of Primary Brain Tumors”, $25,000; (principal investigator).

1996-1997 Graduate School, University of Minnesota, "Development of GM-CSF Based Vaccines for the Treatment of Brain Tumors", $21,359; (principal investigator).

1996-1997 Medtronic, Inc., "Pallidal Stimulation for Parkinson's Disease Using the Medtronic Model 3382 DBS™ Lead"; $110,000 (principal investigator).

1996-1997 SenMed Ventures, "Effect of Synthetic Peptide Administration on Experimental Animal Models of Stroke"; $22,772 (principal investigator)

1996-1997 Bob Allison Ataxia Research Center, "Development of an Antisense Oligonucleotide Based Gene Therapy for Treating Ataxia", $10,000; (principal investigator).

1996-1997 Northstar Research Innovation Fund, "Effects of *c-myb* Antisense Oligonucleotides on the Inhibition of C-MYB Protein Synthesis and Glioblastoma Cell Proliferation"; $9,990; (principal investigator).

1996-1997 Medtronic, Inc., Educational Grant "Symposium on Deep Brain Stimulation for Treating Parkinson's Disease", $20,000; (principal organizer).

1996-1997 American Heart Association
"Neuronal Protection from Cerebral Ischemia by Synthetic Fibronectin Peptides to Leukocyte Adhesion Molecules",
$22,456; (principal investigator).

1995-1996 Minnesota Medical Foundation, "Development of Cancer Vaccines using IGF-1R Antisense for Treating Brain Tumors"; $5,000; (principal investigator)

1995-1996 University of Minnesota Grant-in Aid of Research, "Development of Antisense-based Brain Tumor Therapy"; $13,992; (co-principal investigator)

1994-1999 National Institutes of Health
"Transplantation of Cholinergic Nerve Cells"
R01-NS-24464; $595,906; (principal investigator).

1994-1996 National Institutes of Health, NINDS
"MR Spectroscopy Characterization of Focal Cerebral Ischemia";
K08-NS-01745; $383,711; (CIDA mentor)

1994-1995 American Cancer Society
"Inhibition of Malignant Tumor Cell Proliferation with Antisense Oligonucleotides to *c-myb* Oncogene";
$10,000; (co-principal investigator).

1994-1995 Neuropsychiatric Research Institute, Fargo, ND, "Effects of Transplanted Human Fetal Striatal Tissue on Dopamine Receptors in a Huntington Disease Animal Model"; $5,155; (co-investigator)

1994-1995 Bob Allison Ataxia Research Center Grant, "Repair and Reconstruction of Nerve Cell Connections in Experimental Cerebellar Ataxia"; $14,423; (principal investigator)

1994-1995	University of Minnesota Medical School, Dept. of Radiology, “Radiotracer-Assisted Noninvasive Monitoring of Neural Tissue Graft Viability in Parkinson’s Disease”; $5,958; (co-principal investigator)
1993-1994	American Parkinson's Disease Association "Effects of Growth Factors on the Proliferation of Dopamine Precursor Cells in Fetal Rats" $24,575; (principal investigator)
1993-1996	National Institutes of Mental Health, "Neonatal Hypoxic-Ischemia Brain Injury"; $32,250; (fellowship sponsor)
1993-1998	National Institute of Health, “Predoctoral Training of Neuroscientists”, T32-GM-08471; $838,582 (preceptor).
1993-1998	National Institute of Health “Medical Scientist Training Program”, T32-GM-08244; $1,304,940 (preceptor)
1993	China Center, University of Minnesota, Travel Grant; $600; (principal investigator)
1992-1997	National Institutes of Health "Research Training for Clinical Neuroscientists" T32-NS-07361; $644,655; (preceptor).
1992-1994	National Institutes of Health "The Minnesota Fetal Tissue Bank"; R24-HD30511; $1,107,632; (principal investigator)
1992-1994	United Cerebral Palsy Association "Reconstructive Neurosurgery in Experimental Cerebral Palsy" R-425-92; $97,452; (principal investigator)
1992-1993	American Heart Association, "Cerebral Ischemia: Kinetics of Excitotoxic Neurotansmitter Release" $24,000; (fellowship sponsor)
1992-1993	American Heart Association, Medical Student Research Fellowship "Functional Restoration of the Neostriatum with Neural Grafts in Conditions of Ischemic Injury" $12,000; (fellowship sponsor)
1992-1993	University of Minnesota Graduate School, "Functional Incorporation of Transplanted Cholinergic Neurons"; $15,000; (principal investigator)
1991-1993	National Institutes of Health "Evaluation of Hyperbaric Oxygen in Head Injury" P20-NS-30322; $750,000 (co-investigator)

1991-1992	University of Minnesota Graduate School, "Effects of Sm-C/IGF-I on Cholinergic Nerve Cell Function in Aged Rats"; $15,000; (principal investigator)
1990-1992	Research Investment Fund, Indiana University, "New Computational Approaches to Neural Information Processing"; $228,965; (co-investigator)
1990-1995	American Heart Association Established Investigator Award Cerebral Ischemia and Mechanisms of CNS Repair" AHA 90-230; $175,000; (principal investigator)
1990-1995	National Institutes of Health "Dopamine Neuron Grafts in Genetic Extrapyramidal Disease" $512,610; (consultant)
1990-1993	American Heart Association "Cerebral Ischemia and Mechanisms of Functional Recovery" AHA 90-1135; $105,119; (principal investigator)
1990-1991	Minnesota Medical Foundation, "Innervation of Transplanted Hippocampal Neurons by Host Serotonergic Fibers in a Rodent Model of Cerebral Ischemia"; $10,000; (principal investigator)
1990-1991	Biomedical Research Support Grant, NIH, "Dopamine Neuron Grafting in a Genetic Model of Extrapyramidal Disorder", $20,000; (consultant)
1989-1991	American Heart Association "Repair of Damaged Neural Circuitry: Innervation of Transplanted Cholinergic Neurons by the Host Brain" $20,000; (fellowship sponsor)
1989-1990	American Heart Association "Reconstruction of Neuronal Connections in the Ischemic Brain" $10,000; (fellowship sponsor)
1988-1989	Alzheimer's Disease and Related Disorders Association "Trophic effects of insulin-like growth factor II (IGF-II) on cholinergic neurons of the central nervous system" $20,000; (principal investigator)
1988-1991	National Institutes of Health "Significance of TRH in Epilepsy"; R01-NS-25661; $281,867; (co-investigator)
1988-1989	American Heart Association "Reconstruction of Neuronal Connections in Ischemic Brain" $8000; (fellowship sponsor)
1988	National Institutes of Health "Molecular Biology, the Aging Process, and Neurodegenerative Disorders

Conference"
R13-AG-7993; $9,800; (co-investigator)

1988-1989 Diabetes Research and Training Center, Indiana University School of Medicine, "Effects of insulin and IGF-II on the CNS"; $23,071; (principal investigator)

1987-1992 National Institutes of Health
"Transplantation of Cholinergic Nerve Cells"
R01-NS-24464; $234,313; (principal investigator)

1987-1992 National Institutes of Health
"Selective Neuronal Loss and Its Sequelae: A Model"
R01-NS-14426; $780,269; (co-investigator)

1987-1990 American Heart Association
"Cerebral Ischemia and Factors Affecting Functional Recovery"
87-051; $90,000; (principal investigator)

1987-1990 Veterans Administration
"Role of Thyrotropin-releasing Hormone (TRH) in Antidepressant Treatment"
$257,600; (consultant)

1987-1988 American Heart Association
"Reinnervation of Ischemic Striatum by Cultured Fetal Neurons"
$6,500; (pre-doctoral fellowship sponsor)

1986-1987 American Heart Association
"Cerebral Ischemia, Neural Transplants, and Recovery of Function"
$13,978; (principal investigator)

1986-1987 Huntington's Disease Foundation
"Effects of Nerve Growth Factor on the Function of Transplanted Striatal Neurons in Rats with Kainic Acid Lesions of the Striatum"
$15,000 - award declined; (postdoctoral fellowship sponsor)

1986-1988 Eli Lilly & Co. Grant, "Effects of IGF-II on Neural Implant Survival and Innervation"; $10,124; (principal investigator)

1985-1987 National Institutes of Health
"Transplants of Cholinergic Neurons Derived from Adult Rat Brain"
$13,427; (principal investigator)

1985-1990 National Institutes of Health
"Vascular Biology in Health and Disease";
HL-7595; $371,335; (preceptor)

1985-1986 Eli Lilly & Co. Grant, "Effects of Nerve Growth Factor the Survival of Transplanted Cerebellar Nerve Cells in Mutant Mice with Neurodegenerative Disorders"; $8,563; (co-principal investigator)

1984 International Programs Travel Grant, Indiana University, Symposium on Neural

Transplantation, Lund, Sweden; $300; (principal investigator)

1984-1985 National Institutes of Health
"Neural Transplantation and Neurono-Trophic Factors"
RR-5371; $13,792; (principal investigator)

1983-1986 National Institute of Health
“Neurobiological Aspects of Mental Disorder"
MH-17107; $188,707; (preceptor)

1981-1983 National Institutes of Health
Individual National Research Service Award
“Catecholamines in the Development of Hypertension"
HL-6339; $33,044; (principal investigator)

1981 American Heart Association
“Catecholamines in Genetic Neurogenic Hypertension"
$15,500 – award declined; (principal investigator)

1980-1981 American Heart Association
AGAN Fellowship,
"The Locus Coeruleus in Genetic Neurogenic Hypertension"
$15,500; (principal investigator)

1979-1980 National Science Foundation
"Electron Probe Analysis of Nervous Tissue"
$12,500; (principal investigator)

1979-1981 National Institutes of Health
Individual National Research Service Award
"Analytical Electron Microscopy of Neural Tissue"
F32-NS-6121; $10,000; (principal investigator)

1978-1979 Institutional Faculty Grant, University of Michigan; $5,000; (co-investigator)

1976-1978 Rackham Dissertation Grant, University of Michigan; $3,000; (principal investigator)

1975-1978 National Institute of Health
NIGMS, Predoctoral Fellowship
$16,500; (predoctoral fellow)

Peer-Reviewed Publications

The following 241 peer-reviewed publications have received over 21,160 citations in the scientific literature. The top 34 articles have received over 100 citations each. The h-index for the scientific impact of these publications is ranked among the top 5% of faculty in academic neurosurgery departments in the United States.

1. Var SR, Strell P, Johnson ST, Roman A, Vasilakos Z, Low WC., Transplanting Microglia for Treating CNS Injuries and Neurological Diseases and Disorders, and Prospects for Generating Exogenic Microglia. Cell Transplantation. 32:9636897231171001. doi: 10.1177/09636897231171001. PMID: 37254858 (2023)

2. Strell P, Johnson ST, Carchi C, Low WC., Neuronal Transplantation for Alzheimer's Disease and Prospects for Generating Exogenic Neurons as a Source of Cells for Implantation. Cell Transplantation. 32:9636897231164712. doi: 10.1177/09636897231164712. PMID: 37219048 (2023)

3. Shetty A, Lim S, Strell P, Steer CJ, Rivera-Mulia JC, Low WC. *In Silico* Stage-Matching of Human, Marmoset, Mouse, and Pig Embryos to Enhance Organ Development Through Interspecies Chimerism. Cell Transplantation. 32:9636897231158728. doi:10.1177/09636897231158728.PMID: 36929807 (2023)

4. Laoharawee K, Podetz-Pedersen KM, Nguyen TT, Singh SM, Smith MC, Belur LR, Low WC, Kozarsky KF, McIvor RS. Non-invasive intravenous administration of AAV9 transducing iduronate sulfatase leads to global metabolic correction and prevention of neurologic deficits in a mouse model of Hunter syndrome. Mol Genet Metab Rep. 34:100956. doi: 10.1016/j.ymgmr.2023.100956. eCollection PMID: 36704405 (2023)

5. Clark IH, Roman A, Fellows E, Radha S, Var SR, Roushdy Z, Borer SM, Johnson S, Chen O, Borgida JS, Steevens A, Shetty A, Strell P, Low WC, Grande AW. Cell Reprogramming for Regeneration and Repair of the Nervous System. Biomedicines. 10(10):2598. doi: 10.3390/biomedicines10102598. (2022)

6. Strell, P, Shetty A, Steer CJ and Low WC, Interspecies chimeric barriers for generating exogenic organs and cells for transplantation, Cell Transplantation 31:9636897221110525. doi: 10.1177/09636897221110525 (2022)

7. Wu L, Canna A, Narvaez O, Ma J, Sang S, Lehto LJ, Sierra A, Tanila H, Zhang Y, Gröhn O, Low WC, Filip P, Mangia S, Michaeli S. Orientation selective DBS of entorhinal cortex and medial septal nucleus modulates activity of rat brain areas involved in memory and cognition. Sci Rep. 12(1):8565. doi: 10.1038/s41598-022-12383-2. (2022)

8. Saha R, Faramarzi S, Bloom RP, Benally OJ, Wu K, di Girolamo A, Tonini D, Keirstead SA, Low WC, Netoff TI, Wang JP. Strength-frequency curve for micromagnetic neurostimulation through excitatory postsynaptic potentials (EPSPs) on rat hippocampal neurons and numerical modeling of magnetic microcoil (μcoil). J Neural Eng. 19(1). doi: 10.1088/1741-2552/ac4baf. (2022)

9. Var SR, Shetty AV, Grande AW, Low WC, Cheeran MC. Microglia and Macrophages in Neuroprotection, Neurogenesis, and Emerging Therapies for Stroke. Cells. 10(12):3555. doi: 10.3390/cells10123555. (2021)

10. Harris MA, Kuang H, Schneiderman Z, Shiao ML, Crane AT, Chrostek MR, Tăbăran AF, Pengo T, Liaw K, Xu B, Lin L, Chen CC, O'Sullivan MG, Kannan RM, Low WC, Kokkoli E. ssDNA nanotubes for selective targeting of glioblastoma and delivery of doxorubicin for enhanced survival. Sci Adv. 7(49):eabl5872. doi: 10.1126/sciadv.abl5872. (2021)

11. Li Y, Yi B, Rong G, Wang, Zhang, Chrostek M, Low WC, Zhu X, and Chen W, Machine Learning-Enabled High-Resolution Dynamic Deuterium MR Spectroscopic Imaging, IEEE Transactions in Medical Imaging, 40(12):3879-3890 (2021).

