Renée D. Theiss, Ph.D.

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EDUCATION

Northwestern University, Evanston, IL
Ph.D. in Neuroscience 2005
Dissertation title: "Monoaminergic Modulation of Physiological Responsiveness, Input-Output Functioning and Persistent Inward Currents in Ventral Horn Interneurons"
Thesis advisor: Dr. CJ Heckman, Professor
Departments of Physiology and Physical Medicine & Rehabilitation,
Feinberg School of Medicine, Northwestern University, Chicago, IL

Ithaca College, Ithaca, NY
B.S. in Exercise Science, *magna cum laude* 1996
Area of Concentration: Pre-medical sciences Minor: Mathematics
Honors: Professional Excellence Award in Exercise and Sport Sciences, Foundation Award in Mathematics, Phi Kappa Phi National Honor Society, Freshman Award in Mathematics and Computer Science, Oracle Society (Freshman Honor society), Ithaca College Scholarship (4yr)

PROFESSIONAL AND RESEARCH EXPERIENCE

Governors State University, College of Health and Human Services, University Park, IL
Assistant Professor, Departments of Occupational Therapy and Physical Therapy 8/2011 – present

US Department of Veterans Affairs, Hines VA Hospital Affiliate, Illinois
Intergovernmental Personnel Act Research Scientist 2/2012 – 9/2013

Research Project: A Comparison of Two Surgical Procedures that Restore Elbow Extension; specific consultation on upper extremity polysynaptic reflex elicitation and response interpretation in humans with chronic cervical spinal cord injuries, electrophysiological methodology, data analysis, and interpretation of results.

Northwestern University Feinberg School of Medicine, Chicago, IL
Research Faculty/Adjunct, Department of Physical Medicine and Rehabilitation 7/2009 – present

Current Research: Investigating the cellular mechanisms of spasticity and increased reflexes in humans with chronic spinal cord injury using gross electrophysiological (e.g. surface EMG, single motor unit recordings), biomechanical, and pharmacological methods.

Rehabilitation Institute of Chicago, Chicago, IL
Research Scientist I, Sensory Motor Performance Program 7/2009 – 8/2012
Research Associate and Postdoctoral Fellowship, Sensory Motor Performance Program 9/2005 – 6/2009
Advisors: William Z. Rymer, M.D., Ph.D. and Brian D. Schmit, Ph.D.

Current Research: Investigating the cellular mechanisms of spasticity and increased reflexes in humans with chronic spinal cord injury using gross electrophysiological (e.g. surface EMG, single motor unit recordings), biomechanical, and pharmacological methods.

Northwestern University, Chicago/Evanston, IL
Post-Doctoral Fellow, Department of Physiology, Advisor: C.J. Heckman, Ph.D. 6/2005 – 9/2005
Graduate Student, Institute for Neuroscience, Advisor: C.J. Heckman, Ph.D. 3/1998 – 6/2005

Research: Investigated intrinsic electrophysiological properties, neuromodulation, and persistent currents in lumbar spinal ventral horn interneurons both *in vivo* (extra-cellular recordings during passive hind-limb muscle stretch) and *in vitro* (intracellular sharp electrode and patch-clamp techniques in a novel, viable lumbar cord slice preparation).

University Scholar in the Graduate School 9/1997 – 9/1998

TEACHING EXPERIENCE

College of Health and Human Services, Governors State University, University Park, IL
Professor/Instructor, Gross Anatomy I (2 sections) Summer 2012, 2013, 2014
First year Doctorate in Physical Therapy course (PHYT601-01, PHYT6601-01)
First year Masters in Occupational Therapy course (BIOL701-01, OCCT6601-01)
Instructor for 6 week Summer Intensive Gross Anatomy I, Lecture and Discussion Course
Lectured, designed and implemented in-class activities/case study discussion/review sessions, provided online course materials including study guides and discussion boards (Blackboard), designed online assessments (Blackboard), graded quizzes/homework/exams, provided extensive after class and online assistance/tutoring (60+ students)

