



- 1996-2000 Postdoctoral Fellow  
The University of Vermont, Department of Molecular Physiol. and Biophys.  
*The mechanical and kinetic characterization of the naturally occurring  $\alpha$ - and  $\beta$ -cardiac and human familial hypertrophic mutant myosin isoforms using motility and dual laser trap assays*  
P.I. David M. Warshaw, Ph.D.
- 1988-1990 Research Specialist  
The University of Illinois at Chicago, Department of Physiol. and Biophys.  
*Characterization of the high and low (regulatory) affinity Ca<sup>2+</sup> binding sites of cardiac and skeletal troponin C using radioisotope binding assays, gel electrophoresis, column chromatography*  
P.I. R. John Solaro, Ph.D.
- 1986-1988 Undergraduate research apprentice  
The University of Illinois at Urbana-Champaign, Department of Psychology  
*Effect of estrogen on serotonin re-uptake in rat hippocampal neurons*  
P.I. Edward J. Roy, Ph.D.

**Teaching, Mentoring, Community Outreach:**

- 2007 Associate Trustee, Family Umbrella Group, Friday Harbor, WA  
2006 Mentor - Blink's Fellowship Program, Friday Harbor Laboratories  
2004 Administration of the EM Journal Club, TSRI  
Gifted and Talented Education (GATE) program guest lecturer, San Diego, CA  
2003 Instructor, Practical Course in Molecular Microscopy, TSRI  
Graduate rotation student supervisor, TSRI  
2001 Gifted and Talented Education (GATE) program guest lecturer, San Diego, CA  
2000 California State University Undergraduate Mentor, SDSU  
1990-1996 Teaching Assistant, University of Illinois at Chicago  
*Courses taught: Medical Physiology, Medical Physiology Laboratory Practicals, Human Physiology for Dental Students*  
1994-1996 American Heart Association *Wild About Science* presenter, Chicago, IL  
1993-1996 Physiology Tutor, Chicago, IL

**Honors and Awards:**

- 2001-2003 American Heart Association Postdoctoral Fellowship  
2003 Co-chair, Acto-Myosin Interactions platform session, Biophysical Society Meeting, San Antonio, TX  
2002 Winner best Poster Presentation at the American Heart Association Young Investigators Forum, San Diego State University, San Diego, CA.  
Poster presenter, Contractile Proteins Gordon Research Conference, New London, NH  
2000 Overall Winner for best Presentation (Poster/Oral) at the American Heart Association Young Investigators Forum, University of California at San Diego, San Diego, CA.  
1999 Poster presenter, Contractile Proteins Gordon Research Conference, New London, NH

- 1998 Finalist in the New England Cardiovascular Research Competition, Boston, MA
- 1996 "Thesis of the Year" recipient, Graduate College, University of Illinois, Chicago, IL
- 1986-1988 NSF undergraduate research fellowship, University of Illinois, Urbana, IL

### Seminars and Invited Talks:

- 2004 Seminar: Actin Club, San Diego, CA
- 2003 Invited Talk: Biophysical Society Meeting, San Antonio, TX  
Invited Talk: National Drosophila Meeting, San Diego, CA
- 2002 Seminar: Actin Club, San Diego, CA
- 2001 Seminar: Drosophila Fly Meeting, San Diego, CA
- 2000 Invited Speaker: American Heart Association Young Investigators Forum, University of California at San Diego
- 2000 Seminar: San Diego State University, Dept. of Biology
- 1999 Invited Speaker, Heart Failure Society of America Meeting, San Francisco, CA  
Seminar: TSRI, Dept. of Cell Biology  
Invited Speaker, National Assembly of the American Heart Association, Atlanta, GA
- 1998 Invited Speaker, Biophysical Society Meeting, Kansas City, MO
- 1997 Invited Speaker, Smooth Muscle Society of New England, Burlington, VT
- 1996 Seminar, Boston Biomedical Research Institute, Boston, MA  
Seminar, University of Vermont, Dept. of Molecul. Physiol. and Biophys., Burlington, VT

### Publications:

1. Castillo, A., **Littlefield, K.P.**, and Littlefield, R.S. (2007) A Nebulin Ruler Does Not Dictate Thin Filament Length. *Submitted, Biophys. J.*
2. **Littlefield, K.P.**, Reedy, M.K., Chappie, J.S., Ward, A.B., Reedy, M.C., Bernstein, S.I., and Milligan, R.A. (2007) Structural Differences Between Rigor Vertebrate and Invertebrate Acto-S1 Complexes, in preparation.
3. Miller, B.M., Zhang, S., Suggs, J.A., Swank, D.M., **Littlefield, K.P.**, Knowles, A.F., Bernstein S.I. (2005) An alternative domain near the nucleotide-binding site of Drosophila muscle myosin affects ATPase kinetics. *J Mol Biol.*, Oct 14;353(1):14-25.
4. Noguchi, T., Kihara, Y., Begin, K.J., Gorga, J.A., **Palmiter, K.A.**, LeWinter, M.M., VanBuren, P. (2003) Altered myocardial thin-filament function in the failing Dahl salt-sensitive rat heart: amelioration by endothelin blockade. *Circulation*, **107**:630-635.
5. **Littlefield, K.P.**, Swank, D.M., Sanchez, B.M., Knowles, A.F., Warshaw, D.M., Bernstein, S.I. The Converter Domain Modulates the Kinetic Properties of *Drosophila* Myosin (2003) *Amer. J. Physiol. Cell*, **284**:C1031-1038.\*
6. **Palmiter, K.A.**, Alpert, N.R., Tyska, M.J., Haeberle, J., Fananapazir, L., Warshaw, D.M. (2000) R403Q and L908V Mutant  $\beta$ -Myosin Isolated From Patients With Familial Hypertrophic Cardiomyopathy Exhibit Enhanced Mechanical Performance at the Single Molecule Level. *J. Mus. Res. Cell Motil.*, **21**:609-21.