12. Ruiz-Estevez M, Crane AT, Rodriguez-Villamil P, Ongaratto FL, Steevens A, Hill C, Goldsmith T, Webster D, Sherry L, Denman N, Lim S, Low WC, Carlson DF, Dutton JR, Steer CJ, Gafni O, Liver development in restored by blastocyst complementation of HHEX knockout in mice and pigs, Stem Cell Research and Therapy, doi:10.1186/s13287-02348-z (2021).

13. Belur, LR, Romera M Lee J, Poetz-Pedersen KM, Nan Z, Riedl MS, Vulshanova L, Kitto KF, Fairbanks, CA, Kozarsky KF, Orchard PJ, Frey WH 2nd, Low WC, and McIvor RS, Comparative effectiveness of intracerebroventricular, intrathecal, and intranasal routes of AAV9 vector administration for genetic therapy of neurologic disease in murine muscopolysaccharidosis Type I, Frontiers in Molecular Neuroscience, doi:10.3389/fnmol.2021618360. eCollection (2021).

14. Zhu XH, Lee BY, Tuite P, Coles L, Sathe AG, Cloyd J, Low WC, Steer CJ, Chen C, and Chen W, Quantitative assessment of occipital metabolic and energetic changes in Parkinson's patients using in vivo 31P MRS-based metabolic imaging at 7T, Metabolites 11(3):145. doi: 10.3390/metabo11030145 (2021).

15. Zhan L. Guo S, Kangas, J, Shao Q, Shiao M, Khosla K, Low WC, McAlpine M, and Bischof J. Conduction cooling and plasmonic heating dramatically increase droplet vitrificaiton volumes for cell cryopreservation, Advanced Sciences, 8: 2004605 (1-14), DOI: 10.1002/advs.202004605 (2021).

16. Crane AT, Shen FX, Low WC, Continuing the dialog on human-animal chimerism, Stem Cell Reports, 16:227 (2021).

17. Steevens AR, Griesbach MW, You Y, Dutton JR, Low WC, and Santi PA, Generation of inner ear sensory neurons using blastocyst complementation in a Neurog1-deficient mouse. Stem Cells & Developmental Biology, 12(1):122. doi: 10.1186/s13287-021-02184-1. (2021).

18. Crane AT, Chrostek MR, Krishna VD, Shiao M, Toman NG, Pearce C, Tran SK, Sipe CJ, Buo W, Voth JP, Vaid S, Xie H, Lu WC, Swanson W, Grande AW, Schleiss MR, Bierle CJ, Cheeran MCJ, Low WC, Zika virus-based immunotherapy enhances long-term survial of rodents with brain tumors through upregulation of memory T-cells, PLoS ONE 15(10):e0232858. doi: 10.1371 (2020).

19. Crane AT, Shen FX, Brown JL, Carmack W, Ruiz-Estevez M, Voth JP, Sawai T, Hatta T, Fujita M, and Low WC, The American public is ready to accept human-animal chimera research, Stem Cell Reports, 15:804-810 (2020).

20. Walsh P, Troung V, Saldia Montivero M, Nayak S, Low WC, Parr AM, Dutton J, Accelerated differentiation of human pluripotent stem cells into neural lineages via an early intermediate ectoderm population, Stem Cells 38:1400-1408 (2020).

21. Lehto LJ, Canna A, Wu L, Sierra A, Pearce C, Shiao M, Johnson MD, Low WC, Grohn O, Tanila H, Mangia S, and Michaeli S, Orientation selective deep brain stimulation of the subthalamic nucleus in rats, Neuroimaging, 213:116750, doi:10.1016/j.neuroimage.2020.116750. (2020).

22. Chrostek MR, Fellows EG, Crane AT, Grande AW, and Low WC, Efficacy of Stem Cell-Based Therapies for Stroke, Brain Research. doi: 10.1016/j.brainres.2019.146362. (2020).

23. Sathe AG, Tuite P, Chen C, Ma YW, Chen W, Cloyd J, Low WC, Steer CJ, Lee BY, Zhu XH, and Coles LD, Pharmacokinetics, safety and tolerability of orally administered ursodeoxycholic acid in patients with Parkinson's disease – A pilot study, Journal of Clinical Pharmacology, 11(3):145. doi: 10.3390/metabo11030145. (2020).

24. Crane AT, Aravalli RN, Asakura A, Grande AW, Krishnan VD, Carlson DF,Cheeran MCJ, Danczyk G, Durron JR, Hackett PB, Hu WS, Li L, Lu WC, Miller ZD, O'Brien T, Panoskaltsis-Mortari A, Parr AM, Pearce C, Ruiz M, Shiao M, Sipe C, Toman NG, Voth J, Xie H, Steer, CJ, and Low WC, Interspecies organogenesis for human transplantation, Cell Transplantation. doi: 10.1177/0963689719845351. (2019).

25. Crane AT, Voth JP, Shen FX, and Low WC, Human-animal neurological chimeras: humanized animals or human cells in an animal, Stem Cells. doi: 10.1002/stem.2971. (2019)

26. Chrostek MR, Fellows EG, Guo WL, Swnson WJ, Crane AT, Cheeran MC, Low WC, and Grande, AW, Efficacy of cell-based therapies for traumatic brain injuries, Brain Sciences. 9(10):270. doi: 10.3390/brainsci9100270. (2019).

27. Shiao ML, Yuan C, Crane AT, Voth JP, Juliano M, Hocum-Stone LL, Nan Z, Zhang Y, Kuzman-Nichols N, Sanberg PR, Grande AW, and Low WC, Immunomodulation with human umbilical cord blood stem cells ameliorates ischemic brain injury – A brain transcriptome profiling analysis, Cell Transplantation. doi: 10.1177/0963689719836763. (2019).

28. Toman, N, Grande AW, and Low WC, Neural repair in stroke, Cell Transplantation doi: 10.1177/0963689719863784. (2019).

29. Lehto LJ, Filip P, Laakso H, Sierra A, Slopsema J, Johnson MD, Eberly LE, Utecht L, Low WC, Grohn O, Tanila H, Mangia S, and Michaeli S, Tuning neuromodulation effects by orientation selective deep brain stimulation in the rat medial frontal cortex. Frontiers in Neuroscience, doi: 10.3389/fnins.00899. (2019).

30. Do TH, Miller C, Low WC, Haines SJ, The Radicchi Index (hf) for Comparing Academic Productivity of Medical Specialties, Neurosurgery, doi: 10.1093/neuros/nyz207 (2019).

31. Steevens AR, Glatzer JC, Kellogg CC, Low WC, Santi P, and Kiernam AE, SOX2 is required for inner ear growth and nonsensory formation prior to sensory development, Development. doi: 10.1242/dev.170522. (2019).

32. Arantes S, Low WC, Juhn S, Pauna HF, Auditory dysfunction in aging: Prospect for stem cell therapy, Advances in Bioscience and Technology, (2019).

33. Pearce CM, Chrostek MR, Fellows EG, Toman NG, Tran S, Crane AT, and Low WC, Immunotherapy and checkpoint inhibitors for gliomas, Neuroimmunology and Neuroinflammation, 5:47, doi 1.20517/2347-8659.2018.46 (2018)

34. Snow L, Low WC, and Thompson L, Distinct patterns of fiber type adaptation in rat hindlimb muscles 4 weeks after hemorrhagic stroke, American Journal of Physical Medicine and Rehabilitation, doi: 10.1097/PHM.0000000000001062. (2018).

35. Rockswold SB, Burton PC, Chang OD, McNally N, Grant A, Rockswold GL, Low WC, Eberly L, Yacoub E, and Linglet C, Functional Magnetic Resonance Imaging and Oculomotor Dysfunction in Mild Traumatic Brain Injury, J Neurotrauma, doi: 10.1089/neu.2018.5796. (2018)

36. Walsh P, Trung V, Hill C, Stoflet ND, Baden J, Low WC, Keirstead SA, Dutton JR, and Parr AM, Defined culture conditions accelerate small-molecule-assisted neural induction for the production of neural progenitors from human-induced pluripotent stem cells, Cell Transplantation, 26:1890-1902 (2017).

37. Laoharawee K, Podetz-Pedersen K, Nguyen T, Fairbanks C, Low WC, Kozarsky K, and McIvor RS, Prevention of neurocognitive deficiency in mucopolysaccharidosis type II mice by CNS-directed AAV9-mediated sulfatase gene transfer, Human Gene Therapy, 28(7):626-638 (2017)

38. Belur LR, Temme A, Podetz-Pedersen KM, Riedl M, Vulchanova L, Robinson N, Hanson LR, Kozarsky K, Frey WH, Low WC, and McIvor RS, Intranasal AAV mediated gene delivery and expression of human iduronidase in the CNS: A non-invasive and effective approach for prevention of neurologic disease in mucopolysaccharidosis type I. Human Gene Therapy, 28(7):576-587 (2017)

39. Gardeck AM, Sheehan J, and Low WC, Immune and viral therapies for brain cancer. Expert Opinion on Biological Therapies 17(4):457-474 (2017)

40. Lehto LJ, Slopsema JP, Johnson MD, Shatillo A, Teplitzky B, Utecht L, Adriany G, Mangia S, Sierra A, Low WC, Grohn O, and Machaeli S, Orientation selective deep brain stimulation, Journal of Neural Engineering, 14(1):016016 (2017)

41. Parry GJ, Rodrigues CMP, Low WC, Hilbert SJ, and Steer CJ, ursodeoxycholic acid may slow progression of amyotrophic later sclerosis. Annals of Neurodegenerative Disorders 9(10):270. doi: 10.3390/brainsci9100270. (2016).

42. Stone LLH, Xiao F, Rotshafer J, Juliano M, Sanberg CD, Sanberg PR, Kuzmin-Nichol N, Grande A, Cheeran MC, and Low WC. Amelioration of ischemic brain injury in rats with

human umbilical cord blood stem cells: Mechanisms of action, Cell Transplantation, 25:1473-1488 (2016).

43. Terzic D, Maxon JR, Krevitt L, DiBartolomeo, Goyal T, Dutton JR, Low WC, and Parr AM, Directed differentiation of oligodendrocyte progenitor cells from mouse induced pluripotent stem cells, Cell Transplantation, 25:411-424 (2016).

44. Satzer, D, Miller, C, Maxon J, Dibartolomeo C, Dutton JR, Low WC, and Parr AM, T cell deficiency in spinal cord injury – altered locomotor recovery and whole-genome transcriptional analysis, BMC Neuroscience 16:74 doi: 10.1186/s12868-015-0212-0 (2015).

45. Divani AA, Murphy AJ, Meints J, Sadeghi-Bzargani H, Nordberg J, Monga M, Low WC, Bhatia PM, Beilman GJ, and SantaCruz KS, A novel preclinical model of moderate primary blast-induced traumatic brain injury, Journal of Neurotrauma, 32:1109-1116 (2015).

46. Satzer D, DiBartolomeao C, Ritchie MM, Storino C, Idiyatullin D, Mangia S, Michaeli S, Parr AM, and Low WC, Assessment of dysmyelination with RAFF MRI – application to murine MPS I, PLoS ONE 10:e0116788 (2015).

47. Wolf DA, Banerjee S, Hackett PB, Whitley CB, McIvor RS, and Low WC, Gene therapy for nervous system manifestations of mucopolysaccharidoses, Expert Opinion on Drug Delivery, 12:283-296 (2014).

48. Neuss ND, Peirson MJ, Montaniel KRC, McPherson SW, Lehmann U, Hussong SA, Ferrington DA, Low WC, and Gregerson DA, Retinal dendritic cell recruitment is inhibited in MyD88 and TRIF deficient mice, Journal of Neuroinflammation, doi:10.1186/s12974-014-0143-1 (2014).

49. Vang S, Longley K, Steer CJ, and Low WC, The unexpected uses of urso- and tauroursodeoxycholic acid in the treatment of non-liver diseases, Global Advances in Health and Medicine, 3:62-73 (2014).

50. Olin M, Low WC, McKenna DH, Haines SJ, Tambra D, Nacene D, Gustafson MP, Dietz AB, Clark HB, Chen W, Blazar B, Ohlfest JR, and Moertel C, Vaccination with dendritic cells loaded with allogeneic brain tumor stem cells for recurrent and progressive malignant brain tumors induces a CD4+IL17+ response, Journal for Immunotherapy of Cancer, ePub ahead of print doi: 10.1186/2051-1426-2-4 (2014).

51. Janson C, Romanova L, Leone P, Nan ZH, Belur L, McIvor RS, and Low W, Comparison of endovascular and intraventricular gene therapy with AAV5-IDUA for Hurler's disease. Neurosurgery ePub ahead of print doi: 10.1227NEU.000000157 (2014).