Professor/Instructor, Gross Anatomy II (2 sections) Summer 2012, 2013, 2014
First year Doctorate in Physical Therapy course (PHYT611-01, PHYT6611-01)
First year Masters in Occupational Therapy course (BIOL711-01, OCCT6611-01)
Instructor for 6 week Summer Intensive Gross Anatomy II, Lecture and Discussion Course
Lectured, designed and implemented in-class activities/case study discussion/review sessions, provided online course materials including study guides and discussion boards (Blackboard), designed online assessments (Blackboard), graded quizzes/homework/exams, provided extensive after class and online assistance/tutoring (50+ students)

Professor/Instructor, Gross Anatomy I Laboratory (4 sections) Summer 2012
First year Doctorate in Physical Therapy course (PHYT602-01, -02)
First year Masters in Occupational Therapy course (BIOL702-01, -02)
Instructor for 5.5 week Summer Intensive Gross Anatomy II Laboratory Dissection Course (concurrent with associated Lecture course)
Guided laboratory dissection of human cadaver specimens, supervised lab teaching assistants, provided online course materials including study guides/dissection videos/discussion boards (Blackboard), designed and graded practical exams, provided extensive after class and online assistance/tutoring (60+ students)

Professor/co-Instructor, Gross Anatomy I Laboratory (4 sections) Summer 2013, 2014
First year Doctorate in Physical Therapy course (PHYT6602-01,-02)
First year Masters in Occupational Therapy course (OCCT6602-01, -02)
Co-Instructor for 6 week Summer Intensive Gross Anatomy II Laboratory Dissection Course (concurrent with associated Lecture course)
Co-Guided laboratory dissection of human cadaver specimens, co-supervised lab teaching assistants, provided online course materials including study guides/dissection videos/discussion boards (Blackboard), co-designed and graded practical exams (60+ students)

Professor/Instructor, Gross Anatomy II Laboratory (4 sections) Summer 2012
First year Doctorate in Physical Therapy course (PHYT612-01, -02)
First year Masters in Occupational Therapy course (BIOL712-01, -02)
Instructor for 5.5 week Summer Intensive Gross Anatomy II Laboratory Dissection Course (concurrent with associated Lecture course)
Guided laboratory dissection of human cadaver specimens, supervised lab teaching assistants, provided online course materials including study guides/dissection videos/discussion boards (Blackboard), designed and graded practical exams, provided extensive after class and online assistance/tutoring (50+ students)

Professor/co-Instructor, Gross Anatomy II Laboratory (4 sections) Summer 2013, 2014
First year Doctorate in Physical Therapy course (PHYT6612-01,-02)
First year Masters in Occupational Therapy course (OCCT6612-01,-02)
Co-Instructor for 6 week Summer Intensive Gross Anatomy II Laboratory Dissection Course (concurrent with associated Lecture course)
Co-Guided laboratory dissection of human cadaver specimens, co-supervised lab teaching assistants, provided online course materials including study guides/dissection videos/discussion boards (Blackboard), co-designed and graded practical exams (50+ students)

Professor/Instructor, Neuroscience (Lecture with Dissection Labs, 2 sections) Fall 2011, 2012, 2013
First year Doctorate in Physical Therapy course (PHYT626, PHYT6626)
First year Masters in Occupational Therapy course (BIOL726, OCCT6626)
Instructor for semester-long Neuroscience Course: included Lecture components in Neuroanatomy and Neurophysiology and Laboratory components with dissection of human brain specimens. Lectured, led laboratories, provided online course materials and designed online assessments (Blackboard/WebCT), graded quizzes/homework/exams/group projects, designed and graded practical exams, provided after class and online assistance/tutoring (50+ students)

Guest Lecturer, Neuroscience for the Study of Communicative Disorders Fall 2011, 2012, Spring 2013
Upper level Bachelors/Masters Communication Disorders/Speech-Language Pathology course (CDIS4300)
Facilitate two Neuroanatomy Laboratories per semester with human brain specimens, guide active student identification of key human brain structures through small-group (4-5 students per brain) hands-on exploration, facilitate independent and active learning and examination appropriate for student level (25-35 students)

