CURRICULUM VITAE

PETER J. MEBERG

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Educational Background

1982 B.S. in Biology with Honors, minor in Mathematics, University of North Dakota
1990 M.S. in Psychobiology, Northwestern University, Evanston, IL
1993 Ph.D. in Psychobiology, Northwestern University, Evanston

Professional Experience

1983 Lab Instructor in Biology, Anchorage Community College, Anchorage, AK
1987-93 Graduate fellow/Research Assistant, Dept. of Psychology, Northwestern University
1991-92 Instructor (summer session), University College, Northwestern University
1993-95 Postdoctoral Fellow, Anatomy and Neurobiology, Colorado State University
1995-98 Postdoctoral Fellow, Biochemistry and Molecular Biology, Colorado State University
1998-2004 Assistant Professor of Biology, University of North Dakota, Grand Forks, ND
2004- Associate Professor of Biology, University of North Dakota, Grand Forks, ND

Awards and Honors

1987-88 President's Fellowship, Northwestern University
1988-89 University Fellowship, Northwestern University
1994-97 NRSA Post-doctoral Fellowships, NINDS
2000 Basil O'Connor Starter Scholar Research Award, March of Dimes
2001 CAREER Award, National Science Foundation

Research Grants

1994-96 National Institutes of Health, NINDS (1 F32 NS09583): "Calcium-binding proteins and calcium buffering in neurites"

1996-97 National Institutes of Health, NINDS (1 F32 NS10127): "The role and regulation of ADF in neuronal outgrowth"

1997-98 American Paralysis Association, "Dependence of neurite outgrowth and regeneration on ADF activity." ($50,000)

1999 North Dakota EPSCoR/NIH IDeA Seed Grant ($5000)

2000-01 ND EPSCoR Infrastructure Improvement Program – Seed Grant: "Effects of LIMK-1 mutants on ADF phosphorylation and neurite outgrowth" ($18,000)

2000-02 Basil O'Connor Starter Scholar Research Award, March of Dimes, "ADF regulation of synapse formation and excitotoxicity" ($100,000)

2002 North Dakota EPSCoR: "Optical Microscopy Resource," (Co-P.I., Sally Pyle, P.I.; $50,000; 4/22/02 – 6/28/02)

2003 North Dakota EPSCoR Infrastructure Improvement Grant: "Olympus Fluoview 300 Confocal Laser Scanning Microscope" (Co-P.I., Jeff Carmichael, P.I.; $90,000)

2001-04 National Institutes of Health, NINDS (1 R15 NS40760-01): "Alterations in ADF/cofilin activity related to seizures" ($141,300; 7/1/01 – 6/30/04)

2001-06 CAREER award, National Science Foundation (IBN-0093359): "CAREER: Regulation of growth cone dynamics by actin depolymerizing factor" ($525,347, 4/1/01 – 3/31/07)

2006 Olympus IX70 upgrade, ND EPSCoR Equipment award, $2500, 6/26/06-12/15/06 (Meberg and Darland, Co-PIs).

Professional Memberships

American Association for Advancement of Sciences, 1991-
Society for Neuroscience, 1992-
American Society for Cell Biology, 1996-

Peer-Reviewed Publications

Meberg, P. J. and Routtenberg, A. (1991) Selective expression of protein F1/GAP-43 mRNA in pyramidal but not granule cells of the hippocampus. *Neuroscience* 45:721-733.

Meberg, P. J., Gall, C. M., and Routtenberg, A. (1993) Induction of F1/GAP-43 gene expression in hippocampal granule cells after seizures. *Mol. Brain Res*. 17:295-299.

Meberg, P. J., Barnes, C. A., McNaughton, B. L. and Routtenberg, A. (1993) Protein kinase C and F1/GAP-43 gene expression in hippocampus inversely related to synaptic enhancement (LTE/LTP) lasting three days. *Proc. Natl. Acad. Sci.* USA 90:12050-12054.