52. Chen Y, Ye L, Zhong J, Yan C, Chandler MP, Calvin S, Xiao F, Negia M, Low WC, Zhang J, and Yu X,, The structural basis of functional improvement in response to human umbilical cord blood stem cell transplantation in hearts with post-infarct LV remodeling. Cell Transplantation. 24(6):971-83. doi: 10.3727/096368913X67574 (2013).

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mediated by differential FGF-2 expression in the adult brain, Neurobiology of Disease 58:144-155 (2013).

54. Stone, LL, Grande A, and Low WC, Neural repair and neuroprotection with stem cells in ischemic stroke. Basic Sciences 3:599-614 (2013).

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58. Snow LM, Low WC, and Thompson LV., Skeletal muscle plasticity after hemorrhagic stroke: influence of spontaneous physical activity, American Journal of Physical Medicine and Rehabilitation 91:965-976 (2012).

59. Wolf DA, Hanson LR, Nan ZH, Low WC, Frey WH II, and McIvor RS, Lysosomal enzyme an bypasss the blood-brain barrier and reach the CNS following intranasal administration, Molecular Genetics and Metabolism 106:131-134 (2012).

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21. "Methods and Compositions for Treating Glioma and Medulloblastoma Brain Tumors using the Zika Virus" (UMN Docket #920171.00171) (2017), U.S. Patent no. 10,610,583 (2020)

22. "Composition for the Prevention and Treatment of Parkinson's Disease" US application number 62/649,892, Metselex (2018)

23. "Orientation Selective and Rotating Field Steering of Electrical Stimulation for Treatment of Malignant Tumors" (2018)

24. " Precision Blood Brain Barrier Opening using Dual-mode Transcranial Focused Ultrasound" UMN Case Number 2019-309 (2019)

25. "Magnetic nanostimulator and nanosensorarray for biological material stimulation and sensing", U.S. Patent No.10,201,715, (2019)

26. "Compositions for the Prevention and Treatment of Parkinson's Disease", U.S. Patent US application serial number 17/041,720, (2020)

Presentations

Invited Oral Presentations at International Professional Symposia and Conferences

1. 2019 East Asia Neurosurgery Summit, "Harnessing the Zika Virus for Brain Tumor Immunotherapy", Shenyang, China, 2019

2. 13th International Conference on Alzheimer's and Parkinson's, "Towards the Generation of Nigral Dopamine Neurons in Gene Edited Animals via Stem Cell Complementation for Treating Parkinson's Disease", Vienna, Austria, 2017

3. 13th International Neural Transplantation and Repair Symposium, "Characterization of Chimeric Human-Porcine Blastocysts and PITX3 Knockout Swine for Generating Authentic Human Cells in the Pig",Beijing, China, 2015

4. Frontiers in Biomedical Research Symposium, "Stem Cells for Neural Repair", Karolinska Institute, Stockholm, Sweden, 2010

5. International Meeting of the Society for NeuroImmune Pharmacology, "State of the Art in Neural Stem Cell Biology", Keynote Speaker ,Wuhan, China, 2009

6. International Symposium on Stem Cells and Transplantation, "Pluripotency and Neural Induction of Mesenchymal Stem Cells Derived from Adult Bone Marrow", Nantes, France, 2003

7. Capital Institute of Medicine, (Formerly Beijing Medical College), Beijing, China, "Neural Transplantation and Pallidotomy for Parkinson's Disease", 1993

8. Third International Symposium on Neural Transplantation, Cambridge, U.K., "Evidence for innervation of grafted cholinergic neurons by GABAergic afferents", 1989

9. Fernstrom International Symposium, Neural Grafting in the Mammalian Central Nervous System, Lund, Sweden, "Cross Species Transplants of Cholinergic Neurons and the Recovery of Function", 1984

10. International Symposium on Brain Tissue Transplantation, European Winter Brain Conference, Les Arc, France, "Cross species Transplantation of Cholinergic Neurons", 1983

Invited Oral Presentations at National Professional Symposia, Conferences, and Institutions

1. University of Cincinnati, "Generating Exogenic Organs and Cells in Gene Edited Chimeric Animals", Cincinnati, OH, 2020

2. Genome Writers' Guild-2020, "Generating Human-Animal Chimeras in Gene Edited Animals: Science, Policy, and Public Attitudes", Rochester, MN, 2020

3. Association for Research in Otolaryngology, "Generating Exogenic Cells for Transplantation in Gene Edited Animals via Blastocyst Complementation", San Jose, CA, 2020

4. American Society for Neural Therapy and Repair, “Human-Animal Chimeras Generated via Blastocyst Complementation”, Clearwater, FL, 2019

5. Cambridge HealthTech Institute, “Gene Editing for Generating Exogenic Organs and Cells”, Boston, MA 2016

6. American Society for Neural Therapy and Repair, Workshop on Techniques for NeuroRepair, “Generating Authentic Neural Cells for Cellular Replacement and Repair”, Clearwater, FL 2016

7. National Institutes of Health, Workshop on Animals Containing Human Cells, “Characterization of Human-Porcine Blastocysts and Fetuses”, Bethesda, MD, 2015

8. Iowa State University, "Neural Induction of Bone Marrow-Derived Stem Cells", Ames, Iowa, 2003

9. University of South Florida, “Neural Induction of Multipotent Adult Progenitor Cells (MAPCs) from Bone Marrow”, Tampa, Florida, 2003

10. University of Louisville, “Characterization and Neural Induction of Bone Marrow Derived Stem Cells”, Louisville, Kentucky, 2003

11. Medical College of Georgia, “Neural Induction of Bone Marrow-Derived Adult Stem Cells”, Augusta, GA, 2002

12. Central Michigan University, “Neural Transplantation of Marrow-Derived Stem Cells”, Mt. Pleasant, Michigan, 2001

13. Ataxia-Telangietasia Children's Project, Washington, D.C., "Transplantation of Cerebellar Purkinje Cells in Experimental Ataxia", 1998

14. National Institutes of Health Workshop on Neuroprosthetics, Washington, D.C., "Deep Brain Stimulation for the Treatment of Parkinson's Disease", 1997

15. Annual Meeting, American Association of Tissue Banks, Boston, MA, "A Retrospective Study of Human Fetal Tissue from Spontaneous Abortions: Potential Application for Cell Transplantation Therapies", 1993

16. United Cerebral Palsy Teleconference, Washington, DC, "Reconstructive Neurosurgery in Experimental Cerebral Palsy", 1993

17. Department of Physiology, Syracuse University, Syracuse, NY, "Transplantation of Dopaminergic and Cholinergic Neurons and the Restoration of Function", 1988

18. Schmitt Neurological Sciences Symposium on Transplantation into the Mammalian CNS, Rochester, NY, "Functional Reinnervation of Transplanted Dopamine Neurons in Mutant Mice with Inherited Nigrostriatal Dopamine Deficiency", 1987

19. Eli Lilly and Co., Indianapolis, IN, "Effects of Insulin like Growth Factor II (IGF II) on Neurite Extension of Hippocampal Neurons in Tissue Culture", 1987

20. New York Academy of Science Conference on Brain Tissue Transplantation in the Adult Brain, New York, NY, "Cerebellar Transplants into Mutant Mice with Purkinje Cell Degeneration", 1986

21. IBM College and University Executive Conference, Palm Springs, CA, "Microcomputer Simulations in Physiology", 1986

22. Department of Anatomy, University of Illinois, Chicago, Illinois, "Transplants of Cholinergic Nerve Cells", 1983

23. Surgical Neurology Branch, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Washington, D.C., "Methods of Neural Transplantation", 1983

24. Department of Physiology, Texas Tech University, Lubbock, Texas, "Transplantation of Cholinergic Nerve Cells and the Recovery of Function", 1983

25. Department of Biology, Rutgers University, Camden, New Jersey, "The Development of Transplanted Nerve Cells and the Recovery of Function", 1983

26. Department of Anatomy, Medical College of Pennsylvania, Philadelphia, Pennsylvania, "Neural Transplantation", 1982

27. Department of Neurosurgery, Tufts University School of Medicine, Boston, Massachusetts, "Methods of Transplanting Cholinergic Neurons and the Recovery of Function", 1982

Invited Oral Presentations at Local and Regional Professional Meetings, Conferences

1. Department of Biomedical Engineering, University of Minnesota, College of Science and Engineering, "Engineering Genes and Cells for Regenerative Medicine", Minneapolis, MN, 2020

2. Center for Orphan Drug Discovery, University of Minnesota, College of Pharmacy, “Generating Exogenic Organs and Cells for Regenerative Medicine”, Minneapolis, MN, 2020

3. Institute for Molecular Virology, University of Minnesota, Symposium on Minnesota’s Response to COVID-19, “Mesenchymal Stem Cell Therapy to Control Inflammation in COVID-19”, Minneapolis, MN 2020

4. Departments of Surgery and Research Day, University of Minnesota, “Generating Exogenic Organs for Transplantation, Minneapolis, MN 2019

5. Department of Medicine Research Conference, University of Minnesota. “The Genesis Project – Generating Organs and Cells for Transplantation”. Minneapolis, MN 2016

6. 4th Engineering and Stem Cell Institute Symposium, University of Minnesota, “The Genesis Project: Generating Exogenic Organs and Cells for Regenerative Medicine”, Minneapolis, MN 2016

7. Stem Cell Institute, University of Minnesota, “Creating Human Organs/Cells via Gene Editing and Blastocyst Complementation”, Minneapolis, MN 2015

8. Lillihei Heart Institute, University of Minnesota “Stem Cells for Ischemic Brain Injury” Minneapolis, MN 2015

9. St. Thomas University, “Translational Neuroscience in Neurodegenerative Diseases”, St. Paul, MN, 2013

10. Institute for Engineering in Medicine Symposium on The Heart-Brain Connection, “Stem Cells for the Protection of the Brain and Heart”, Minneapolis, MN, 2011

11. Minnesota Mini Medical School, “Cancer Vaccines for Treating Brain Tumors”, University of Minnesota Medical School, Minneapolis, MN, 2011

12. University of Minnesota Duluth, “Stem Cells for the Treatment of Ischemic Brain Injury”, Duluth, MN, 2006

13. University of Minnesota Medical School Alumni Association, New Horizons in Minnesota Medicine Symposium, “Stem Cells and Neuroscience”, Minneapolis, MN 2006

14. Minnesota Science Teachers Association, 12th Annual Meeting of Life Science and Biology Teachers, “Stem Cells and the Brain”, St. Paul, Minnesota, 2005

15. Minnesota Biotechnology Symposium on “The Future of Stem Cells and Regenerative Medicine”, Bloomington, Minnesota, 2004

16. Veterans Administration Hospital, “Stem Cells and the Brain”, Minneapolis, MN 2002

17. Minnesota Medical Foundation, “The Promise of Stem Cells for Parkinson’s Disease”, Minneapolis, MN, 2002

18. Fairview-University Medical Center, Brain Tumor Symposium, “Development of Cancer Vaccines for the Treatment of Brain Tumors”, Bloomington, MN, 2000

19. Brain Awareness Week Symposium, “Parkinson’s Disease: Current Clinical Trials and Future Therapies”, Minneapolis, MN, 2000

20. Xenotransplantation Workshop, Minneapolis, MN, 1999

21. 25th Lehman Swine Conference, Symposium on Swine in Biomedical Research, Minneapolis, MN, “Neural Xenotransplantation", 1998

22. Minnesota Medical Foundation - New Horizons in Minnesota Medicine Symposium, Minneapolis, MN, “Neurosurgical Advances for Treating Parkinson’s Disease", 1997

23. Hennepin County Medical Center, Department of Surgery, Minneapolis, MN, “GM-CSF Based Vaccines for the Treatment of Brain Tumors”, 1997

24. Huntington’s Disease Society of America Annual Meeting, Symposium on Recent Advances

in Huntington's Research, Minneapolis, MN, "Recovery of Motor Function Following Transplantation of Human Fetal Striatum in Rodents with Experimental Huntington's Disease", 1996

25. Microbiology, Immunology, and Molecular Pathology Program, University of Minnesota, Minneapolis, MN, "Cell Transplantation Therapies for Experimental Neurodegenerative Diseases", 1996

26. Clinical Neuroscience Conference, University of Minnesota, Minneapolis, MN, "Development of Antisense Oligonucleotides for the Treatment of Brain Tumors", 1995

27. Rotary Club, Minneapolis, MN "Decade of the Brain", 1993

28. Learning Center, University of Minnesota, Minneapolis, MN "Restoration of Spatial Memory Function with Transplanted Cholinergic Neurons", 1993

29. Research Animal Resources, University of Minnesota Medical School, Minneapolis, MN, "Behavioral Tests for Learning and Memory, and Locomotor Function in Rodents", 1992

30. M.D./Ph.D. Program, University of Minnesota Medical School, Minneapolis, MN, "Neuronal Transplantation in Experimental Models of Neurodegenerative Disorders", 1992

31. Department of Psychiatry, University of Minnesota Medical School, Minneapolis, MN, "Nerve Cell Transplantation in a Rodent Model of Alzheimer's Disease: Improvement in Spatial Memory Function", 1991

32. Department of Physiology, University of Minnesota Medical School, Minneapolis, MN, "The Hippocampal Formation: Remembrance of Places Past, Present and Future", 1991

33. Department of Surgery, University of Minnesota Medical School, "Repair of Neural Connections with Nerve Cell Transplants: Restoration of Neurologic Function", 1991

