

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow the sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME		POSITION TITLE	
Cheney, Richard E.		Assoc. Professor of Cell & Molecular Physiology	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Oregon State University, Corvallis, OR	BS	1976-1980	Biochem & Biophysics
Washington University, St. Louis, MO	PhD	1981-1989	Neuroscience
Yale University, New Haven, CT	Postdoc	1990-1995	Cell Biology

A. Positions and Honors.

Positions:

- 1980-81 Research assistant. Isolated and sequenced cytochrome c for studies of molecular evolution and isolated the active fragment of a *Bacillus thuringiensis* delta endotoxin with Dr. George Beaudreau. Biochemistry Dept., Oregon State University.
- 1981-89 Graduate student. Thesis research on brain spectrin and the membrane-associated cytoskeleton with Dr. Mark Willard in the Department of Anatomy and Neurobiology, Washington University School of Medicine.
- 1990-95 Postdoctoral fellow with Dr. Mark Mooseker at Yale University Dept. of Biology. Purified and characterized brain myosin-V, designed PCR screen to identify unconventional myosins, phylogenetic analysis of myosins, and identification/characterization of the IQ motif.
- 1994-95, 97 Instructor. Cellular and Molecular Physiology Course, molecular motors section, Marine Biological Laboratory, Woods Hole, MA.
- 1995-02 Assist. Professor. Dept. of Cell & Molecular Physiology, School of Medicine, UNC Chapel Hill
- 2002-present Assoc. Professor. Dept. of Cell & Molecular Physiology, School of Medicine, UNC Chapel Hill

Honors and memberships:

- National Science Foundation Predoctoral Fellowship, 1981-84
Muscular Dystrophy Society Postdoctoral Fellowship, 1990
American Cancer Society Postdoctoral Fellowship, 1991-93
NIH Training Fellowship with the Liver Center at the Yale University School of Medicine
Hettleman Prize for Scholarly and Artistic Achievement by Junior Faculty, 2002

- UNC Lineberger Comprehensive Cancer Center
UNC Comprehensive Center for Inflammatory Disorders
UNC Neuroscience Center
American Society for Cell Biology

- NIH NINDS Special Emphasis Panel for program project grants, ad hoc reviewer, 1998
NIH NINDS Special Emphasis Panel, Neurobiology of Diabetic Complications, 2000
ad hoc reviewer for NSF

- ad hoc reviewer for: Cell, Cell Motility and the Cytoskeleton, Current Biology, European J Cell Biology, FASEB J., FEBS Lett., Genomics, J. Cell Biol., J. Cell Sci., J. Mol. Biol., J. Neurosci., A. J. Physiology, Mol. Biol. Cell, Nature, PNAS, Science