Meberg, P. J., Valcourt, E. G. and Routtenberg, A. (1995) Protein F1 (GAP-43) and PKC gene expression patterns in hippocampus are altered 1-2 hours after LTP. *Mol. Brain Res.* 341:343-346.

Meberg, P. J., Jarrard, L. E. and Routtenberg, A. (1996) Is the lack of protein F1/GAP-43 mRNA in granule cells target-dependent? *Brain Res*. 706:217-226.

Meberg, P., McCabe, B. J. and Routtenberg, A. (1996) MARCKS and protein F1/GAP-43 mRNA in chick brain: effects of imprinting. *Mol. Brain Res*. 35:149-156.

Meberg, P. J., Kinney, W. R., Valcourt, E. G and Routtenberg, A. (1996) Gene expression of the transcription factor NF-κB in brain: regulation by synaptic activity. *Mol. Brain Res*. 38:179-190.

Meberg, P. J., Ono, S., Minamide, L.S., Takahashi, M. and Bamburg, J. R. (1998) Actin depolymerizing factor and cofilin phosphorylation dynamics: response to signals that regulate neurite extension. *Cell Motil. Cytoskel.* 39:172-190.

Meberg, P. J., Kossel, A. H., Williams, C. V. and Kater, S. B. (1999) Calcium-dependent alterations in dendritic architecture of hippocampal pyramidal neurons. *Neuroreport* 10:639-644.

Meberg, P.J. and Bamburg, J.R. (2000) Increase in neurite outgrowth mediated by overexpression of actin depolymerizing factor. *J. Neurosci.* 20:2459-2469.

Minamide, L. S., Streigl, A. M., Boyle, J. A., Meberg, P. J. and Bamburg, J. R. (2000) Neurodegenerative stimuli induce persistent ADF/cofilin-actin rods that disrupt distal neurite function. *Nature Cell Biol.* 2:628-636.

Ashworth, S.L., Southgate, E.L., Sandoval, R.M., Meberg, P.J., Bamburg, J.R. and Molitoris, B.A. (2003) ADF/cofilin mediates actin cytoskeletal alterations in LLC-CPK cells during ATP depletion. *Am. J. Physiol.: Renal Physiol.* 284:F852-F862.

Reviews, Book Chapters, Commentaries

Routtenberg, A. and Meberg, P. J. (1998) A novel signaling system from the synapse to the nucleus. *Trends Neurosci.* 21:106. (letter/commentary)

Kuhn, T.B., Meberg, P.J., Brown, M.D., Bernstein, B.W., Minamide, L.S., Jensen, J.R, Okada, K., Soda, E.A. and Bamburg, J.R. (2000) Regulating actin dynamics in neuronal growth cones by ADF/cofilin and Rho family GTPases. *J. Neurobiol.* 44:126-144. (invited review)

Meberg, P. J. (2000) Signal-regulated ADF/cofilin activity and growth cone motility. *Mol. Neurobiol.* 21:97-107. (invited review)

Meberg, P.J. and Miller, M. W. (2003) Culturing Hippocampal and Cortical Neurons. In "Neurons: Methods and Applications for the Cell Biologist" (P. J. Hollenbeck and J. R. Bamburg, eds.); *Methods in Cell Biology* vol. 71, pp. 111-127. Academic Press, San Diego.

Published Abstracts/Meeting Presentations

Meberg, P., Sheu, F.-S., Xiang, X., Huang, Y. Y., Colley, P., Kapella, B., Valcourt, E. and Routtenberg, A. (1990) Synaptic plasticity: molecular and cellular approaches to the study of protein kinase C (PKC) regulation of F1/GAP-43 phosphorylation. Society for Neuroscience Annual Meeting, St. Louis, MO. *Soc. Neurosci. Abstr.* 16:658.

Meberg, P. J., McCabe, B. J., Horn, G., Rosenfeld, J. P. and Routtenberg, A. (1991) Differential mRNA distribution in chick brain of two protein kinase C (PKC) substrates, F1/GAP-43 and MARCKS. Society for Neuroscience Annual Meeting, New Orleans, LA. *Soc. Neurosci. Abstr.* 17:140.

