

BIOGRAPHICAL SKETCH

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NAME Egelhoff, Thomas	POSITION TITLE Staff, Department of Cell Biology, CCF. Professor, Department of Molecular Medicine, Case Western Reserve		
eRA COMMONS USER NAME TEGELHOFF			
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
University of Virginia, Charlottesville VA	B.A.	1981	Biology
Stanford University, CA	Ph.D.	1987	Cell/Molc. Biology
Stanford School of Medicine, CA	Postdoc	1988-1992	Myosin cell biology

Positions and Honors**Professional Positions:**

2011-2012 Acting Chair, Dept of Cell Biology, Cleveland Clinic, Cleveland, OH
 2008-present Staff, Dept. of Cell Biology, Lerner Research Institute, Cleveland Clinic, Cleveland, OH
 2008-present Professor, Dept. of Molecular Medicine, Case Western Reserve, Cleveland, OH
 1999- 2008 Associate Professor, Dept. of Physiology and Biophysics, Case Western, Cleveland, OH
 1992-1999 Assistant Professor, Dept of Physiology and Biophysics, Case Western, Cleveland, OH
 1988-1992 Postdoctoral Fellow, James A. Spudich, Advisor, Stanford School of Medicine, CA.
 1981-1987 Graduate Student, Sharon Long, Advisor, Department of Biological Sciences, Stanford, CA

Honors and Awards:

American Cancer Society Junior Faculty Research Award 1993-1995
 Jane Coffin Childs Postdoctoral Fellowship (1987-1990)
 Stanford Tumor biology Fellowship (1991-1992)
 B.A. with High Honors, University of Virginia (1981)
 Phi Beta Kappa (1981)

Scientific Service:

NIH PPG review panels (four different PPG reviews, 2007-2010)
 NIH Challenge and GO grant external reviewer 2009.
 NIH CSF Study Section Member, 2005-2006.
 NIH CDF4 Study Section Member, 2002-2004.
 NIH Cell Physiology I/CDF4 Study Sections, ad hoc member, June, 1998; June 1999; October, 2000.
 Public Information Committee, American Society for Cell Biology, member, 1999-2010.
 American Cancer Society, National Division: Cell Structure & Metastasis Study Section, Member 1998-2002.
 American Cancer Society, National Division: Cell Structure & Metastasis Study Section, Ad Hoc member 1997-1998.
 American Heart Association Study Section (Northeast Ohio/Indiana Affiliate) 1995-1997

Selected Peer-reviewed Publications (Selected from 48 peer-reviewed publications & 7 review articles)

Oxidized LDL/CD36 interaction induces loss of cell polarity and inhibits macrophage locomotion. Park YM, Drazba JA, Vasanji A, Egelhoff T, Febbraio M, Silverstein RL. **Mol Biol Cell. 2012 In Press.**
 Analysis of the Role of Ser1/Ser2/Thr9 Phosphorylation on Myosin II Assembly and Function in Live Cells. Beach, J.R., Licate, L.S., Crish, J.F., and Egelhoff, T.T. **BMC Cell Biol. 12:52, 2011. PMC3257205**
 Myosin II Isoform Switching Mediates Invasiveness following TGF β -induced Epithelial-Mesenchymal Transition. Beach, J.R., George S. Hussey, G.S., Miller, T.E., Chaudhury, A., Patel, P., Monslow, J., Zheng, Q., Keri, R.A., Reizes, O., Bresnick, A.R., Howe, P.H., Egelhoff, T.T. **PNAS. 108:17991-6, 2011. PMC3207690**
 * **Featured as "Hottest new publication" by the Cell Migration Consortium Website, Dec. 2011**
 Dictyostelium Huntingtin Controls Chemotaxis and Cytokinesis through the Regulation of Myosin II Phosphorylation. Wang, Y., Steimle, P.A., Ren, Y., Ross, C.A., Robinson, D.N., Egelhoff, T.T., Sesaki, H., and Iijima, M. **Molc. Biol. Cell, 22:2270-81, 2011. PMC3128529**