Adjunct Faculty, Neuroscience (Lecture with Dissection Labs) 5/2011 – 7/2011
First year Masters in Occupational Therapy course (BIOL726)
Instructor for summer session Neuroscience Course: included Lecture components in Neuroanatomy and Neurophysiology and Laboratory components with dissection of human brain specimens. Lectured, led laboratories, provided online course materials and designed online assessments (Blackboard/WebCT), graded quizzes/homework/exams/group projects, designed and graded practical exams, provided after class and online assistance/tutoring (20+ students)

Adjunct Faculty, Neuroscience (Lecture with Dissection Labs) 8/2010 – 12/2010
First year Doctorate in Physical Therapy course (PHYT626)
Instructor for semester-long Neuroscience Course: included Lecture components in Neuroanatomy and Neurophysiology and Laboratory components with dissection of human brain specimens. Lectured, led laboratories, provided online course materials and designed online assessments (Blackboard/WebCT), graded quizzes/homework/exams/group projects, designed and graded practical exams, provided after class and online assistance/tutoring (20+ students)

Northwestern University Feinberg School of Medicine, Chicago, IL
Facilitator/Tutor, Neuroscience Problem Based Learning Unit (PBL104) 4/2011-5/2011
First year medical school course (medical students)
Facilitated integration of neuroscience knowledge through case-studies in a problem-based learning format with a small group (6-8) first year medical students

Teaching Assistant, Laboratory in Neuroanatomy 9/2000 – 12/2000
First year medical school course (medical students)
Guiding six groups of medical students (total 24 students out of 100+ students) through the human neuroanatomy laboratory and dissection and assisted with design and grading of practical exams

New Millennium Studies Department, Columbia College, Chicago, IL
Guest Lecturer 4/2006
First year seminar course (fine arts students)
Presented and facilitated discussion about advances in science and medicine in the context of the course review of Mary Shelley's *Frankenstein*

Northwestern University, Evanston, IL
Teaching Assistant, Developmental Neurobiology 3/1999 – 6/1999
Undergraduate upper level Neurobiology course (majors and advanced non-majors)
Facilitated class discussions of original research articles, provided course materials, graded exams, tutored students outside of class

Teaching Assistant, Neural Systems and Behavior 9/1998 – 12/1998
Graduate level Neuroscience course (graduate and advanced undergraduate majors)
Obtained and provided photocopied course materials to students, scheduled and set-up multimedia presentation devices for instructors, wrote questions for and graded take-home essay exams, tutored students outside of class

ACADEMIC AND PROFESSIONAL AWARDS

Governors State University, University Research Grant AY2014-2015

Governors State University, College of Health and Human Service
Course Release Award for Research and Scholarship
Approved by committee (score 50/50), declined by departmental need AY2013-2014

Governors State University, College of Health and Human Service
Course Release Award for Research and Scholarship

Approved by committee (score 31/32), declined by departmental need AY2012-2013

ACADEMIC SERVICE AND COMMUNITY OUTREACH

Governors State University:

- Institutional Animal Care and Use Committee Member 2014 - present
- Office for Sponsored Projects and Research Grants Planning Committee Member 2014 - present
- Institutional Review Board Member 2012 - present
- Department of Occupational Therapy, Faculty Search Committee 2012 - 2014
- Department of Physical Therapy 2012, 2013
  - Doctorate Program Student Capstone Project second reader
- Department of Communication Disorders 2011 - present
  - Neuroscience Guest Lecturer/Laboratory facilitator

Faculty of 1000, Associate Faculty Member Evaluation Contributor 2010 - 2013

Curley K-8 School, Jamaica Plain, MA 1/2010

Guest Neuroscientist, 6th grade Science, English Language Learners

Association for Women in Science (Chicago Chapter), VP Programs 2008-2010

Science Chicago - Advisory Committee on Public Programming, Member 2008-2010

Scitizen.com, Contributor 2007

Northwestern University Institute for Neuroscience (NUIN):

- Student Travel Award Planning Committee 2001
- Student Steering Committee 1999-2002
- Chicago Graduate Student Organization, Core Founding Group, Co-Moderator 1999-2001

PUBLICATIONS (*Refereed Journals*)

Theiss, RD, Hornby, TG, Rymer, WZ, and Schmidt, BD (2011) Riluzole decreases flexion withdrawal reflex but not voluntary ankle torque in human chronic spinal cord injury. Journal of Neurophysiology 105:2781-2790.