Meberg, P. J. et al. (1991) "Synaptic plasticity: molecular and cellular approaches" and "Protein kinase C and protein F1/GAP-43: a molecular mnemonic module in avian learning." Invited poster presentations at DuPont-sponsored session (Molecular Aspects of Neuronal Plasticity"), Society for Neuroscience Annual Meeting, New Orleans, LA.

Meberg, P. J. and Routtenberg, A. (1992) The distribution of PKC subtypes in the hippocampus. Midwest Hippocampal Society Meeting, Northwestern University, Evanston, IL.

Routtenberg, A., Meberg, P. J. and Gall, C. M. (1992) Induction by seizures of F1/GAP-43 gene expression in hippocampal granule cells. Society for Neuroscience Annual Meeting, Anaheim, CA. *Soc. Neurosci. Abstr*. 18:594.

Meberg, P. J., Barnes, C. A., McNaughton, B. L., Routtenberg, A. (1992) Altered structural gene expression after LTE/LTP of the same proteins (PKC and F1/GAP-43) which have phosphorylation activity altered by LTE/LTP. Society for Neuroscience Annual Meeting, Anaheim, CA. *Soc. Neurosci. Abstr*. 18:637.

Meberg, P. J., Kinney, W. R., Valcourt, E. G. and Routtenberg, A. (1993) The transcription factor NF-kappa-B is expressed in brain: DNA-binding and increased gene expression after LTP. Society for Neuroscience Annual Meeting, Washington, DC. *Soc. Neurosci. Abstr.* 19:699.

McNamara, R. K., Meberg, P. J., and Routtenberg, A. (1993) Kainic acid elicits a transient induction of F1/GAP-43 mRNA in dentate gyrus granule cells: role of seizures and opioids. Society for Neuroscience Annual Meeting, Washington, DC. *Soc. Neurosci. Abstr.* 19:805.

Williams, C. V., Meberg, P. J., and Kater, S. B. (1994) Intercellular associations stabilize morphological plasticity and calcium responsiveness in hippocampal neurons. Society for Neuroscience Annual Meeting, Miami Beach, FL. *Soc. Neurosci. Abstr.* 20:1082.

Meberg, P. J. and Bamburg, J. R. (1996) Activation of actin depolymerizing factor (ADF) by calcium-dependent and -independent pathways in neurons. American Society for Cell Biology Annual Meeting, San Francisco, CA. *Mol. Biol. Cell Suppl.* 7:203a.

Meberg, P. J. and Bamburg, J. R. (1996) ADF as a target of extracellular signals that influence neuronal growth. Rocky Mountain Neuroscience Group meeting, Denver, CO.

Meberg, P. J., Wilcox, C. L. and Bamburg, J. R. (1997) Adenoviral-mediated introduction of actin depolymerizing factor (ADF) into neurons to determine ADF function in vivo. Society for Neuroscience Annual Meeting, New Orleans, LA. *Soc. Neurosci. Abstr.* 23:604.

Molitoris, B. A., Hosford, M., Sandavol, R., Minamide, L., Meberg, P. and Bamburg, J. R. (1998) ADF mediates microvillar actin disruption during ischemia in renal proximal tubule cells. Special subgroup session (Regulation Of Actin Dynamics By ADF/Cofilins In Vitro & In Vivo) at American Society for Cell Biology annual meeting, San Francisco, CA.

Bamburg, J.R., Minamide, L.S., Boyle, J.A., Meberg, P.J., Painter, W.B. and Striegl, A.M. (1998) Formation of Hirano-like(ADF/cofilin-actin) inclusion bodies in axons and dendrites of cultured neurons: irreversibility depends on oxidative stress. *Muscle and Nerve* 7:S56.

Wees, E. A., McNamara, R. K., Meberg, P. J., Kuhn, T. B. and Lenox, R. H. (1998) The PKC substrate MARCKS is enriched in neuronal growth cones and developmentally regulated in the rat hippocampus. Society for Neuroscience Annual Meeting, Los Angeles, CA. *Soc. Neurosci. Abstr.* 24:537.