- Role of B regulatory subunits of PP2A in myosin II assembly control in *Dictyostelium discoideum*. Rai, V. and Egelhoff, T. T. **Eukaryotic Cell**, **10:604-610**, 2011. [PMC3127641](#)
- A proteomic study of myosin II motor proteins during tumor cell migration. Betapudi, V., Gokulrangan, G., Chance, M.R., and Egelhoff, T.T. **Journal of Molecular Biology**, **407:673-686**, 2011 [PMC3072708](#)
- A microfluidic imaging chamber for the direct observation of chemotactic transmigration. Breckenridge, M.T., *Egelhoff, T.T., and *Baskaran, H. **Biomedical Microdevices**, **12:543-53**. 2010. [PMCID2886973](#)
**Egelhoff and Baskaran contributed equally to development and guidance of this project, and are co-senior authors on the publication.*
- Novel regulation and dynamics of myosin-II activation during epidermal wound responses. Betapudi, V, Rai, V., Beach, J., and Egelhoff, T.T. **Experimental Cell Research**, **316:980-991**. 2010. [PMCID2835573](#)
- Insights into the roles of non-muscle myosin IIA in human keratinocyte migration. Sarkar, S., Egelhoff, T.T., and Baskaran, H. **Cellular and Molecular Bioengineering**, **4:486-494**. 2009. [PMCID2883784](#)
- Roles of an Unconventional Protein Kinase and Myosin II in Amoeba Osmotic Shock Responses. Venkaiah Betapudi and Thomas T. Egelhoff. **Traffic**. **10:1773-84**, 2009. [PMCID2783991](#)
- Myosin II Recruitment during Cytokinesis Independent of Centralspindlin-mediated Phosphorylation. Beach, J., and Egelhoff, T.T., **Journal of Biological Chemistry**. **284:27377-83**. 2009. [PMCID2785666](#)
- Multiple Regulatory Steps Control Mammalian Nonmuscle Myosin II Assembly in Live Cells. Breckenridge, M., Dulyaninova N.G., and Egelhoff, T.T. **Mol Biol Cell**, **20:338-47**. 2009. [PMCID2613126](#)
- Distinct roles of nonmuscle myosin II isoforms in the regulation of MDA-MB-231 breast cancer cell spreading and migration. Betapudi, V., Licate, L.S., and Egelhoff, T.T. **Cancer Research**. **66:4725-4733**. 2006.
- Multiple myosin II heavy chain kinases: Roles in filament assembly control and proper cytokinesis in *Dictyostelium*. Yumura, S., Yoshida, M., Betapudi, V., Licate, L.S., Iwadate, Y., Nagasaki, A, Uyeda, T., and Egelhoff, T.T. **Mol. Biol. Cell**, **16:4256-66**, 2005. [PMCID1196335](#)
- Identification and characterization of a novel alpha kinase with a vWFA-like motif localized to the contractile vacuole and Golgi complex in *Dictyostelium discoideum*. Betapudi, V., Mason, C., Licate, L.S., and Egelhoff, T.T. **Mol. Biol. Cell**, **16: 2248-2262**, 2005. [PMCID1087232](#)
- Actin-activation of myosin heavy chain kinase A in *Dictyostelium*: A biochemical mechanism for the spatial regulation of myosin II filament disassembly. Egelhoff, T.T., Croft, D., and Steimle, P.A. **J. Biological Chemistry**, **280:2879-2887**, 2005.
- Generation of double gene disruptions in *Dictyostelium discoideum* using a single antibiotic marker selection. Betapudi, V. and Egelhoff, T.T. **Biotechniques**. **36:106-112**, 2004.
- Myosin Heavy Chain Kinase B participates in the regulation of myosin assembly into the cytoskeleton. Rico, M. and Egelhoff, T.T. **J. Cellular Biochemistry**, **88:521-532**, 2003.
- Dictyostelium discoideum* has a single diacylglycerol kinase gene with similarity to mammalian theta isoforms. Marc A. de la Roche, Janet L. Smith, Maribel Rico, Silvia Carrasco, Isabel Merida, Lucila Licate, Graham P. Côté, and Thomas T. Egelhoff. **Biochem. J.** **368:809-815**, 2002. [PMCID1223045](#)
- Differential localization in cells of myosin II heavy chain kinases during cytokinesis and cell migration. Wenchuan Liang, Lucila S. Licate, Hans M. Warrick, James A. Spudich, & Thomas T. Egelhoff. **BMC Cell Biology**. **3:19**. 2002. [PMCID119860](#)
- Myosin II dynamics in *Dictyostelium*: Determinants for filament assembly and translocation to the cell cortex during chemoattractant responses. Levi, S., Polyakov, M.V., Egelhoff, T.T. **Cell Motility Cytoskel.** **53:177-188**, 2002.
- Lamellipodial localization of *Dictyostelium* myosin heavy chain kinase A is mediated via F-actin binding by the coiled-coil domain. Steimle, P.A., Licate, L., Côté, G.P., and Egelhoff, T.T. **FEBS Lett.** **516:58-62**. 2002.
- Recruitment of a Myosin Heavy Chain Kinase to Actin-Rich Protrusions in *Dictyostelium*. Steimle, P.A., Yumura, S., Côté, G.P., Polyakov, M.V., Leppert, B., Egelhoff, T.T. **Current Biology**, **11:708-713**. 2001.
- Threonine-Specific Phosphorylation by the *Dictyostelium* Myosin II Heavy Chain Kinase Family. Luo, X., Steimle, P.A., Egelhoff, T.T., and G.P. Côté. **J. Biol. Chem.** **276:17836-17843**. 2001.
- WD-repeat domains target *Dictyostelium* myosin heavy chain kinases by binding directly to myosin filaments. Steimle, P.A., Naismith, T.V., Licate, L.S., and Egelhoff, T.T. **J. Biol. Chem.** **276:6853-6860**. 2001.
- Green Fluorescent Protein (GFP) and Epitope Tag Fusion Vectors for *Dictyostelium discoideum*. Levi, S., Polyakov, M.V., and T.T. Egelhoff. **Plasmid** **44:231-238**, 2000.
- Purification and Biochemical Characterization of a Myosin Heavy Chain Phosphatase which Regulates Filament Assembly of *Dictyostelium* Myosin II. Murphy, M.B. and Egelhoff, T.T. **Eur. J. Biochemistry** **264:582-590**, 1999.
- Molecular characterization and immunolocalization of *Dictyostelium discoideum* protein phosphatase 2A. Murphy, M.B. Levi, S.K., and T.T. Egelhoff. **FEBS Lett.** **456: 7-12**, 1999.