Heckman, C.J., Mottram, C., Quinlan, K., **Theiss, R.**, and Schuster, J. (2009). Motoneuron excitability: the importance of neuromodulatory inputs. Clin Neurophysiol *120*, 2040-2054.

Theiss RD, Kuo JJ & Heckman CJ (2007) Persistent inward currents in rat ventral horn neurones. Journal of Physiology 580, 507-522.

Research Recognition:

Commentary on publication in: Rose PK (2007) Persistence has its own reward: repetitive firing of action potentials in neurons. Journal of Physiology 580, 357.

Press coverage on research: "Information Processing In The Central Nervous System: The Signaling System Controlling Movement" *ScienceDaily (Apr. 16, 2007)*

Theiss RD, Heckman CJ (2005) Systematic variation in effects of serotonin and norepinephrine on repetitive firing properties of ventral horn neurons. Neuroscience 134:803-815.

Chen D, **Theiss RD**, Ebersole K, Miller JF, Rymer WZ and Heckman CJ (2001) Spinal Interneurons That Receive Input From Muscle Afferents Are Differentially Modulated by Dorsolateral Descending Systems. Journal of Neurophysiology 85:1005-1008.

INVITED TALKS AND PRESENTATIONS

Masters in Occupational Therapy Program Research Symposium 2 3/13/2013
in conjunction with Research in Occupational Therapy course, Governors State University
(Course director: Dr. Divya Sood)
"Neural mechanisms of hyperreflexia in human spinal cord injury"

Continuing Education in Physical Therapy 11/2/2011
Hosted by The Department of Physical Therapy, Governors State University
Continuing Education Course: "Functional Neuroanatomy and Neurological Interventions for Physical Therapy, Part I"

Sensory Motor Performance Program, Rehabilitation Institute of Chicago, Chicago, IL 05/2011
"Hyperexcitable reflexes in chronic, incomplete spinal cord injury: Systematic quantification of key features and contributions of intrinsic neuronal excitability"

Mechanisms of Plasticity and Disease in Motoneurons Conference, Seattle, WA 06/2008
"Pharmacological targeting of intrinsic spinal neuron excitability in human chronic spinal cord injury"

Second Annual International Symposium on Active Integration in Motoneurons, Chicago, IL 05/2006
"PICs and Firing Patterns in Spinal Cord Interneurons"

Sensory Motor Performance Program, Rehabilitation Institute of Chicago, Chicago, IL 10/2002
"Effects of Monoamines on Input-Output Functioning of Spinal Neurons"

Alberta Motor Control Conference, Jasper, Alberta, Canada 9/2001
"The effects of serotonin and norepinephrine on interneurons within the intermediate zone of lumbar spinal cord slices from neonatal rats"

SELECT ABSTRACTS AND PRESENTATIONS

Theiss RD, Cerdenia JC (2013) Effects of therapeutic muscle stretching intervention on upper extremity hyperexcitable deep tendon reflexes in human chronic spinal cord injury. 2013 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2013. Online.

Theiss RD, Cerdenia JC, Rafeeq, L (2011) Do persistent inward currents contribute to monosynaptic reflex excitability in neurologically intact and spinal cord injured humans? Program No. 808.07. 2011 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.

Theiss RD, Schieber JR, Cerdenia JC, Chardon MK, Rymer WZ (2010) Contribution of persistent inward currents to hyperexcitable deep tendon reflexes in human chronic spinal cord injury. Program No. 684.1. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.

Suresh NL, Morris KE, **Theiss RD**, Chardon MK, Rymer WZ (2010) Monoamine contributions to the stretch reflex response threshold in hemispheric stroke and control subjects. Program No. 181.17. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.

Theiss RD, Schieber JR, Cerdenia JC, Suresh NL, Chardon MK, Rymer WZ (2010). Do persistent inward currents contribute to hyperexcitable mono-synaptic reflexes in individuals with chronic, incomplete spinal cord injury? *Towards Translational Research in Motoneurons (Motoneuron Society Meeting 2010),* Paris, France.

Theiss RD, Rymer WZ, Schmit BD (2009) Differential effects of riluzole and isradipine on hip torque and muscle activity in chronic spinal cord injury. Program No. 659.16. 2009 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2009. Online.