B. Selected peer-reviewed publications (in chronological order).

- Hirokawa, N., Cheney, R.E., and Willard, M. (1983) Location of a Protein of the Fodrin-Spectrin-TW260/240 Family in Mouse Intestinal Brush Border. **Cell** 29:953-965.
- Cheney, R.E., Levine, J., and Willard, M. (1986) Purification of Fodrin From Mammalian Brain. **Method Enzymol.** 134:42-54.
- Espreafico, E.M., Cheney, R.E., Matteoli, M., Nascimento, A.A., De Camilli, P.V., Larson, R.E., and Mooseker, M.S. (1992) Primary Structure and Localization of Chicken Brain Myosin-V (p190), an Unconventional Myosin with Calmodulin Light Chains. **J. Cell Biol.** 119:1541-1557.
- Cheney, R.E., Riley, M.A., and Mooseker, M.S. (1993) A Phylogenetic Analysis of the Myosin Superfamily. **Cell Motil. Cytoskeleton** 24:215-223.
- Cheney, R.E., O'Shea, M., Heuser, J., Coelho, M.V., Espreafico, E.M., Wolenski, J.W., Forscher, P., Larson, R.E., and Mooseker, M.S. (1993) Brain Myosin-V Is a Two-Headed Unconventional Myosin with Motor Activity. **Cell** 75:13-23.
- Bement, W.M., Hasson, T., Wirth, J.A., Cheney, R.E., and Mooseker, M.S. (1994) Identification and Overlapping Expression of Multiple Unconventional Myosin Genes in Vertebrate Cells. **Proc. Natl. Acad. Sci. USA** 91:6549-6553.
- Wang, F.S., Wolenski, J.W., Cheney, R.E., Mooseker, M.S., and Jay, D. (1996) Function of Myosin-V in Filopodial Extension of Growth Cones. **Science** 273:660-663.
- Cheney, R.E. (1998) Purification and Assay of Myosin-V. **Methods Enzymol.** 298:3-18.
- Mehta, A.D., Rock, R.S., Rief, M., Spudich, J.A., Mooseker, M.S., and Cheney, R.E. (1999) Myosin-V is a Processive Actin-Based Motor, **Nature** 400:590-593.
- Waterman-Storer, C., Duey, D.Y., Weber, K.L., Keech, J., Cheney, R.E., Salmon, E.D., and Bement, W.M. (2000) Microtubules Remodel Actomyosin Networks in *Xenopus* Egg Extracts via Two Mechanisms of F-Actin Transport. **J. Cell Biol.** 150:361-376.
- Reif, M., Rock, R.S., Mooseker, M.S., Cheney, R.E., and Spudich, J.A. (2000) Myosin-V Stepping Kinetics: A Molecular Model for Processivity. **Proc. Natl. Acad. Sci. USA** 97:9482-9486.
- Berg, J.S., Derfler, B.H., Pennisi, C.P., Corey, D.P., and Cheney, R.E. (2000) Myosin-X: A Novel Myosin with Pleckstrin Homology Domains, Associates with Regions of Dynamic Actin. **J. Cell Sci.** 113:3439-51.
- Espindola, F., Cheney, R.E., Suter, D., King, S.M., and Mooseker, M.S. (2000) The Light Chain Composition of Chicken Brain Myosin-Va: Calmodulin, Myosin-II Essential Light Chains, and 8 kDa Dynein Light Chain/PIN. **Cell Motil. Cytoskel.** 47:269-281.
- Berg, J.S., Powell, B.C., and Cheney, R.E. (2001) A Millennial Myosin Census **Mol. Biol. Cell** 12:780-794.
- Puthalakath, H., Villunger, A., O'Reilly, L.A., Beaumont, J.G., Coultas, L., Cheney, R.E., Huang, D.C., and Strasser, A. (2001) Bmf: A Pro-Apoptotic BH3-only Protein Regulated by Interaction with the Myosin-V Actin Motor Complex, Activated by Anoikis. **Science** 293:1829-1832.
- Rodriguez, O.R., and Cheney, R.E. (2002) Human Myosin-Vc is a Novel Class V Myosin Expressed in Epithelial Cells. **J. Cell Sci.** 115:991-1004.
- Berg, J.S., and Cheney, R.E. (2002) Myosin-X is an Unconventional Myosin that Undergoes Intrafilopodial Motility. **Nature Cell Biology** 4:246-250.
- Cox, D., Berg, J.S., Cammer, M., Chingwundoh, J.O., Dale, B.M., Cheney, R.E., and Greenberg, S. (2002) Myosin-X as a downstream effector of PI 3-kinase during phagocytosis. **Nature Cell Biology** 4:469-477.
- Prakash, R., Washburn, S., Superfine, R., Cheney, R.E., and Falvo, M.R. (2003) Visualization of Individual Carbon Nanotubes with Fluorescence Microscopy Using Conventional Fluorophores. **Applied Physics Letters** 83:1219-1221.
- Hobby-Henderson, K.C., Hales, C.M., Lapierre, L.A., Cheney, R.E., and Goldenring, J.R. (2003) Dynamics of the Apical Plasma Membrane Recycling System During Cell Division. **Traffic** 4:681-693.
- Asokan, S.B., Jawerth, L., Carroll, R.L., Cheney, R.E., Washburn, S., and Superfine, R. (2003) Two-D Manipulation and Orientation of Actin-Myosin Systems with Dielectrophoresis. **Nano Letters**, 3:431-437.
- Zhang, H., Berg, J.S., Li, Z., Sousa, A., Bhaskar, A., Lennartsson, P., Cheney, R.E., and Strömblad, S. (2004) Myosin-X is a Novel Link Between Actin and Integrins. **Nature Cell Biology**, 6:523-531.
- Weber, K.L., Sokac, A.M., Berg, J.S., Cheney, R.E., and Bement, W.M. (2004) A microtubule-binding myosin required for nuclear anchoring and spindle assembly. **Nature**, 431:325-329.

Selected book chapters, invited reviews, and other publications:

- Mooseker, M.S., and Cheney, R.E. (1995) Unconventional Myosins. **Ann. Rev. Cell Dev. Biol.** 11:633-675.
- Cheney, R.E. (1999) Class V Myosins., p. 440-444 in **Guidebook to Cytoskeletal and Motor Proteins**
- Rodriguez, O.C., and Cheney, R.E. (2000) A New Direction for Myosin. **Trends Cell Biol.** 10:307-311.
- Hasson, T., and Cheney, R.E. (2001) Mechanisms of Motor Protein Reversal. **Curr. Opin. Cell Biol.** 13:29-35.
- Cheney, R.E., and Rodriguez, O.R. (2001) A Switch to Release the Motor. **Science** 293:1263-1264.

C. Research Support

Ongoing Research Support:

2 R01-DC03299-06 (Cheney)

6/1/02 – 5/31/07

NIH/NIDCD

"Myosin-X: A Novel Myosin with PH Domains"

Role: PI 40% effort

This continuation of our original myosin-X grant supports most of our lab's research and focuses on the characterization of a novel form of motility in filopodia and the functions of myosin-X in processes such as motility, adhesion, and phagocytosis. A 1 year administrative supplement to this grant for the generation of a Myo10 knockout mouse was recently approved for 8/15/03 –8/14/04.

Completed Research Support:

BES-0088509 (Superfine)

9/1/00 - 9/31/04

National Science Foundation

"XYZ on a Chip: Biomolecular Motor/Nanotube Integration"

Role: One of 5 co-PIs involved in a collaborative grant

This collaborative grant combines the expertise of physicists using atomic force microscopy, optical trapping, and microfabrication with that of motor protein biologists to explore the intersection of nanotechnology and molecular motors. Our lab provides proteins and expertise in biochemistry and motility assays.