34. Neuroscience Seminar Series, University of Minnesota Medical School, "Neural Grafting in Experimental Models of Neurodegenerative Disorders", 1991

35. Clinical Neuroscience Conference, University of Minnesota Medical School, "Brain Cell Transplants: Repair of Dopaminergic and Cholinergic Pathways and Restoration of Neurologic Function", 1991

36. Department of Neurosurgery, University of Minnesota Medical School, Minneapolis, MN, "Neural Grafting and the Restoration of Function", 1990

37. Department of Biology, Indiana University Purdue University, Indianapolis, IN, "Nerve Cell Transplantation and the Restoration of Function", 1988

38. Medical Science Program, Indiana University, Bloomington, "Neural grafting and functional restoration in animal models of neuronal degeneration", 1989

39. International Symposium on Molecular Neurobiology, the Aging Process and Neurodegenerative Disease, Indianapolis, IN, "Transplantation of Cholinergic Neurons and Functional Restoration in the Mammalian Central Nervous System: An Overview", 1988

40. Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN, "Restoration of Function with Intrahippocampal Grafts of Cholinergic Neurons from the Medial Septal Nucleus", 1988

41. 7th Annual Meeting, Society for Neuroscience, Indianapolis Chapter, Indianapolis, IN, Symposium on Neural Networks, "Adaptive Neural Networks in the Hippocampal Formation", 1990

42. Medical Science Program, Indiana University, Bloomington, Indiana, "Growth and Development of Neural Transplants", 1986

43. Vascular Biology Training Program, Indiana University School of Medicine, Indianapolis, Indiana, "Methods of Neural Transplantation", 1985

44. Evansville Center for Medical Education, Indiana University School of Medicine, Evansville, Indiana, "Transplantation of Cholinergic Neurons and the Recovery of Function", 1984

45. Department of Psychiatry, Indiana University School of Medicine, Indianapolis, Indiana, "Neural Transplantation of Cholinergic Neurons and the Recovery of Function", 1984

46. Department of Physiology and Biophysics Retreat, Indiana University School of Medicine, Brown County, Indiana, "Transplantation of Cholinergic Neurons", 1983

47. Department of Physiology and Biophysics, University of Vermont, Burlington, Vermont, "Neural Transplantation of Cholinergic Neurons", 1981

48. Society for Neuroscience, Vermont Chapter, University of Vermont, Burlington, Vermont, "Neural Transplantation and the Recovery of Function", 1980

49. Symposium on State of the Art Techniques in Neuroscience, Society for Neuroscience, 9th Annual Meeting of the Michigan Chapter, East Lansing, Michigan, "Electrophysiological Recordings from in vitro Hippocampal Slices", 1979

50. Department of Physiology, Downstate Medical Center, State University of New York, Brooklyn, New York, "Synaptic Potentiation of CA1 Pyramidal Cells in Hippocampal Slices", 1978

51. Neuroscience Program, University of Michigan, Ann Arbor, Michigan, "Heterosynaptic Potentiation of Pyramidal Cells in Hippocampal Slices", 1977

Poster Abstract Presentations at Professional Meetings and Conferences

1. Clark IH, Low WC, and Grande AW, NeuroD1 promotes neurogenesis, American Society for Neural Therapy and Repair, Clearwater, FL, 2023.

2. Shetty A, Clark I, Crane AT, Dunbar, Fink KD, Grande AW, Marcy B, Parr AM, Rossignol J, Roman A, Strell P, Var SR, Zhao LR, Zholudeva LV, and Low WC, Recommendations for

research guidelines that involve stem/progenitor cells and human-animal chimeras, American Society for Neural Theapy and Repair, Clearwater, FL, 2022.

3. Shetty A, Lim S, Steer CJ, and Low WC, Single cell RNA sequencing-based stage matching to enhance the generation of interspecies chimeras for generating exogenic tissues and organs, American Society for Neural Therapy and Repair, Clearwater, FL, 2021.

4. Shen F, Brown JL, Ruiz M, Voth J, Sawai, T, Hatta T, Fujita M, Crane A, and Low WC, Public attitudes in the United States towards human-animal chimeric research using human induced pluripotent stem cells to generate human organs for transplantation, International Society for Stem Cell Research, Los Angeles, CA 2019

5. Sathe AG, Chen C, Chen W, Cloyd J, Coles L, Low WC, Sanders L, Steer CJ, Tuite P, Zhu, XH, A comprehensive evaluation of UDCA pharmacokinetics, biological target engagement, and mechanism(s) of action in people with Parkinson's disease, AP/PD2019 Symposium, Lisbon, Portugal, 2019.

6. Chrostek M, Crane A, Vegoe A, Lindborg B, O'Brien T, and Low WC, Cerebral organoids as a novel source of dopaminergic neuron progenitors for cell based treatment of Parkinson's disease, American Society for Neural Therapy and Repair, Clearwater, FL, 2018.

7. Toman N, Shaio ML, Voth J, Danczyk G, and Low WC, Assessing the ability of the Zika virus to infect human GBM6 and U87 gliomas, Peyton Society 80th Anniversary Meeting, Minneapolis, MN 2017

8. Pearce CM, Shiao ML, and Low WC, Zika virus targeting of human DAOY medulloblastoma, Peyton Society 80th Anniversary Meeting, Minneapolis, MN 2017

9. Sipe CJ, Shiao ML, and Low WC, Characterization of the Zika virus as an oncolytic virus in murine GL261 gliomas, Peyton Society 80th Anniversary Meeting, Minneapolis, MN 2017

10. Voth J, Miller ZD, Danczyk G, Low WC, and Parr AM, Porcine to porcine blastocyst complementation to generate oligodendrocytes, Peyton Society 80th Anniversary Meeting, Minneapolis, MN 2017

11. Crane A, Swaminathan P, Hewitt H, Xiao F, Savanur V, Voth J, Schultz Z, Carlson D, Fahrenkrug S, Dutton J, and Low WC, Use of blastocyst complementation in identifying novel source of tissue for craniofacial and neural regenerative therapies, Federation of European Neuroscience Society Annual Meeting, Copenhagen, Denmark, 2016.

12. Savanur VH, Schultz Z, Hewitt H, Swaminathan P, Crane A, Voth J, Carlson D, Fahrenkrug S, Dutton, J, and Low WC, Interrogation of PITX# for blastocyst complementationin generating lens, Institute for Engineering in Medicine Annual Meeting, Minneapolis, MN, 2015

13. Fernando, N, Hewitt H, and Low WC, Optimzation of an immunohistochemical fluorescent antibody staining protocol for use on chimeric tissues, Proceedings of the Summer Undergraduate Research Symposium, University of Minnesota, page 12, 2014.

14. Xiao F, Juliano M, Stone LL, Mihalko H, Vinodkumar D,Suresh M, Nan C. Kuzmin-Nichols N, Sanberg CD, Sanberg PR, Grande A, and Low WC, Amelioration of ischemic brain injury with

non-hematopoietic umbilical cord blood stem cells (nh-UCBSCs): Mechanisms of action, Cell Transplantation 23(6):789, 2014.

15. Nan Z, Podetz-Pederson KM, Muenzer J, Low WC, and McIvor RS, Spatial navigation and working memory tests demonstrate neurological deficits in a murine model of mucopolysaccharidosis Tye II (Hunter syndrome). Proceedings for the WORLD Conference, 2012.

16. Divani AA, Bhatia P, Hartly EW, Low WC, Monga M, Beilman G. A New Novel Model of Blast Traumatic Brain Injury. The 1st International Congress of Interventional Neurology, Minneapolis, MN. Oct 6-8, 2011.

17. Nan Z, Belur L, Wolf D, Gunther R, Whitley C, McIvor RS, and Low WC, Central nervous system biodistribution of AAV5-GFP following intraventricular administration in neonatal and adult mice, Proceedings of the American Society for Neural Therapy and Repair, 2010.

18. Chen Y, Zhong J, Chandler M, Low WC, Zhang J, and Yu X, Long-term effects of human umbilical cord stem cells on myocardial function in post-infarct rat heart, Proceedings of the American Heart Association Annual Meeting, 2009.

19. Nikas J, and Low WC, Mathematical analyses of *in vivo* Proton Nuclear Magnetic Resonance Spectroscopy (^{1}H NMRS) in the diagnosis, assessment of clinical change, and metabolomics investigation of the underlying causes of the neuropathology of Huntington's disease in R6/2 transgenic mice, Proceedings of the American Society for Neural Therapy and Repair, 2008.

20. Gao Y, Zu T, Low WC, Orr HT and McIvor RS, Antisense RNA Sequences Modulating the Ataxin-1 Message: Molecular Model of Gene Therapy for Spinocerebellar Ataxia Type 1, a Dominant-Acting Unstable Trinucleotide Repeat Disease, Proceedings of the American Society for Neural Therapy and Repair, 2007.

21. Xin J, Noetzel M, Demorest ZL, Carlson G, Ashe KH, and Low WC, Decreased proliferation of endogenous neural stem cells in transgenic tau Alzheimer's mice, American Society for Neural Therapy and Repair Abstracts, Experimental Neurology 198:595, 2006.

22. Naylor MC, Negia M, Noetzel M, Demorest ZL, and Low WC, Heparan sulfate mediates neuroprotection from degeneration in experimental glutaric aciduria, American Society for Neural Therapy and Repair Abstracts, Experimental Neurology 198:582-583, 2006.

23. Demorest ZL, Ohlfest JR, Low WC, and Freese A., Non-viral gene transfer using Sleeping Beauty transposition for long-term gene expression in the CNS of neonatal mice, American Society for Neural Therapy and Repair Abstracts, Experimental Neurology 198:565-566, 2006.

24. Burns, TC, Ortiz-Gonzales XO, Keen CD, Demorest Z, Nakagawa Y, Verfaillie, CM, and Low WC, BrdU is not a reliable label for transplanted cells in the embryonic and neonatal host brain, Society for Neuroscience Abstracts, Program Number 257.3 (2005).

25. Low WC, Xiao J, Nan ZH, and Motooka, Y, Characterization and transplantation of a novel population of umbilical cord blood stem cells in experimental ischemic brain injury, Iowa State University Stem Cell Meeting Abstracts, Ames, IA (2004).

26. Oh, S, WM Jurney, XR Ortiz-Gonzalez, CD Keene, WC Low, CM Verfaillie, SK Juhn, and JH Andersen, Survival and distribution of adult-derived stem cells transplanted into the adult mouse inner ear, Society for Neuroscience Abstracts, Program Number 150.15 (2003).

27. Motooka, Y, XR Ortiz-Gonzalez, CM Verfaillie, and WC Low, Neurogenesis and axonal fiber sprouting following human multipotent adult progenitor cells (MAPC) transplantation in acutely ischemic rats, Society for Neuroscience Abstracts, Program Number 42.2 (2003).

28. Ortiz-Gonzalez, XR, CD Keene, M Reyes, ZH Nan, WM Duan, CM Verfaillie, and WC Low, Human and rat derived multipotent adult progenitor cells (MAPC) survive and express neural markers when transplanted into neonatal rats, Society for Neuroscience Abstracts, Program Number 237.19 (2002).

29. Keene, CD, CMP Rodrigues, T Eich, MS Chhabra, CJ Steer, and WC Low, TUDCA, a common bile acid, amerliorates neuropathology and associated behavioral deficits in a transgenic mouse model of Huntington's disease, Society for Neuroscience Abstracts, Program Number 195.13 (2002).

30. Keene, CD, CM Rodrigues, T Eich, C Linehan-Stieers, A Abt, BT Kren, CJ Steer and WC Low, Neuroprotective effects of TUDCA, a hydrophilic bile acid, in experimental Huntington's disease, Society for Neuroscience Abstracts, Program Number 968.10 (2001).

31. Kaemmerer, WF, RS McIvor, and WC Low, Evidence that transduction of cerebellar purkinje cells by adeno-associated virus type 2 is mediated by bFGF receptor type 1, Society for Neuroscience Abstracts, Program Number 294.6 (2001).

32. Zhao, LR, WM Duan, M Reyes, CD Keene, ES Nussbaum, CM Verfaillie, and WC Low, Human bone marrow stem cells exhibit neural phenotypes after transplantation and ameliorate neurologic deficits with ischemic brain injury, Society for Neuroscience Abstracts, abstract 860.1 (2000).

33. Reyes M, CD Keene, WC Low, and CM Verfaillie, Ex vivo differentiation of mesenchymal stem cells into oligodendrocytes, astrocytes, and/or dopaminergic, gamma amino butyric acid-ergic, or serotonergic neurons, Society for Neuroscience Abstracts, abstract 415.15 (2000).

34. Duan WM, LR Zhao, CMP Rodrigues, CJ Steer, and WC Low, Tauro-ursodeoxycholic acid improves the survival and function of nigral transplants in a rat model of Parkinson's disease, Society for Neuroscience Abstracts, abstract 328.6 (2000).

35. Keene, CD, M Reyes, LR Zhao, W Wang, SR Spellman CM Verfaillie, and WC Low, Transplantation of bone marrow derived multipotent adult stem cells into the rat CNS: Phenotypic expression, Society for Neuroscience Abstracts, abstract 327.6 (2000).

36. Kaemmerer, WF, CMP Rodrigues, C Steer, HT Orr, and WC Low, Creatine supplemented diet extends Purkinje cell survival in SCA-1 transgenic mice, but does not prevent the ataxic phenotype, Society for Neuroscience Abstracts, abstract 203.12 (2000).