- Phosphorylation of the *Dictyostelium* myosin II heavy chain is necessary for maintaining cellular polarity and suppressing turning during chemotaxis. Stites, J., Wessels D., Uhl A., Egelhoff T., Shutt D., and Soll D.R. **Cell Motil Cytoskeleton** **39:31-51, 1998.**
- Dictyostelium* Myosin Heavy Chain Kinase A Subdomains: coiled-coil and WD-repeat roles in oligomerization and substrate targeting. Kolman, M.F., and Egelhoff, T.T. . **J. Biol. Chem.** **272:16904-16910, 1997.**
- Identification of a Protein Kinase from *Dictyostelium* with Homology to the Novel Catalytic Domain of Myosin Heavy Chain Kinase A. Clancy, C.E., Mendoza, M.G., Naismith, T.V., Kolman, M.F., and Egelhoff, T.T. **J.Biol.Chem.** **272:11812-11815, 1997.**
- Mapping the Novel Protein Kinase Catalytic Domain of Dictyostelium Myosin II Heavy Chain Kinase A. Côté, G.P., Luo, X., Murphy, M.B., and Egelhoff, T.T. **J Biol Chem** **272: 6846-6849, 1997.**
- Cloning and Characterization of a *Dictyostelium* Myosin I Heavy Chain Kinase Activated by Cdc42 and Rac. Lee, S-F, Egelhoff, T.T., Mahasneh, A., and Côté, G.P. **J. Biol. Chem.** **271:27044-27048, 1996.**
- Myosin-based Cortical Tension in *Dictyostelium* Resolved into Heavy and Light Chain-Regulated Components. Egelhoff, T.T., Naismith, T.V., and Brozovich, F.V. **J. Muscle Res. Cell Motil.** **17:269-274, 1996.**
- Dictyostelium* Myosin Heavy Chain Kinase A Regulates Myosin Localization During Growth and Development. Kolman, M.F., Futey, L.M., and Egelhoff, T.T. **J. Cell Biol.** **132:101-109, 1996.**
- Structural Analysis of Myosin Heavy Chain Kinase A from *Dictyostelium*: Evidence for a highly divergent protein kinase domain, an amino-terminal coiled-coil domain and a domain homologous to the β -subunit of heterotrimeric G proteins. Futey, L., Medley, Q., Côté, G.P., and Egelhoff, T.T. **J. Biol. Chem** **270:523-529, 1995.**
- Molecular genetic truncation analysis of filament assembly and phosphorylation domains of *Dictyostelium* myosin heavy chain. Lee, R., Egelhoff, T.T., and Spudich, J.A. **J. Cell Sci.** **107:2875-2886, 1994.**
- Dictyostelium* Myosin Heavy Chain Phosphorylation Sites Regulate Myosin Filament Assembly and Localization In Vivo. Egelhoff, T.T., Lee, R., and Spudich, J.A. **Cell** **75:363-371, 1993.**
- Spatial and Temporal Control of Nonmuscle Myosin Localization: Identification of a Domain that is Necessary for Myosin Filament Disassembly in Vivo. Egelhoff, T. T., Brown, S. B., and Spudich, J. A. **J. Cell Biol.** **112:677-688, 1991.**
- Complementation of Myosin Null Mutants in *Dictyostelium discoideum* by Direct Functional Selection. Egelhoff, T.T., Manstein, D.J., and Spudich, J.A. **Devel. Biol.** **137:359-367, 1990.**
- Hygromycin Resistance as a Selectable Marker in *Dictyostelium*. Egelhoff, T.T., Brown, S.S., Manstein, D.J., and Spudich, J.A.. **Mol. Cell. Biol.** **9:1965-1968, 1989.**
- Specific binding of proteins from *Rhizobium meliloti* cell-free extracts containing NodD to DNA sequences upstream of inducible nodulation genes. Fisher, R.F., Egelhoff, T.T., Mulligan, J.T., and Long, S.R. **Genes Dev.** **2: 282-93, 1988.**
- Rhizobium meliloti* nodulation genes: identification of nodDABC gene products, purification of nodA protein, and expression of nodA in *Rhizobium meliloti*. Egelhoff, T.T., and Long, S.R. **J Bacteriol.** **164:591-9, 1985.**
- Nucleotide sequence of *Rhizobium meliloti* 1021 nodulation genes: nodD is read divergently from nodABC. Egelhoff, T.T., Fisher, R.F., Jacobs, T.W., Mulligan, J.T., and Long, S.R. **DNA.** **4:241-8, 1985.**
- Physical and genetic map of a *Rhizobium meliloti* nodulation gene region and nucleotide sequence of nodC. Jacobs, T.W., Egelhoff, T.T., and Long, S.R. **J Bacteriol.** **162:469-76, 1985.**
- Cytoplasmic and Chloroplast Synthesis of Phycobilisome Polypeptides. Egelhoff, T.T., and Grossman, A. **PNAS** **80: 3339-3343, 1983.**