Meberg, P. J. and Bamburg, J. R. (1998) Neurite outgrowth is increased by overexpression of actin depolymerizing factor. *Mol. Biol. Cell Suppl.*, 9:16a. American Society for Cell Biology Annual Meeting, San Francisco, CA.

Ashworth, S.L., Meberg, P.J., Bamburg, J.R. and Molitoris, B.A. (1999) ADF mediates microvilli disruption during ATP depletion. *Mol. Biol. Cell Suppl.* 10:157a. American Society for Cell Biology Annual Meeting, San Francisco, CA

Meberg, P. (2000) Synapse formation is accompanied by a decrease in active forms of actin depolymerizing factor. Society for Neuroscience Annual Meeting, New Orleans, LA. *Soc. Neurosci. Abstr*. 26:288.

M.W. Miller and P.J. Meberg (2002) Localization of actin depolymerizing factor (ADF)/cofilin at dendritic spines. Program No. 153.1. 2002 *Abstract Viewer/Itinerary Planner.* Washington, DC: Society for Neuroscience. Online. Society for Neuroscience Annual Meeting, Orlando, Fl.

Miller, M.W., Schmidt, S.D., Carr, P.A. and P.J. Meberg (2003) Activity-dependent Changes in Actin Depolymerizing Factor (ADF) and cofilin phosphorylation," Program No. 52.11. 2003 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience. Society for Neuroscience Annual Meeting, New Orleans, LA.

Meberg, P.J., Miller, M.W., Stegman, B.M. and Schmidt, S.D. (2004) Signal pathways regulating actin depolymerizing factor (ADF) and cofilin phosphorylation. Program No. 633.14 2004 Abstract Viewer/Itinerary Planner. Washington, D.C: Society for Neuroscience. Society for Neuroscience Annual Meeting, San Diego, CA.

Meberg, P.J., Mescher, C.A. and Miyagi, M. (2006) Changes in protein levels and phosphorylation in rat brain after seizures. Program No. 473.20 2006 Abstract Viewer/Itinerary Planner. Washington, D.C: Society for Neuroscience. Society for Neuroscience Annual Convention, Atlanta, GA.

Other seminars/invited talks

1998 Invited seminar, Department of Anatomy and Cell Biology, University of North Dakota Medical School, Grand Forks, ND: "Regulation of actin dynamics and neurite growth by actin depolymerizing factor"

2002 Invited participation on panel, 35th Annual Winter Conference on Brain Research, Snowmass Village, CO (1/28/02): "Downstream Effectors of Rho Family GTPases: ADF/cofilin & LIM Kinases" (Panel title: "Rho GTPases in Neuronal Development and Plasticity")

2003 Invited seminar, Department of Anatomy and Cell Biology, University of North Dakota School of Medicine (9/29/03): "Effects of Synaptic Activity on ADF/Cofilin and the Actin Cytoskeleton."

2004 Invited seminar, Department of Biochemistry and Molecular Biology, University of North Dakota School of Medicine (3/4/04): "Actin and ADF/cofilin modifications by seizures."

2004 Invited seminar (after request for facility tour as part of NDSTaR participation), NASA Ames Research Center, Moffett Field, CA (7/16/04) "Regulation and function of actin depolymerizing factor/cofilin in neurons."

Regional Research Presentations by Students

Wilhelmi, B. G. and Meberg, P. J. (2001) Isolation and subcloning of LIM kinase cDNAs for transfection of neurons. 9th annual ND EPSCoR research poster session, North Dakota State University, Fargo, ND.

Thibert, K. J. and Meberg, P. J. Antisense inhibition of actin depolymerizing factor in primary cortical cultures. (2001) 9th annual ND EPSCoR research poster session, North Dakota State University, Fargo, ND.

Schmidt, S., Miller, M. and Meberg, P. J. Localization and phosphorylation of ADF/cofilin in rat hippocampus. (2002) 10th annual ND EPSCoR research poster session, University of North Dakota, Grand Forks, ND.