37. Rodrigues CMP, CD Keene, C Linehan-Stieers, X Ma, WC Low, CJ Steer. Tauroursodeoxycholic acid prevents apoptosis induced by the neurotoxin 3-nitropropionic acid in rat neuronal cells: evidence for a mitochondrial-dependent pathway that does not involve the permeability transition. European Association for the Study of Liver Diseases (1999)

38. Ni, H-T, SR Spellman, WC Jean, WA Hall, WC Low, Dendritic cells pulsed with tumor extract is a potent treatment for C57Bl/6 mice bearing intracranial GL261 gliomas. 5th International Symposium on Dendritic Cells in Fundamental and Clinical Immunology (1998).

39. Ni, H-T, JC David, SR Spellman, JL Mortenson, WC Jean, WA Hall, WC Low, Immunotherpay with B16 melanoma cells transfected with the B7-1 co-stimulatory molecule increases the survival of mice with melanoma. Congress of Neurological Surgeons (1998).

40. Jean, WC, ES Nussbaum, SR Spellman, WC Low, Reperfusion injury after focal cerebral ischemia: the role of inflammation and treatment strategies. Congress of Neurological Surgeons (1998).

41. Ni, H-T, WC Jean, SR Spellman, WA Hall, WC Low, Immunization with dendritic cells pulsed with tumor extract increases survival of C57BL/6 mice bearing intracranial GL261 glioma. Congress of Neurological Surgeons (1998).

42. Duan, W-M, M Westerman, T Flores, WC Low, Intrastriatal grafting of ventral mesencephalic tissue from MHC knockout mice to adult rats. Society for Neuroscience, (1998).

43. Keene, C.D., I Tkac, J Pfeuffer, R Gruetter, WC Low, Proton magnetic resonance spectroscopic identification of alterations in the neurochemical profile of the rat striatum following quinolinic acid lesions. Society for Neuroscience, (1998).

44. Ni, H-T., SR Spellman, WC Jean, MA Wallenfriedman, WA Hall, WC Low, Dendritic cells pulsed with tumor extract is a potent treatment for C57BL/6 mice bearing intracranial GL261 gliomas. Society for Neuroscience, (1998).

45. Duan, W-M, M. Westerman, T Flores, WC Low, Xenotransplantation of fetal dopamine neurons from MHC I and MHC II knockout mice to adult rats: enhancement of cell survival. Annual Meeting of the American Society for Neural Transplantation. (1998).

46. Jean, W.C., SR Spellman, FT Merkle, CT Flores, L DelaBarre, M Garwood, WA Hall, WC Low, Effects of combined GM-CSF and IL-2 in the treatment of rat 9L glioma. Annual Meeting of the American Association of Neurological Surgeons (1998).

47. Wallenfriedman, MA, JA Conrad, L Chiang, L DelaBarre, WC Jean, M Garwood, DYK Wen, WA Hall, and WC Low, Antisense oligonucleotide vaccine for intracerebral metastatic breast cancer, Annual Meeting of the Congress of Neurological Surgeons (1997).

48. Jean, WC, SR Spellman, WA Wallenfriedman, WA Hall, and WC Low, IL-12 based tumor cell vaccine for the treatment of gliomas, Annual Meeting of the Congress of Neurological Surgeons (1997).

49. Jean, WC, SR Spellman, L Chiang, WA Hall, and WC Low, Antisense oligonucleotides to the mdm-2 gene yield paradoxical effects in the treatment of brain tumors, Annual Meeting of the Congress of Neurological Surgeons (1997).

50. Jean, WC, G Lee, SR Spellman, MA Wallenfriedman, WA Hall, and WC Low, IL-2 treatment of 9L glioma provides additional long-term immunity to alternate glioma cell line, Annual Meeting of the American Association of Neurological Surgeons (1997).

51. Jean, WC, SR Spellman, FT Merkle, CT Flores, L DelaBarre, M Garwood, WA Hall, and WC Low, Effects of combined GM-CSF and IL-2 in the treatment of rat 9L glioma, Annual Meeting of the American Association of Neurological Surgeons (1997).

52. Spellman, SR, WC Jean, FT Merkle, WA Hall, and WC Low, Cytokine dependent lymphocyte infiltration of 9L gliosarcoma peripheral tumors in Fischer 344 rats, Annual Meeting of the American Association of Neurological Surgeons, (1997).

53. Lakkaraju, A., W.C. Jean, W.C. Low, and Y.E. Rahman, Liposomes as vectors for the delivery of antisense oligonucleotides targeting the mRNA of the p53 tumor-suppressor gene, Proceedings of the American Association of Pharmaceutical Scientists Annual Meeting, submitted (1997).

54. Wallenfriedman, M.A., W.E. Galicich, W.C. Jean, S.R. Spellman, A. Sanan, W.A. Hall, and W.C. Low, Spontaneous regression of C6 glioma tumors in BD-IX rats. Society for Neuroscience, 23:2449, (1997).

55. Pundt, L.L., N. Narang, and W.C. Low, Localization of striatal markers in human ganglionic eminence transplants in quinolinic acid-lesioned rats. Society for Neuroscience, 23:84, (1997).

56. Lee, G., S.R. Spellman, W.A. Hall, D.S. Gregerson, M.A. Wallenfriedman, and W.C. Low, Brain tumor regression in Fischer 344 rats vaccinated with F98 glioma cells treated with antisense oligonucleotides for the IGF1 receptor. Society for Neuroscience, 23:2448, (1997).

57. Keene, C.D., E.M. Jansen, and W.C. Low, Effects of intraventricular injection of antisense oligodeoxynucleotides on NR1 protein production in neonatal rat brain. Society for Neuroscience, 23:2434, (1997).

58. Kaemmerer, W.F., and W.C. Low, Wildtype cerebellar grafts into spinocerebellar ataxia Type-1 transgenic mice survive and improve motor behavior. Society for Neuroscience, 23:347, (1997).

59. Jean, W. C., S.R. Spellman, L. Chiang, P.J. Camarata, W.A. Hall, and W.C. Low, Paradoxical effects of antisense oligonucleotides in the treatment of brain tumors: an illustration using the *mdm*-2 gene. Society for Neuroscience, 23:2447, (1997).

60. Jansen, E.M., C.D. Keene, and W.C. Low, Pretreatment with antisense oligonucleotides against mRNA to the NMDA receptor is neuroprotective in a rat model of neonatal ischemic-hypoxia: TTC staining. Society for Neuroscience, 23:2434, (1997).

61. Pundt, L.L., E.A. Jorn, J.A. Conrad, and W.C. Low, Organotypic organization of human fetal cerebellar tissue following transplantation into the cerebellum of nude mice, Proceedings of the 6th International Neural Transplantation Meeting, pg. 50, (1997).

62. Khan, M.H., L.L. Pundt, W.B. Rathbun, and W.C. Low, Increased survival of fetal ventral mesencephalon cells following treatment with an L-cysteine prodrug: in vitro studies, Proceedings of the 6th International Neural Transplantation Meeting, pg. 34 (1997).

63. Galicich, W.E., W.C. Low, J.A. Conrad, E.P. Flores, and W.A. Hall, c-myb antisense oligonucleotide uptake and diffusion in the brain, Proceedings of the Congress of Neurological Surgeons Poster Program, pg. 293 (1997).

64. Wallenfriedman, M.A., K.K. Stiffler, F.T. Merkle, J.A. Conrad, L. Chiang, W.C. Jean, D.Y.K. Wen, W.A. Hall, and W.C. Low, Peripheral vaccines for the treatment and prevention of 9L glioblastoma also provide long-term immunity to an alternate glioma cell line of syngeneic origin, Proceedings of the Congress of Neurological Surgeons. Poster Program, pg. 278 (1997).

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Other Key Activities and Accomplishments

FDA Investigational Device Exemption (IDE) and Investigation New Drug (IND) Protocols:

1. "Pallidal Stimulation for Parkinson's Disease using the Medtronic Model 3382 DBS™ Lead and ITREL® II System", FDA IDE #G950133, 1995 (principal investigator/sponsor)

2. "Unilateral Pallidal Stimulation for Parkinsonian Patients with Prior Pallidotomies", FDA IDE #G950133, Supplement 1, 1996 (principal investigator)

3. "Subthalamic Nucleus Stimulation for the Treatment of Parkinson's Disease", FDA IDE #G950133, Supplement 2, 1998 (principal investigator/sponsor)

4. ''Dendritic Cell – Brain Tumor Stem Cell Vaccine for Treating Brain Tumors'', FDA IND #13887, 2010 (principal investigator/sponsor)

TEACHING AND CURRICULUM DEVELOPMENT

University of Minnesota (repeat for other university or academic positions)
Use reverse chronological order – present to past – in each section.

Course/Lecture List

NSu 8324	Course Director - Fundamentals of Neuroscience for Neurosurgery, 2013 – present, University of Minnesota
SCB 8181	Stem Cell Biology, 2012-present, University of Minnesota Medical School
NSc 5667	Course Director, Neurobiology of Disease, 2007- 2013, University of Minnesota Medical School
PT 6282	Scientific Foundations II: Neuromotor Control, 2007, University of Minnesota Medical School
NSc 5561	Systems Neuroscience, 1999-2004, University of Minnesota Medical School
NSc 8320	Survival Skills, 1998- present, University of Minnesota Medical School
NSu 8320	Neurosurgical Teaching Conference, 1990-present, University of Minnesota Medical School
NSu 8324	Course Director, Readings in Neurobiology, 1990-2013, University of Minnesota Medical School
NSu 8316	Neurosurgical Research, 1990-present, University of Minnesota Medical School
NSu 5520	Neurosurgical Investigations, 1990-present, University of Minnesota Medical School
AdPy 5927	Biological Psychiatry, 1992-2000, University of Minnesota Medical School
Nsc 5660	Behavioral Neuroscience, 1995, University of Minnesota Medical School
Phsl 3091	Undergraduate Physiology Research, 1994, University of Minnesota Medical School

CBN 5110/ Phsl 5101	Neuroscience for dental students, 1993-1995, University of Minnesota Medical School
Phsl 5112	Human Neuroscience for medical students, 1991, University of Minnesota Medical School
Nsc 8550	Itasca Neurobiology Course, 1991-2004, University of Minnesota Medical School
PSLB301	Human Physiology for medical students, Summer Course, 1983-1994, University of Vermont College of Medicine
F513	Human Physiology for medical students, 1984-1990, Indiana University School of Medicine
F613	Mammalian Physiology for graduate students, 1984-1990, Indiana University School of Medicine
F724	Physiology of the Nervous System for graduate students, 1986, 1988, 1990, Indiana University School of Medicine
93HA790	Elective in Neurophysiology for Senior Medical Students, 1990, Indiana University School of Medicine
N8XX	Neurophysiology for Neurology Residents and Fellows, 1990, Indiana University School of Medicine
D876	Neurotransmitter and Neuroendocrine Cytology, 1988, Indiana University School of Medicine
F499	Directed Research in Medical Physiology and Biophysics for undergraduates, 1985-86, Indiana University School of Medicine
F509	Physiology for dental students, 1984-1986, Indiana University School of Medicine
ANNB302	Neuroscience for medical students, 1983, University of Vermont
PSLB102	Physiology for physical therapists, 1982, University of Vermont
PSLB304	Cell Physiology and Biophysics for graduate students, 1982, University of Vermont
ANNB305	Techniques in Neurobiology for graduate students, 1982, University of Vermont
PSLB323	Biomedical Instrumentation for graduate students, 1981, University of Vermont
PSLB10	Human Physiology for undergraduates, 1980, University of Vermont
ZOOL325	Comparative Physiology for undergraduates, 1975, University of Michigan
PSIO101	Human Physiology for undergraduates, 1974, University of Michigan

Curriculum Development

NSu 8324 Fundamentals of Neuroscience for Neurosurgery - Online, 2013, University of Minnesota

ADVISING AND MENTORING

High School Student Mentees in the Twin Cities

Emily Nikas	2022	(Cal Tech)
Olivia Chen	2020-2021	(Duke University)
Kelly Zeng	2019-2020	
Gauri Binoy	2016-2017	(Cornell University)
Malu Suresh	2012-2013	(Carleton College)
Jeff Zhang	2010-2011	(Yale University)
Brandon Law	2007-2008	(Harvard University)
Tara Mokhtari	2006-2007	(MIT)
Jonathan Kleinman	2002-2003	(Johns Hopkins University)
Kejia Sun	1999-2000	(Stanford University)
Manik Chhbbra	1998-2000	(Stanford University)
Florian Merkle	1996-1997	(Cal Tech)

Undergraduate Students

Zoey Vasilakos	2022-present	University of Minnesota
Nathan Deep	2022-present	University of Minnesota
Jeffrey Blake	2022-present	University of Minnesota
Elise Zahs	2022-present	University of Minnesota
Ashley Ballou	2022-present	University of Minnesota
Maggie Swanson	2021-present	University of Minnesota
Grant Schlauderaff	2021-2023	University of Minnesota
Taylor Bores	2021-2022	University of Minnesota
Manashri Bohr	2021-2023	University of Minnesota
Grant Badger	2021-2022	University of Minnesota
Mayuresh Vernekar	2020-2023	University of Minnesota
Jake Borgida	2020	Trinity College
Kashif Qureshi	2019-2022	University of Minnesota
Samantha Johnson	2019-2020	University of Minnesota
Kennedy Person	2019, 2021	University of Maryland
Chris Carchi	2018-2021	University of Minnesota
Derek Chen	2018-2022	University of Minnesota
Winston Guo	2018-2020	University of Minnesota
Sarah Tran	2017-2018	University of Minnesota
Salma Issa	2017-2018	University of Minnesota
Max Sandler	2017	Tulane University
Clairice Pearce	2016-2019t	University of Minnesota
Nicolas Toman	2016-2019	University of Minnesota
Nancy Abdelrahman	2016-2017	University of Minnesota
Matthew Chrostek	2016-2020t	University of Minnesota
Arielle Hay	2016	Carthage College