Theiss RD, Rymer WZ, Schmit BD (2009) The Effects of Riluzole and Isradipine on Passive and Active Hip Movement in Human Chronic Spinal Cord Injury. *Cellular and Network Functions in the Spinal Cord Symposium2009*, Madison, WI.

Theiss RD, Hornby TG, Schmit BD, Rymer WZ (2008) Effects of riluzole and isradipine on reflex excitability and strength in human chronic spinal cord injury. Program No. 573.17. 2008 Neuroscience Meeting. Washington, DC: Society for Neuroscience Abstracts, 2008.

Hornby TG, Schmit BD, **Theiss RD**. (2006) Serotonergic modulation of motor function in human spinal cord injury. Program No. 146.20. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.

Theiss RD, Kuo JJ, Heckman CJ (2005) The role of persistent sodium currents in firing patterns of spinal interneurons. Program No. 863.11. Society for Neuroscience Abstracts, Washington, DC USA. In: *2005 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2005. Online.

Theiss RD, Kuo JJ, Heckman CJ (2004) Persistent inward currents in ventral horn interneurons. Program No. 656.9. Society for Neuroscience Abstracts, San Diego, CA USA. In: *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004. Online.

Hyngstrom AS, Kuo JJ, Johnson MD, **Theiss RD**, Heckman CJ (2004) Linear summation of excitatory and inhibitory synaptic inputs by motoneurons with and without strongly active dendritic conductances. Program No. 875.10. Society for Neuroscience Abstracts, San Diego, CA USA. In: *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004. Online.

Theiss RD, Heckman CJ (2002) Excitatory effects of serotonin and norepinephrine on rat lumbro-sacral ventral horn neurons *in vitro*. Program No. 363.2. Society for Neuroscience Abstracts. Orlando, FL USA. In: *2002 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2002. Online.

Heckman CJ, Johnson MD, **Theiss RD**. (2002) Movements in 3 dimensions: mapping synaptic inputs onto spinal interneurons. Program No. 166.1. Society for Neuroscience Abstracts, Orlando, FL

USA. In: *2002 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2002. Online.

Theiss RD, Heckman CJ (2001) Electrophysiological properties of intermediate zone lumbar spinal interneurons *in vitro*. Program No. 297.16. In: Society for Neuroscience Abstracts, San Diego, CA USA.

Heckman CJ, **Theiss RD**, Johnson MD, Lee RH (2000) Active dendrites markedly enhance input-output gain in motoneurons. Program No. 257.12. In: Society for Neuroscience Abstracts, New Orleans, LA USA

Heckman CJ, **Theiss RD**, Lee RH (1999) Dendritic amplification of steady state synaptic input in motoneurons *in vivo*. Program No. 25:1395. In: Society for Neuroscience Abstracts, Miami Beach, FL USA

FUNDING AND RESEARCH SUPPORT

Governors State University, University Research Grant AY2014-2015
"Neurological pathways in stroke survivors before and after a physical intervention program"
Awardee: Renee D. Theiss, PhD
Role: Principal Investigator

"A Comparison of Two Surgical Procedures that Restore Elbow Extension" 2012-2013
Veterans Administration Intergovernmental Personnel Act (2/12/2012-9/30/2013)
Funded research proposal #B7515R
Principal Investigator/Program Director: Dr. Wendy Murray, PhD
Role: Co-Investigator

"Impact of persistent conductances on motor unit firing in SCI" 2009-2012
Funded by The Craig H. Neilsen Foundation Research Grant, Award ID # 124932 $247,081
Principal Investigator: Renée D. Theiss, PhD
Role: Principal Investigator

"Cellular Mechanisms of Hyperexcitability in Human Spinal Cord Injury" 2007-2009
Funded by The Craig H. Neilsen Foundation Postdoctoral Fellowship, Award ID #2780 $120,000
Principal Investigator: Renée D. Theiss, PhD
Role: Principal Investigator

PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS

American Association for the Advancement of Science (AAAS)
American Association of Anatomists (AAA)
American Physiological Society (APS)
Association for Women in Science (AWIS)
Society for Neuroscience (SFN)