Thibert, K. J. and Meberg, P. J. Effects of ADF on growth cone motility and morphology. (2002) 10th annual ND EPSCoR research poster session, University of North Dakota, Grand Forks, ND.

Wilhelmi, B.G. and Meberg, P. J. (2002) Subcellular localization and expression of LIM kinase family members. 10th annual ND EPSCoR research poster session, University of North Dakota, Grand Forks, ND.

Wilhelmi, B.G. Subcellular localization and expression of LIM kinase family members. 2003 Scholarly Activities Forum, University of North Dakota, Grand Forks, ND.

Schmidt, S. Changes in activity and localization of ADF/cofilin in response to seizure activity. 2003 Scholarly Activities Forum, University of North Dakota, Grand Forks, ND.

Miller, M.W. and P.J. Meberg. (2003) "Localization of actin depolymerizing factor (ADF)/cofilin at dendritic spines" 2003 Scholarly Activities Forum, University of North Dakota, Grand Forks, ND.

Schmidt, S., Miller, M. and Meberg, P. (2003) "Changes in actin depolymerizing factor (ADF) activity and F-actin distribution in a model of epilepsy" 4th Biennial ND/SD Joint EPSCoR Conference, Fargo, ND

Schmidt, S.D., Miller, M.W., Carr, P.A. and P.J. Meberg (2004) "Activity-dependent changes in actin depolymerizing factor (ADF) and cofilin phosphorylation." 2004 Scholarly Activities Forum, University of North Dakota.

Moritz, A., Steffan, H.M., Stegman, B. and P. J. Meberg (2004) "Signals regulating actin depolymerizing factor (ADF) activity in neuronal growth cones," ND EPSCoR 12th Annual Science, Engineering & Mathematics Poster Session, North Dakota State University, Fargo, ND.

Woell, C.S., Burckhard, A.J. and P. J. Meberg (2004) "Activity-dependent changes in the phosphorylation of actin-binding proteins," ND EPSCoR 12th Annual Science, Engineering & Mathematics Poster Session, North Dakota State University, Fargo, ND.

Burckhard, A. and P. J. Meberg (2004) "Localization and function of actin depolymerizing factor (ADF) in neurons," ND EPSCoR 12th Annual Science, Engineering & Mathematics Poster Session, North Dakota State University, Fargo, ND.

Moritz, A., Upadhaya, R., Steffan, H., Bollimuntha, S., Singh, B. and P.J. Meberg (2006) "TRPC Involvement in Growth Cone Motility in Cortical Neurons." 2006 Scholarly Activities Forum, University of North Dakota.

Mescher, C., Miyagi, M., Han, I., and Meberg, P.J. (2006) "Changes in Protein Phosphorylation in Rat Brain after Seizures: A Proteomic Approach" 2006 Scholarly Activities Forum, University of North Dakota.

Courses Taught

1991	Introductory Biology Laboratory; Anchorage Community College, Anchorage, AK
1991-92	Mind and Brain: Biological Basis of Human Behavior; Northwestern University
1995-97	Techniques in Neuroscience (section of team-taught course); Colorado State University
1998-2002	Biol 111 Concepts of Biology (non-majors course); University of North Dakota
2002-2003	Biol 503 Graduate Seminar: Neuronal Signal Transduction, University of North Dakota
2003	Biol 491/503 Seminar: Neural Plasticity, UND
2003	Biol 499 Special Topics: Developmental Neurobiology, UND
2004-2005	Biol 499 Special Topics: Molecular Biology Techniques
1999-2006	Biol 341 Cell Biology; University of North Dakota
1999-2006	Biol 341L Cell Biology Laboratory; University of North Dakota
2006	Biol 491/503 Seminar: Topics in Cell and Molecular Biology