Antony Crane	2015-2016	University of Minnesota
Zach Coffel	2014-2015	University of Minnesota
Nimasha Fernando	2014	University of Maryland
Brenna Holms	2014-2015	University of Minnesota
Breanna Hardy	2014-2015	University of Minnesota
Sunita Krishnan	2014-2015	University of Minnesota
Quincy Rudman	2014-2015	University of Minnesota
Zach Schultz	2014-2015	University of Minnesota
Jordan Sheehan	2014-2015	University of Minnesota
Joseph Voth	2014-2016	University of Minnesota
Kendra Wright	2014-2015	University of Minnesota
Madeleine Howard	2013-2015	University of Minnesota
Andrew Gardeck	2013-2014	University of Minnesota
Katie Longley	2013-2014	University of Minnesota
Shiela Vang	2013-2014	University of Minnesota
Hanna Mihalko	2012-2014	University of Minnesota
Garima Singh	2012-2014	University of Minnesota
Mona Sonbol	2012-2013	University of Minnesota
Sabrina Hermsen	2012	University of Minnesota
Grant Larson	2011-2012	University of Minnesota
Ronda Fahim	2011-2012	University of Minnesota
Jasmine Abraham	2011-2012	Hamline University
Marissa Donatelle	2011-2012	University of Minnesota
Blake Siljander	2011-2012	University of Minnesota
June K. Yan Huang	2011	University of Puerto Rico
Michael Kalinowski	2010-2012	University of Minnesota
Gretta Joseph	2010-2012	University of Minnesota
Carrie Evavold	2009-2010	University of Minnesota
Katherine Holten	2009-2010	University of Minnesota
Brittney Lemke	2009-2010	University of Minnesota
Sheena Potretzke	2009-2010	University of Minnesota
Justin Snesrud	2009-2010	University of Minnesota
Jill Crosby	2008-2009	University of Minnesota
Julie Neborak	2008-2009	University of Minnesota
Jackie Jensen	2008-2009	University of Minnesota
Emily Nuechterlein	2008-2009	Macalester College
Katya Erickson	2007-2008	University of Minnesota
Julianne Eggum	2007-2008	University of Minnesota
Yuliya Perepelitsa	2007-2008	University of Minnesota
Erin Bromberg	2007-2009	University of Minnesota
Sarah Parker	2007-2009	University of Minnesota
Jeff Ames	2007-2008	University of Minnesota
Nathan Mesfin	2007-2008	University of Minnesota
Patrick Hosrt	2007-2008	University of Minnesota
Elina Kudishevich	2007-2008	University of Minnesota
Aleta Reese	2006-2007	University of Minnesota
Kelly Sorvell	2006-2007	University of Minnesota
Rita Weiss	2006-2007	University of Minnesota
Elina Lipovskiy	2006-2007	University of Minnesota
Alex Hartman	2006-2007	University of Minnesota
Jessica Curtis	2005	St. Catherine’s University

Blake Daley	2005-2006	University of Minnesota
Dominic Schomberg	2005-2006	University of Minnesota
Jenny Xin	2004-2005	University of Minnesota
Mitch Mudra	2004-2005	University of Minnesota
Japs Lee	2002-2003	University of Minnesota
Tina Flores	1999-2000	University of Minnesota
Anna Abt	1998-1999	University of Minnesota
Leah Solberg	1995-1996	University of Minnesota
Suzanne Underhill	1994-1995	University of Minnesota

Medical Students

Jennifer McKay	2022-present	University of Minnesota
Alexandra Perron	2022-present	University of Minnesota
Sam Nelson	2021-2020	University of Minnesota
Emily Fellows	2019-2022	University of Minnesota
Cleresa Roberts	2019-2020	University of Minnesota
Tony Larson	2017-2020	University of Minnesota
Zach Miller	2016-2018	University of Minnesota
Elizabeth Straub	2016	University of Minnesota
Kelly Setterholm	2015	University of Minnesota
Amber Retzlaff,	2014-2016	University of Minnesota
Huy Nguyen,	2014-2015	University of Minnesota
Amanda Louiselle	2013-2014	University of Minnesota
Zi Gong	2012	University of Minnesota
Tom Zhou	2011-2012	University of Minnesota
Ken Dodd	2009-2011	University of Minnesota
Michelle Naylor	2008-2009	University of Minnesota
Oleg Ryabinin	2009-2011	University of Minnesota
Andy Rivard	2004-2005	University of Minnesota
Caitlin Anderson	2003-2005	University of Minnesota
Andrew Grande	1999-2000	University of Minnesota
Jason Chesney	1993-1994	University of Minnesota
Frank Tomecek	1985-1986	Indiana University School of Medicine

Graduate Students

Olivia Erlanson	2023-	Univ. of Minnesota (Mol. Cell, Devel, & Genet.)
Kennedy Person	2022-	Univ. of Minnesota (Neuroscience)
Madison Waldron	2022-	Univ. of Minnesota (Neuroscience)
Kiowa Wiesner-Matthews	2022-2022	Univ. of Minnesota (Bioinformatics and Computational Biology)
Seth Johnson	2021-	Univ. of Minnesota (Stem Cell Biology)
Phoebe Strell	2021-	Univ. of Minnesota (Comp. Molec. Biosciences)
Chris Carchi	2021-	Univ. of Minnesota (Biomedical Engineering)
Alex Roman	2020-	Univ. of Minnesota (Neuroscience)
Isaac Clark	2020-	Univ. of Minnesota (Biomedical Engineering)
Anala Shetty,	2019-	Univ. of Minnesota (Stem Cell Biology, Molecular, Cell, Development, & Genetics)
Nicole Emmitt, Ph.D.	2018-2022	Univ. of Minnesota (Comp. Molec. Sci.)

Swathi Radha, M.S.	2018-2019	Univ. of Minnesota (Stem Cell Biology)
Azhar Abdukadir, M.S.	2018-2019	Univ. of Minnesota (Stem Cell Biology)
Emily Segler, M.S.	2017-2018	Univ. of Minnesota (Stem Cell Biology)
Chris Sipe, M.S.	2016-2017	Univ. of Minnesota (Stem Cell Biology)
Angelo C. Yuan, Ph.D.	2016-2022	Univ. of Minnesota (Computational Biology)
Shivanshi Vaid, M.S.	2016-2017	Univ. of Minnesota (Stem Cell Biology)
Jennifer Winters, M.S.	2015-2016	Univ. of Minnesota (Stem Cell Biology)
Josh Hamborg, M.D., M.S.	2014-2015	Univ. of Minnesota (Stem Cell Biology)
Vibha Savanur, M.S.	2014-2015	Univ. of Minnesota (Stem Cell Biology)
Preethi Swaminathan, M.S.	2013-2015	Univ. of Minnesota (Stem Cell Biology)
Deepti Vinodkumar, M.S.	2012-2013	Univ. of Minnesota (Stem Cell Biology)
Brian Andersen, M.D., Ph.D.	2012-2013	Univ. of Minnesota (Neuroscience)
Michael Ritchie, M.S.	2010-2012	Univ. of Minnesota (Stem Cell Biology)
Mayra Quito, M.S.	2010-2012	Univ. of Minnesota (Biological Sciences)
Mesfin Negia, M.S.	2008-2010	Univ. of Minnesota (Biological Sciences)
Laura Stone, Ph.D.	2007-2014	Univ. of Minnesota (Neuroscience)
Terry Burns, M.D., Ph.D.	2003-2007	Univ. of Minnesota (Neuroscience)
Andy Rivard, M.D., M.S.	2003-2005	Univ. of Minnesota (Physiology)
Murray Blackmore, Ph.D.	2000-2005	Univ. of Minnesota (Neuroscience)
Xilma Ortiz, M.D., Ph.D.	1999-2004	Univ. of Minnesota (Neuroscience)
Stephen Spellman, M.S.	1999-2000	Univ. of Minnesota (Biomedical Sciences)
Dirk Keene, M.D., Ph.D.	1997- 2003	Univ. of Minnesota (Neuroscience)
Marcus Westerman, M.D., Ph.D.	1996- 2001	Univ. of Minnesota (Neuroscience)
William Kaemmer, Ph.D.	1995-2001	Univ. of Minnesota (Lab Med and Pathology)
Elizabeth M. Jansen, Ph.D.	1991-1997	Univ. of Minnesota (Neuroscience)
Ying-Jie Li, M.D., Ph.D.	1990-1994	Indiana University (Physiol.& Biophys.)
Thomas Cavanaugh, M.S.	1990	Indiana University (Medical Neurobiol.)
Ming-Lei Cui, M.S.	1989-1990	Indiana University (Physiol.& Biophys.)
Bonnie J. Tarricone, Ph.D.	1988-1991	Indiana University (Medical Neurobiol.)
Lee Phebus, Ph.D.	1987-1990	Indiana University (Medical Neurobiol.)
Sandra L. Gage, M.D., Ph.D.	1987-1991	Indiana University (Medical Neurobiol.)
Stephen M. Onifer, Ph.D.	1986-1990	Indiana University (Physiol.& Biophys.)
Scott H. Murphy, M.D., M.S.	1985-1987	Indiana University (Physiol.& Biophys.)

Member on Masters and Doctoral Committees

Susan Arnold, DVM	2023-present	Univ. of Minnesota (Comp & Molec Biosci)
Siddeh Joshi	2022-present	Univ. of Minnesota (Exp & Clin Pharma)
Lakshana Murari	2022-2023	Univ. of Minnesota (Stem Cell Biology)
Anne Huntemer-Silveira	2021-present	Univ. of Minnesota (Neuroscience)
Kristina Fredriksen	2021-present	Univ. of Minnesota (Neuroscience)
Kimberly Demos-Davies	2020-present	Univ. of Minnesota (Comp & Molec. Biosci.)
Seughyun Lim	2020-present	Univ. of Minnesota (Bioinformat & Comp Bio)
Rui Zhong, Ph.D.	2020-2023	Univ. of Minnesota (Exp & Clin Pharmacology)
Julia Stumpf, M.S.	2020-2021	Univ. of Minnesota (Biologcial Sciences)
Lin Wu, Ph.D.	2020-2023	Univ. of Minnesota (Medical Physics)
Garrett Draper	2019-present	Univ. of Minnesota (Comparative Mol. Biosci.)
Yinglong Feng, Ph.D.	2019-2020	Univ. of Minnesota (Elec. Computer Engr.)
Wei Zhu, Ph.D.	2017-2022	Univ. of Minnesota (Medical Biophysics)
Michael Pryzbilla, Ph.D.	2017-2018	Univ. of Minnesota (Mol Cell Dev Biol & Gen)
Dong-Seong Cho, Ph.D.	2016-2017	Univ. of Minnesota (Chem Engr & Material Sci)