7. Warshaw, D.M., Guilford, W.H., Freyzon, Y., Kementsova, E., **Palmiter, K.A.**, Tyska, M.J., Baker, J., Trybus, K.M. (2000) The Light Chain Binding Domain of Expressed Smooth Heavy Meromyosin Acts as a Mechanical Lever. *J. Biol. Chem.*, **275**:37167-25.
8. Arteaga, G.M., **Palmiter, K.A.**, Leiden, J., Solaro, R.J. (2000) Attenuation of Length Dependence of Calcium Activation in Myofilaments of Transgenic Mouse Hearts Expressing Slow Skeletal Troponin I. *J. Physiol. (London)*, **526.3**:541-549.
9. Van Buren, P., **Palmiter, K.A.**, Warshaw, D.M. (1999) Tropomyosin Directly Modulates Actomyosin Mechanical Performance at the Level of a Single Actin Filament. *Proc. Natl. Acad. Sci. USA*, **96**:12488-93.
10. Wolska, B.M., Keller, R.S., Evans, C.E., **Palmiter, K.A.**, Phillips, R.M., Muthuchamy, M., Oehlenschlaeger, J., Wieczorek, D.F., deTombe, P.P., Solaro, R.J. (1999) Correlation Between Myofilament Response to  $Ca^{2+}$  and Altered Dynamics of Contraction and Relaxation in Transgenic Cardiac Cells that Express  $\alpha$ -Tropomyosin. *Circ. Res.*, **84**:745-51.
11. **Palmiter, K. A.**, Tyska, M.J., Dupuis, D.E., Alpert, N.R., and Warshaw, D.M. (1999) Differences at the Single Molecule Level Account for the Functional Diversity of Rabbit Cardiac Myosin Isoforms. *J. Physiol. (London)*, **519**:669-678.\*
12. **Palmiter, K.A.** and Solaro, R.J. (1997) Molecular Mechanisms Regulating the Myofilament Response to  $Ca^{2+}$ : Implications of Mutations Causal for Familial Hypertrophic Cardiomyopathy. *Basic Res. Cardiol.*, **92**:63-74.
13. Wolska, B.M., Kitada, Y., Palmiter, K.A., Westfall, M.V., Johnson, M.J., and Solaro, R.J. (1996) CGP-48506 Increases Contractility of Ventricular Myocytes and Myofilaments by Effects on Actin-Myosin Reaction. *Am. J. Physiol.*, **270**:H24-H32.
14. **Palmiter, K.A.**, Kitada, Y., Muthuchamy, M., Wieczorek, D.F., and Solaro, R.J. (1996) Exchange of  $\alpha$ -for  $\beta$ -tropomyosin in Hearts of Transgenic Mice Induces Changes in Thin Filament Response to  $Ca^{2+}$ , Strong Cross-bridge Binding, and Protein Phosphorylation. *J. Biol. Chem.*, **271**:11611-11614.
15. Powers, F.M., **Palmiter, K.A.**, and Solaro, R.J. (1996) E-1020, a Water Soluble Imidazopyridine, has Direct Effects on  $Ca^{2+}$ -dependent Force and ATP Hydrolysis of Canine and Bovine Cardiac Myofilament. *Mol. Cell. Biochem.*, **161**:33-39.
16. Guo, X., Wattanaperpool, J., **Palmiter, K.A.**, Murphy, A.M. and Solaro, R.J. (1994) Mutagenesis of Cardiac Troponin I. Role of Unique  $NH_2$ -Terminal Peptide in Myofilament Activation. *J. Biol. Chem.*, **161**:15210-15216.
17. Pan, B.-S., **Palmiter, K.A.**, Plonczynski, M., Solaro, R.J. (1990) Slowly Exchanging Calcium Binding Sites Unique to Cardiac/Slow Muscle Troponin C. *J. Mol. Cell. Cardiol.*, **22**:1117-1124.

**Professional associations:**

2002-present      Member, American Society of Cell Biology  
1994-present      Member, Biophysical Society  
1996-2000        Member, International Society of Heart Research

**Computer and Technical Expertise:**

Maintenance of TSRI EM Journal Club web site; Comfortable familiarity with both PC and Macintosh based operating systems and software including *Microsoft Office, EndNote, Reference Manager, Adobe Acrobat, Corel Draw, Adobe Photoshop*; Familiarity with Linux and Unix based operating systems and specific helical analysis (*Phoelix*) and 3-dimensional atomic modeling, fitting, and image presentation (*O, AVS*) software.

Comfortable familiarity with Philips CM 200FEG, CM120, EM208, and CM100 electron microscopes, cryo sample and grid preparation, Gatan cryo stage pumping station, carbon evaporator, SO-163 film development, Perkin Elmer microdensitometer.

**Personal Data and General Interests:**

Married, October, 21, 2000 to Ryan S. Littlefield, Ph.D.

Son, Justin Andrew, born April 6, 2003

Interests: *child development, running, hiking, cooking, stained glass art, Book Club, traveling, knitting*

**References**

*Grants Management/Administrative*

**Garrett M. Odell, Ph.D.**

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*Scientific/Research*

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