Workshops/Post-graduate Courses

1998-1999 Alice T. Clark Scholars Mentoring Program, University of North Dakota

1999 Bush Seminar on Innovative Teaching and Assessment, University of North Dakota
1999 Sigma Xi Forum "Reshaping Undergraduate Science and Engineering Education," Minneapolis, MN

Professional Service

Manuscript reviews: Journal of Neuroscience, Journal of Neurobiology, Neuroscience, Journal of Histochemistry and Cytochemistry, Cell Motility and the Cytoskeleton
External research grant reviewer, National Science Foundation (2002-2004)
Grant proposal reviewer for Alzheimer's Association (2001-04)
President-Elect, Red River Valley chapter of Society for Neuroscience (2005)

University/Departmental Service

2000 New Student Orientation Faculty Facilitator & Residence Hall Greeter
2001 Department representative, UND Campus Open House for prospective students
2001-2002 Member, Ad hoc Space Committee, Biology department
2001-2003 Advisor for 3 AURA research program students
2002 Biology representative, Academic Day for football recruits
2002 Mentor, UND Grantwriting Workshop (for Van Doze)
2002-2003 Infectious Disease position Search Committee, Biology Department
2002-2004 Neuroscience Graduate Program Steering Committee
2003, 2004 New Student Orientation Faculty Facilitator
2004 Faculty representative, Super Saturday for football recruits
2002-2005 Research Committee, Biology Department
2003-2005 Developmental Biologist Faculty Search Committee
2005 Panelist, UND seminar on NSF CAREER Proposal and Grants
2005 Mentor, UND Grantwriting Workshop (for Becky Simmons)
2005 Panelist, tenure and promotion discussion, Alice T. Clark Scholars Mentoring Program
2000- Library Liason, Biology Department
2002- Institutional Animal Care and Use Committee
2005- Executive Committee, Department of Biology
2006- University Research Council
2006 Welcome Weekend Facilitator

Community Service

2000 Advisor, Maddock High School student science fair project
2000 Invited talk, North Dakota Chapter of March of Dimes Annual Meeting, Bismarck, ND
2001 Host for Job Shadow student from Adams, ND
2006 Judge, Greater Grand Forks High School Brain Bee

Student Mentoring -- Research

High School: Josh Swanson (2000) – co-advisor on Science Fair project

Undergraduates/Program (15 total): Andrea Tracy (1999), Barbara Hietala (1999), Dawn Back (2000-2001), Kelsey Thibert (ND EPSCoR AURA, NSF REU, 2001-2003), Brian Wilhelmi (ND EPSCoR AURA, NSF REU, 2001-2003); Steven Schmidt (ND EPSCoR AURA, 2002-2004); Brian Stegman (NSF REU, 2003-2004); Nicole Ingraham (2003); Erica Hofland (ND EPSCoR Science Bound, 2003-2004); Catherine Woell (ND EPSCoR AURA, 2004); Andy Burckhard (ND STaR Program, 2004); Amy Moritz (NSF REU, 2004-6); Amanda Moen (2004-2005, Honors Program Thesis); Craig Mescher (ND EPSCoR AURA, 2004-6); Kjerstin Bubolz (2006)

Graduate students (Committee Chair): Matt Miller (M.S. 2003; Medical School – U. of Minn.); Ritika Upadhaya (M.S., 2005-)

Other Graduate Committees, member (11 total): Shanon Oldenburg (Biology, 1999-2001), Hina Baliyan (Chemistry, 2000-2002), Jyl Mattson (Ph.D. 2003, Microbiology), Janell Johnson (Ph.D. 2003, Anatomy & Cell Biology), Crystal Hayes (M.S. 2004, Anatomy & Cell Biology); Kelsey Thibert (M.S. 2005, Biology); Allen Helmstetter (Ph.D. English; 2005), Richard Zaruba (Ph.D. 2005, Anatomy and Cell Biology), Andrew Woster (Physiology, Pharmacology and Therapeutics; 2001-present); Mark Cervinski (Ph.D., Biochemistry and Molecular Biology, 2006); Chris Jurgens (Ph.D., Physiology, Pharmacology and Therapeutics; 2004-)