Reviews & Other Publications:

- Cardiac myocyte cytokinesis: The contractile ring is the thing. Egelhoff, T.T, and Fisher, S.A. **J Mol Cell Cardiol.** **41:592-594, 2006.**
- Signaling pathways regulating *Dictyostelium* myosin II. De la Roche, M.A., Smith, J.A., Betapudi, V., Egelhoff, T.T., and Côté, G.P. **J. Muscle Research and Cell Motility** **23:703-718, 2002.**
- Myosin Heavy Chain Kinases. Egelhoff, T.T., and Côté, G.P. In: **Guidebook to the Cytoskeleton, 2nd Ed., 1999. Oxford University Press.**
- Molecular Genetics of Cell Migration: Dictyostelium as a Model System. Egelhoff, T.T., and Spudich, J. A. **Trends in Genetics** **7: 161-166, 1991.**
- Molecular Genetic Tools for the Study of the Cytoskeleton in Dictyostelium. Egelhoff, T.T., Titus, M.A., Manstein, D.J., Ruppel, K.M., and Spudich, J.A. **Methods Enzymol.** **196: 319-333, 1991.**

Principal Investigator/Program Director (Last, First, Middle):

Purification of a Functional Recombinant Myosin Fragment from Dictyostelium discoideum. Ruppel, K.M., Egelhoff, T.T., and Spudich, J.A. In: **Mechanism of Furrow Formation during Cell Division, Annals of the New York Academy of Sciences. 582:147-155. 1989. Conrad, G. W. and Schroeder, T. E., eds .**

Rhizobium meliloti Nodulation Gene Products and Gene Regulation. Egelhoff, T., Mulligan, J., and S. Long. In: Plant Cell/Cell Interactions (eds. I. Sussex et al.). Current Communications in Molecular Biology. pp.121-126. 1985.

Patents:

Mulligan, J., Egelhoff, T., and S. Long. 1985. Bacterial Promoters Inducible by Plant Extracts. U.S. Patent Office. (Patent filed by Stanford University).