Dustin Chernick, Ph.D.	2015-2018	Univ. of Minnesota (Pharmacology)
Ravali Raju, Ph.D.	2014-2015	Univ. of Minnesota (Chem Engr & Material Sci)
Leo Oh, Ph.D.	2012-2015	Univ. of Minnesota (Mol Cell Dev Biol & Gen)
Juan Felipe Diaz Quiroz, Ph.D.	2012-2015	Univ. of Minnesota (Mol Cell Dev Biol & Gen)
Liang Tu, Ph.D.	2011-2012	Univ. of Minnesota (Electrical Engineering)
Anja Srienc, Ph.D.	2010-2014	Univ. of Minnesota (Neuroscience)
Xiao Wang, Ph.D	2009-2013	Univ. of Minnesota (Biophysical Sci. and Med. Physics.)
Chris Chamberlain, Ph.D.	2008-2012	Univ. of Minnesota (Mol Cell Cev Biol &Gen)
Timothy Kline	2008-2010	Univ. of Minnesota (Biomedical Engineering)
Maureen Handoko, Ph.D.	2008-2012	Univ. of Minnesota (Neuroscience)
Brian Gibbens, Ph.D.	2008-2010	Univ. of Minnesota (Mol Cell Dev Biol & Gen)
Cornelius Lam, Ph.D.	2008-2011	Univ. of Minnesota (Biomedical Engineering)
Daniel Wolf Ph.D.	2007-2010	Univ. of Minnesota (Mol Cell Dev Biol & Gen)
LeeAnn Bera, M.S.	2007-2008	Univ. of Minnesota (Mol Cell Dev Biol & Gen)
Daniel Franc, Ph.D.	2007-2008	Univ. of Minnesota (Neuroscience)
Paul Score, Ph.D.	2007-2008	Univ. of Minnesota (Mol Cell Dev Bio & Gen)
Marc Parent, Ph.D.	2006-2010	Univ. of Minnesota (Neuroscience)
Jon Larson, Ph.D.	2006-2011	Univ. of Minnesota (MICaB)
Steven Highfill, Ph.D.	2006-2010	Univ. of Minnesota (MICaB)
Amada Brosnahan, Ph.D.	2006-2008	Univ. of Minnesota (MiCaB)
Sandra Alcala, Ph.D.	2005-2009	Univ. of Minnesota (Neuroscience)
Ge “Christie” Zhang, Ph.D.	2004-2006	Univ. of Minnesota (Biomedical Engineering)
Nathan Jorgensen, Ph.D.	2003-2007	Univ. of Minnesota (Neuroscience)
Edward Rustamzadeh, M.D., Ph.D.	2003-2005	Univ. of Minnesota (Biophysical Sci. and Med Physics)
Kerri Petro, M.S.	2002-2003	Univ. of Minneosta (Physical Therapy)
Ann Mosemiller	2002-2008	Univ. of Minnesota (Neuroscience)
John Ohlfest, Ph,D.	2002-2004	Univ. of Minnestoa (MICaB)
Corey Carlson, Ph.D.	2002-2004	Univ. of Minnesota (MICaB)
Aparna Lakkaraju, Ph.D.	1997-2001	Univ. of Minnesota (Pharmaceutics)
Xueqing Chen, Ph.D.	1997-1999	Univ. of Minnesota (Pharmaceutics)
Angela Brienzo, Ph.D.	1997-1998	Univ. of Minnesota (Dev. Biology)
Katherine Larson, M.S.	1997-1998	Univ. of Minnesota (Comm. Disorders)
Peter L. Malen, Ph.D.	1994-1997	Univ. of Minnesota (Neuroscience)
Scott A. Oakman, Ph.D.	1992-1998	Univ. of Minnesota (Neuroscience)
Lisa Bellavance, Ph.D.	1992-1997	Univ. of Minnesota (Neuroscience)
Eric Engleman, M.S.	1989-1990	Indiana University (Medical Neurobiol.)
Jo-wen Liu, M.S.	1988-1990	Indiana University (Physiol.& Biophys.)
Robert Soltis, M.S.	1988-1990	Indiana University (Pharmacology)
Elizabeth Stotz, M.S.	1988-1990	Indiana University (Medical Neurobiol.)
Thomas Herbst, M.S.	1988-1989	Indiana University (Medical Neurobiol.)
Jeffrey Andersen, Ph.D.	1987-1990	Indiana University (Pharmacology)
Keith Brandt, M.S.	1987-1988	Indiana University (Physiol.& Biophys.)
Rebecca Porter, M.S.	1986-1990	Indiana University (Medical Neurobiol.)
Willie T. Anderson, M.S.	1986-1989	Indiana University (Medical Neurobiol.)
Lydia Arbogast, Ph.D.	1985-1988	Indiana University (Physiol.& Biophys.)
Angela Ying, M.S.	1986-1987	Indiana University (Physiol.& Biophys.)
Paul Garris, Ph.D.	1985-1990	Indiana University (Physiol.& Biophys.)
Lazaros C. Triarhou, M.D., Ph.D.	1985-1987	Indiana University (Medical Neurobiol.)

Timothy Breen, M.S.	1985-1986	Indiana University (Physiol.& Biophys.)
James H. Wible, Jr., Ph.D.	1985-1986	Indiana University (Pharmacology)
Joanne Daniloff, Ph.D.	1982-1983	Univ. of Vermont (Anat. & Neurobiol.)
Janette Johnson, Ph.D.	1982-1983	Univ. of Vermont (Psychology)
James T. Garsik, Ph.D.	1980-1982	Univ. of Vermont (Physiol.& Biophys.)

Post-doctoral Fellows

Susanne Var, Ph.D.	2020-present	Central Michigan University, MI
Aleta Steevens, Ph.D.	2018-2021	University of Rochester, NY
Andrew Crane, Ph.D,	2015-2021	Central Michigan University, MI
Sharbani Banerjee, Ph.D.	2010-2014	University of Minnesota, Minneapolis, MN
Jason Nikas, DPT	2008-2011	University of Minnesota, Minneapolis, MN
An-Hua Wu, M.D., Ph.D.	2005-2006	China Medical University, Shenyang, China
Seung-Uk Oh, Ph.D.	2003-2005	Yonsei University, South Korea
Yasuhiko Mootooka, M.D., Ph.D.	2002-2004	Kobe University Medical School, Japan
Feng Xiao, M.D.	2006-present	Beijing Medical College, China
An-Hua Wu, M.D., Ph.D.	2001-2002	China Medical University, Shenyang, China
Jing Xiao, M.D.	2001-2006	Chongqing Medical College, China
Zhen-Hong Nan, M.D., Ph.D.	2000-2013	Shanghai Medical University, China
Wei-Jun Wang, M.D.	1998-2000	Shandong Tumor Institute, China
Li-Ru Zhao, M.D.	1997-2002	University of Lund, Sweden
Hsiao-Tzu Ni, Ph.D.	1997- 2000	University of Minnesota
Wei-Ming Duan, M.D., Ph.D.	1997-2001	University of Lund, Sweden
Erwin Concepcion, Ph.D.	1992-1993	Wayne State University
Takeshi Kondoh, M.D.	1990-1995	Kobe University School of Medicine, Japan
Ying-Jie Li, M.D.	1988-1990	Capitol Institute of Medicine, Beijing, China
Yumiko Kaseda, M.D.	1986-1988	Kyushu University School of Medicine, Japan
Shereen Farber, Ph.D.	1985-1988	Indiana Univ. School of Medicine, Indpls, IN

Residents

Hart Garner, M.D.	2006-2007	University of Minnesota
Ray Chu, M.D.	2002-2003	University of California, San Diego
Lars Anker, M.D.	2001-2002	Hamburg University, Germany
Patrick Graupman, M.D.	2000-2001	University of Minnesota
Darren Lovick, M.D.	1998-2000	University of Iowa
Walter Jean, M.D.	1996-1998	Cornell University
Margaret Wallenfriedman, M.D., Ph.D.	1995-1996	Yale University
Edison McDaniels, M.D.	1994-1995	Stanford University
Eric Flores, M.D.	1993-1994	University of the Philippines
Jeff Blount, M.D.	1993-1994	University of Rochester

Visiting Scholars

Wei-Cheng Lu, M.D.	2017-2019	China Medical University, Shenyang, China
Hui Xie, M.D., Ph.D.	2017-2019	Shenyang Medical College, Shengyang, China

Hong-Sung Chun, Ph.D.	2010-2011	Chosun University, South Korea
Ji-Eun Kim, M.D.	2006-2008	Catholic University of Daegu,South Korea
Bo-Woo Jung, M.D.	2006-2007	Kumi Medical Center, South Korea
Joonho Song, M.D.	2003-2005	Hallym University, South Korea
Indrani Maitra, Ph.D.	2003-2005	St. Catherine College, St. Paul, MN
Yu Sawada, M.D.	2002-2003	Akita University School of Medicine, Japan
Laurent Lescaudron, Ph.D.	2000-2001	University of Nantes, France
Kyoyuki Yanaka, M.D.	1995-1997	Tsuba University, Japan

Junior Faculty

Andrew Grande, M.D.	2016-2019	University of Minnesota, Minneapolis, MN (NIH K12 Award – Neurosurgery)
Ann Parr, M.D., Ph.D.	2014-2017	University of Minnesota, Minneapolis, MN (NIH K12 Award – Neurosurgery)
LeAnn Snow, M.D., Ph.D.	2007-2011	University of Minnesota, Minneapolis, MN (NIH K08 Award – Physical Medicine)
Vallabh Janardhan, M.D.	2006-2009	University of Minnesota, Minneapolis, MN (NIH K12 Award – Neurology)

PROFESSIONAL SERVICE AND PUBLIC OUTREACH

Editorships/Journal Reviewer Experience

Editorial Board, *American Journal of Translational Research* (2008)
Associate Editor, *Stem Cells and Development* (2006)
Guest Editor, *Cell Transplantation, Special Issue on Guidelines and Regulations for Cell Transplantation Therapies, 1995*

Ad Hoc Reviewer:

American Journal of Physiology
Behavioral and Brain Sciences
Behavioral Brain Research
Brain Research
Brain Research Bulletin
Canadian Journal of Zoology
Cancer Immunology and Immunotherapy
Cell Transplantation
Clinical Transplantation
Experimental Neurology
Experimental Hematology
FEBS Letters
Frontiers in Neuroscience
Future Neurology
International Journal of Neuroscience
Journal of Cell Science
Journal of Cellular and Molecular Medicine

Journal of Immunology
Journal of Neurochemistry
Journal of Neuroimmunology
Journal of Neuro-Oncology
Journal of Neurophysiology
Journal of Neuroscience
Journal of Neuroscience Research
Journal of the Autonomic Nervous System
Medicinal Research Reviews
Molecular and Cellular Neurosciences
Nature Medicine
Neuro-Oncology
Neuroscience
Neuroscience Letters
Physiology and Behavior
PLOS One
Restorative Neurology and Neuroscience
Science
Stem Cells
Stem Cells and Development
Stroke
Surgical Neurology
Trends in Neuroscience

Review panels for external funding agencies, foundations, etc.

Member, NIH Center for Scientific Review, ZNS1 SRB-L Study Section, Special Emphasis Panel, 2018

Member, State of Minnesota Spinal Cord Injury and Traumatic Brain Injury Scientific Review Committee, 2017-2019.

Member, NIH Center for Scientific Review, ZRG1 Study Section, Animal Models and Stem Cell-based therapies for Regenerative Medicine, 2016

Chair, Advisory Committee for Scientific Review, State of Minnesota Traumatic Brain Injury and Spinal Cord Injury Program, 2015-2017

Member, American Cancer Society, Grant Review Study Section, 2009

Member, NIH Center for Scientific Review, Biological Chemistry and Macromolecular Biophysics Study Section, 2009

Member, NIH Center for Scientific Review, Neurogenesis and Cell Fate Study Section, Washington, DC, 2006-2008

Ad-Hoc Grant Reviewer, Alberta Heritage Foundation for Medical Research, Edmonton, AB, Canada, 2006

Ad-Hoc Member, National Aeronautics and Space Administration Research Program Grant Review Committee, 2005

Ad hoc Reviewer on Stem Cells, Veterans Administration, 2003

Ad hoc Reviewer, Internal Grants Program, Rush University Medical Center, Chicago, 2003

Ad hoc Reviewer on Stem Cells, Veterans Administration, 2002

Ad hoc Reviewer for the Telethon Research Program of Italy, 2002

Ad hoc Reviewer on Stem Cells, National Institute of Drug Abuse, 2001

External Grant Reviewer, U.S. Army Medical Research Study Section on Parkinson's Disease and Neurotoxins, 1997

External Grant Reviewer, Veterans Administration Medical Research Service, 1997-98.

Ad Hoc Member, National Institute of Health, NIGMS, Special Review Committee for Predoctoral Institutional Training Grants, 1994.

Ad Hoc Member, National Institutes of Health, NINDS Program Project Review Committee, 1992.

Ad Hoc Reviewer, United States-Israel Bi-national Science Foundation, 1988.

Ad Hoc Reviewer, National Science Foundation, Developmental Neuroscience Study Section, 1985, 1988.

Organization of conferences, workshops, panels, symposia

Chair, Scientific Session on Cell Reprogramming and Human-Animal Chimeras, American Society for Neural Therapy and Repair, Clearwater, FL, 2022

Chair, Scientific Session on Cell Reprogramming and Human-Animal Chimeras, American Society for Neural Therapy and Repair, Clearwater, FL, 2021

Chair, Scientific Session on Cell Reprogramming and Human-Animal Chimeras, American Society for Neural Therapy and Repair, Virtual, 2020

Scientific Program Committee, WORLD Meeting on Lysosomal Storage Disorders, Orlando, FL, 2019

Scientific Program Committee, WORLD Meeting on Lysosomal Storage Disorders, San Diego, CA, 2017

Chair, Scientific Session on Basic Sciences, WORLD Meeting on Lysosomal Storage Disorders, Orlando, FL, 2016

Organizing Scientific Program Committee Member, WORLD Meeting on Lysosomal Storage Disorders, Orlando, FL,
2015-2016

Member, Scientific Committee, 13th International Symposium on Neural Transplantation and Repair, Beijing, China, 2014-2015.

Chair, Scientific Session on Basic Sciences, WORLD Meeting on Lysosomal Storage Disorders, Orlando, FL, 2013

Organizing Committee Member, WORLD Meeting on Lysosomal Storage Disorders, Orlando, FL, 2012-2013

Chair, Scientific Session on Gene Therapy and Novel Approaches, American Society for Neural Therapy and Repair, Clearwater, FL, 2012

Member, International Organizing Committee, 9th International Conference on Neural Transplantation and Repair, Taipei, Taiwan, 2004-2005.

Chair, Scientific Session I, International Meeting for Stem Cells and Transplantation, Nantes, France, 2003

Co-Chair, Scientific Session on "Stem Cells and Progenitors", American Society for Neural Transplantation and Repair, Annual Meeting, Clearwater, Florida, 2001

Member, Scientific Program Committee, American Society for Neural Transplantation and Repair, Annual Meeting, Clearwater, Florida, 2001

Chairperson, Scientific Session on "Neural Stem Cells", American Society for Neural Transplantation and Repair, Annual Meeting, Clearwater, Florida, 2000

Chairperson, Scientific Session on Xenotransplantation, Lehman Conference, Minneapolis, Minnesota, 2000

Organizer, American Association of Neurological Surgeons Satellite Symposium on "Deep Brain Stimulation for the Treatment of Parkinson's Disease", 1996.

Local Organizing Committee, 2nd International Congress of the Cell Transplantation Society, 1993-1994.

Chairperson, Scientific Session on Molecular Mechanisms of Cell Death and Restoration of Function, 5th International Symposium on Neuronal Control of Bodily function - Molecular Neurobiology, the Aging Process and Neurodegenerative Disorders, Indianapolis, IN 1988.

Organizing and Scientific Program Committee, 5th International Symposium on Neuronal Control of Bodily Function - Molecular Neurobiology, the Aging Process, and Neurodegenerative Disease, 1987.

Committee memberships

Chair, Task Force on Stem Cell Research Guidelines, American Society for Neural Therapy and Repair, 2021-2023

Chair, Ethics Committee, American Society for Neural Therapy and Repair, 2021-present

Member, Ethics Committee, Genome Writers' Guild, 2019

External Chair, Thesis Defense, University of South Florida, Tampa, FL, 2008

Member, NIH Study Section, ZHL1 CSR-H, National Heart Lung and Blood Institute Special Emphasis Panel, 2005

President-elect, American Society for Neural Transplantation and Repair, 2004

External Member, Doctoral Thesis Committee, Stem Cells and Cerebral Ischemia, University of South Florida, 2004.

Member, Education Committee, American Society for Neural Transplantation and Repair, 1999-present.

Clinical Practice Committee, American Society for Neural Transplantation, 1995-present.

Scientific Program Committee, American Society for Neural Transplantation, First Annual Meeting, 1994.

Secretary Elect, American Society for Neural Transplantation, 1994-1995.

Member, Workshop on Scientific Literacy in Neuroscience, Society for Neuroscience, 1992.

Technical Committee, Colloquium on Computational Neuroscience, Satellite Conference of the IEEE International Symposium on Systems, Man and Cybernetics, Indianapolis, IN, 1992.

Member, Stroke Council, American Heart Association National Center, 1991-present.

Advisory Panel, National Research Council, Washington, D.C., 1988-1990.

National Chapters Delegate, Society for Neuroscience, 1985.

Public Advocacy

Grass roots lobbying effort to maintain State of Minnesota Office of Higher Education funding by Office of Higher Education for Spinal Cord Injury and Traumatic Brain Injury Research Program, 2020.

Minnesota Legislative Initiative for Spinal Cord and Traumatic Head Injury Research Fund, 2016, $6 million biennial state appropriation.

Minnesota Legislative Initiative for Spinal Cord and Traumatic Head Injury Research Fund,

2012-2015, $1 million biennial state appropriation.

Service to the University/Medical School/Department

University-wide service

Member, MNCreST Training Grant Executive Committee, 2015-2018

Member, Review Committee for UMN Research Infrastructure Investment Grants, 2015

Member, Scientific Advisory Board, Powell Center for Women's Health, University of Minnesota, 2013.

Member, Grant Review Committee, College of Pharmacy, University of Minnesota, 2011

Member, Graduate School, Grant-in-Aid review committee, University of Minnesota, 2009-2012.

Member Elect, University Senate, University of Minnesota, 2009-present

Member Elect, Dean's Advisory Committee, University of Minnesota Medical School, 2009-present

Member, American Cancer Society Grant Review Committee, University of Minnesota Medical School, 2009-2012.

Member, Masonic Cancer Center Brainstorm Award Review Committee, University of Minnesota
Medical School, 2009

Member, Research Council, University of Minnesota Medical School, 2006-2009

Member, Faculty Mentor Liaison Committee, University of Minnesota Medical School, 2008

Chair, Search Committee for Faculty in Neuromodulation, University of Minnesota Medical School, 2007

Chair, Search Committee for Faculty in Translational Neuroscience,
University of Minnesota Medical School, 2005

Member, Graduate School, Grant-in-Aid Review Committee, 2005

Faculty Member, Mini-Med School, University of Minnesota Medical School, 2004, 2006

Member, Promotion and Tenure Committee, University of Minnesota Medical School, 2004-2007

Member, Diversity Task Force, University of Minnesota, 2004-2006

Member, Technology Transfer Liaison Search Committee, Office of Patents and Technology Transfer,
University of Minnesota, 2004

Senator Elect, University Senate, University of Minnesota, 2003-2006.

Chair, Search Committee for Faculty in Neural Stem Cell Biology,
University of Minnesota Medical School, 2003

Member, Dean's Task Force on Allied Health, University of Minnesota Medical School, 2003

Chair, Nominations Subcommittee, Faculty Advisory Committee to the Dean,
University of Minnesota Medical School, 2002

Chair, Diversity Subcommittee, Faculty Advisory Committee to the Dean,
University of Minnesota Medical School, 2002

Member, Nominations Committee, University of Minnesota Medical School, 2001

Member, Neuroscience Strategic Planning Committee, University of Minnesota Medical School, 2001

Member, Search Committee, Stem Cell Institute, University of Minnesota, 2000, 2002

Member, Steering Committee, Center for Molecular and Cell Therapy,
University of Minnesota Medical School, 2000-2001

Member, Medical School Faculty Advisory Committee, University of Minnesota, 2000-2003.

Senator Elect, University Senate, University of Minnesota, 2000-2003.

Member, Steering Committee, Graduate Program in Neuroscience,
University of Minnesota Medical School, 1999-2002

Reviewer, Undergraduate Research Opportunity Program (UROP) Grants, University of Minnesota
Medical School, 1998-present.

Member, Search Committee for Head of the Department of Psychiatry, University of Minnesota Medical School, 1998-1999.

Member, Medical School Space Allocation Committee, University of Minnesota, 1997- 2000.

Member, Center for Molecular and Cell Therapy Task Force, Academic Health Center,
University of Minnesota, 1997-99.

Member, Animal Advisory Committee, University of Minnesota Medical School, 1997-2000.

Interviewer, Medical Admissions Committee, University of Minnesota Medical School,
1990-95.

M.D./Ph.D. Combined Degree Program, University of Minnesota Medical School,
1991-present.

Full Member, Graduate Faculty, University of Minnesota Graduate School, 1990-present.

Executive Faculty, University of Minnesota Medical School, 1990-present.

Biomedical Research Grant Review Committee, Indiana University School of Medicine, 1989-90.

M.D./Ph.D. Combined Degree Committee, Indiana University School of Medicine, 1989-90.

Laboratory Animal Use Review Committee, Indiana University School of Medicine, Indianapolis, IN, 1989-90.

Animal Care Committee, Indiana University - Purdue University Indianapolis, IN, 1989-1990.

Full Member, Graduate School, Indiana University, Bloomington, IN, 1987-90.

Faculty Member, Indiana University-Purdue University at Indianapolis (IUPUI), 1983-90.

Education and Curriculum Topics Committee on the Central Nervous System, Indiana University School of Medicine, Indianapolis, IN 1989-1990.

Organizing Committee, Indiana University School of Medicine, First Annual Scientific Session, Indianapolis, IN, 1989.

Moderator, Indiana University School of Medicine, First Annual Scientific Session, Indianapolis, IN, 1989.

Member, Graduate Fellowship Committee, Indiana University School of Medicine, Indianapolis, IN, 1986-1988.

Faculty Member, Freshmen Medical Student Support Program, Indiana University School of Medicine, Indianapolis, IN, 1984-88.

Medical Cell Science Review Committee, Indiana University, Bloomington, IN, 1988

Member, Search and Screen Committee, Dept. of Pathology, Indiana University School of Medicine, Indianapolis, IN, 1988.

Faculty Member, Honors Council, Indiana University-Purdue University at Indianapolis, 1987-1988.

Associate Member, Graduate School, Indiana University, Bloomington, IN, 1985-1987.

Department/Unit Service

Member, Admissions Committee, Stem Cell Biology Graduate Program, University of Minnesota, 2016-present.

Organizer, Joint Surgery and Neurosurgery Research Day, University of Minnesota, 2019

Member, Research Discovery Committee, Dept. Neurosurgery, University of Minnesota, 2014-18

Neurosurgery Residency Program Coordination, University of Minnesota, 2009

Member, Faculty Status Committee, Graduate Program in Neuroscience, University of Minnesota Medical School, 2005-2008.

Member, Curriculum Committee, Department of Neurosurgery, University of Minnesota Medical School, 2003-present.

Chairman, Neuroscience Graduate Program Seminar Committee, University of Minnesota Medical School, 1999-2003.

Member, Faculty Status Committee, Department of Physiology, University of Minnesota Medical School, 1994-1999.

Chair, Minority Recruitment Committee, Program in Neuroscience, University of Minnesota Medical School, 1994-1996.

Member, Steering Committee, Program in Neuroscience, University of Minnesota Medical School, 1994-1996; 1998-2003.

Admissions Committee, Program in Neuroscience, University of Minnesota Medical School, 1993-1996.

Member, Minority Recruitment Committee, Program in Neuroscience, University of Minnesota Medical School, 1992-1994.

Member, Development Officer Search Committee, Department of Neurosurgery, University of Minnesota Medical School, 1992.

Director, Basic Science Teaching Conference, Department of Neurosurgery, University of Minnesota Medical School, 1996-present.

Co-Director, Basic Science Teaching Conference, Department of Neurosurgery, University of Minnesota Medical School, 1990-1996.

Resident Examination and Evaluation, Department of Neurosurgery, University of Minnesota Medical School, 1990-present.

Resident Admissions, Department of Neurosurgery, University of Minnesota Medical School, 1990-present.

Department Development Committee, Dept. of Physiology and Biophysics, Indiana University School of Medicine, 1989-90.

Coordinator, Public Relations, Dept. of Physiology and Biophysics, Indiana University School of Medicine, 1989-90.

Director, Graduate Program in Physiology and Biophysics, Indiana University School of Medicine, 1985-1988.

Faculty Member, Promotion and Tenure Committee, Department of Physiology and Biophysics, Indiana University School of Medicine, 1985-1988.

Steering Committee Member, Committee on Microcomputers in Physiology, Department of Physiology and Biophysics, Indiana University School of Medicine, 1984-1987.

Coordinator, Department of Physiology and Biophysics Seminar Series, Indiana University School of Medicine, Fall 1986.

Course Organizer, Physiology and Biophysics F499, Directed Research in Medical Physiology and Biophysics for Undergraduates, Indiana University, 1985.

Community Outreach Activities

Chair, State of Minnesota Spinal Cord and Traumatic Head Injury Research Program, Advisory Committee, 2013-2019

Member, Minnesota Brain Bee Organizing Committee, Minneapolis, MN 2008

Member, Outreach Committee, Graduate Program in Neuroscience, University of Minnesota, 2007

Scientist of the Week, Minnesota Science Museum, Minneapolis, MN, 2002

Brain Awareness Week Outreach, Twin Cities Metro Area, 1998-present.

Ad Hoc Member, Hennepin County Medical Center Grant Review Committee, Minneapolis, 1997-1998.

Science Fair Judge, Minnetonka High School, Minnetonka, MN, 1996

Search Committee Member, Department of Surgery, Division of Neurosurgery, Hennepin County Medical Center, Minneapolis, 1995.

Science Fair Judge, Clear Springs Elementary School, Minnetonka, MN, 1995.

Chairman, Grass Foundation Lecturer Search Committee, Society for Neuroscience, Voyageurs (Minnesota) Chapter, 1992-1993.

Ad Hoc Member, Hennepin County Medical Center Grant Review Committee, Minneapolis, 1992.

Scientific Advisor, Board of Directors, Supporters United for Parkinson's Education and Research (SUPER), Minneapolis, MN, 1992-present.

Member, American Parkinson's Disease Association, Minnesota Chapter, 1991-94.

Grassroots Network Representative, Society for Neuroscience, Indianapolis Chapter, 1989-90.

Member, Executive Committee, Indianapolis Chapter, Society for Neuroscience, 1987-1990.

Local Organizing Committee, Grass Foundation Traveling Scientist Program, Society for Neuroscience, Indianapolis Chapter, 1988, 1990.

President, Society for Neuroscience, Indianapolis Chapter, Indianapolis, Indiana, 1985-1987.

Editor, Neuroscience News, Society for Neuroscience, Indianapolis Chapter, 1985-1987.

Organizer, 4th Regional Meeting, Indianapolis Chapter, Society for Neuroscience, Lilly Corporate Center, Indianapolis, IN, 1987.

Organizer, 3rd Regional Meeting, Indianapolis Chapter, Society for Neuroscience, Lilly Corporate Center, Indianapolis, IN, 1986.

Chairman, Local Organizing Committee, Grass Foundation Traveling Scientist Program, Society for Neuroscience, Indianapolis Chapter, 1985.

Executive Committee Member, Society for Neuroscience, Vermont Chapter, Burlington, Vermont, 1981-1983.

CITATION ANALYSIS
TOP 10 UNIVERSITIES: BIOLOGICAL SCIENCES*
(1987 - 1990)

RANK	INSTITUTION	NUMBER OF PAPERS	TOTAL CITATIONS	CITATIONS PER PAPER
1	Rockefeller	1,646	13,094	7.96
2	Caltech	837	6,450	7.71
3	MIT	2,025	14,246	7.04
4	Stanford	3,962	24,539	6.19
5	Princeton	612	3,713	6.07
6	UC Berkeley	2,353	14,025	5.96
7	Harvard	10,610	59,557	5.61
8	UC San Francisco	5,908	29,838	5.05
9	UC San Diego	3,824	17,566	4.59
10	U. Oregon	378	1,731	4.58
--	***Walter C. Low****	***207*****	***15,967***	***77.14***

*Source: *The Scientist*, March 8, 1993

**Peer reviewed publications and citations from 1980 – 2017

****The **h-index** of 54 for the scientific impact of these publications is ranked above the 95th percentile among faculty in academic neurosurgery departments in the United States*.