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Education

Madurai Kamaraj University, India	B.S.	1977-80	Chemistry
Madurai Kamaraj University, India	M.S.	1981-83	Integrated Biology
Madurai Kamaraj University, India	Ph.D.	1984-89	Biochemistry/Molecular Biology

Professional Experience

January 2006	Associate Professor, Department of Systems Biology and Translational Medicine, Texas A&M Health Science Center, College of Medicine, College Station, TX.
September 2005	Associate Professor, Department of Medical Physiology, Texas A&M System Health Science Center, College Station, TX.
1997 - 2005	Assistant Professor, Department of Medical Physiology, Texas A&M System Health Science Center, College Station, TX.
1994 - 1997	Research Associate, Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati College of Medicine, Cincinnati, OH.
1989 - 1994	Postdoctoral Research Fellow, Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati College of Medicine, Cincinnati, OH.
1983 – 1989	Graduate Research Assistant, Department of Biochemistry, Madurai Kamaraj University, India.
1986 - 1989	Graduate Teaching Assistant, Department of Biochemistry, Madurai Kamaraj University, India.

Memberships

American Heart Association - Basic Science Council
American Physiological Society
Microcirculation Society
International Society for Heart Research

Honors

- 1983 - 86 Junior Research Fellowship from Indian Council of Medical Research, India.
- 1986 - 89 Senior Research Fellowship from Council of Scientific and Industrial Research, India
- 1993 - 94 American Heart Association Post Doctoral Fellowship, Ohio Affiliate.
- 1998 AHA, Texas Affiliate's 1998 **Lyndon Baines Johnson Research Award** (in recognition of the most outstanding research project funded by Texas affiliate AHA)
- 1998 Selected as a review panel member for Interdisciplinary award review committee (TAMU)
- 2001 Selected as a review panel member for Scholarly & Creative Activities Review Committee (TAMU)
- 1998 and 2006 Selected as a review panel member for Western States AHA review committee
- 2007 Selected as a review panel member for National AHA review committee

Research Interests

Molecular mechanisms of cardiac and lymphatic muscle contraction
Mechanotransduction and integrin signaling in cardiomyocytes
Regulation of the coronary microcirculation
Contractile and regulatory protein gene expression and function

Teaching Interests

Cytoskeleton, muscle proteins and contractility
Cardiac development and gene regulation; Cardiovascular diseases
Genomics
Cell and molecular biology techniques

Service

A. Departmental service

Graduate Course Coordinator (Advanced cardiovascular Biology I & II, Fall and Spring Semesters)
Seminar Coordinator for Cardiovascular Forum

B. Membership on College of Medicine and University Committees

Selected for Interdisciplinary research award committee, 1998

University Laboratory Animal Care Committee, 1997- 1998 and from 2002

Curriculum Committee member October, 1999 – October 2004

Selected for Scholarly & Creative Activities Review Committee, 2001

C. Membership on state, regional or national committees

AHA Western States Affiliate review committee member since 1999

AHA National review committee member since 2007

D. Referee for Journals

Journal of Molecular and Cellular Cardiology

American Journal of Physiology

Cardiovascular Research

Cancer Letters

Journal of Vascular Research

Post-doctoral trainees

Past

Andreea Trache, Ph.D – 2001-2003

Robert Gaffin, Ph.D – 2003-2004

Present

Xin Wu, Ph.D. - 2005

Doctoral Students

Past

Carl Tong (MD/Ph.D. student), 1997-2002; finished his residency program in Duke University and doing his cardiology program at University of Wisconsin-Madison Medical School.

Robert Gaffin (Ph.D student), 2003; currently working as a post doctoral fellow at University of Illinois at Chicago in Dr. Solaro's lab.

Vandana Sarin (Ph.D student), 2005 (Co-chair)

Current

Andrea Julian (Ph.D. student), 2004 (Co-chair)

Patrick Dougherty (Ph.D. student), 2005

Masters Students

Gayathri Krishnamoorthy (MS student, Biomedical Engineering, 1998 – 1999; Co-chair)

Manish Shroff, (MS student, Biomedical Engineering, 2002; Co-Chair)

Saraswathy Ganapathy (MS student, Biomedical Engineering, 2007; Co-Chair)

Guest Lectures

- i) November 1995: “Role of Tropomyosin in Cardiac Muscle Contractility” Seminar to the Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati Medical Center, Cincinnati, OH.
- ii) February 1996: “Role of Tropomyosin in Cardiac Muscle Contractility” Seminar to the Department of Medical Physiology, Texas A&M University, College Station, TX.
- iii) June 1996: “Functional Role of Tropomyosin in Cardiac Muscle Contractility- a Transgenic Approach” Seminar to the Department of Pharmacology, SUNY Health Science Center, Syracuse, NY.
- iv) August 1997: “Regulation of Cardiac Muscle Contractility - a Transgenic Approach” Seminar to the Department of Molecular Microbiology and Immunology, St. Louis University Medical Center, St. Louis, MO
- v) October 1997: “Molecular Mechanisms of Cardiac Muscle Contractility” Seminar to the Department of Pharmacology, Texas A&M University system HSC, College Station, TX.
- vi) September 1998: “Molecular Mechanisms of Cardiac Muscle Contractility” Seminar to Department of Biology, Texas A&M University, College Station, TX.
- vii) November 1999: “Regulatory Mechanisms in Cardiac Muscle Contraction” Seminar to Department of Biophysics and Physiology, University of Illinois at Chicago.
- viii) May 2002: “Molecular Mechanisms in Cardiac Muscle Contractility” Seminar to Department of Medical Physiology, Texas A&M University System HSC, College Station, TX.
- ix) August 2004: “Thin Filament Regulatory Mechanisms in Cardiac Muscle” Seminar to Department of Physiology and Cell Biology, Ohio State University, Columbus, OH.
- x) August 2004: “Thin Filament Regulatory Mechanisms in Cardiac Muscle” Seminar to Cardio Vascular Center, University of Cincinnati College of Medicine, Cincinnati, OH
- xi) November 2004: “Differential Functions of Inner-Core and Carboxy-Terminal Overlap Regions of Tropomyosin” Seminar to Cardiovascular Diseases Research Program, JLC-Biomedical & Biotechnology Research Institute, North Carolina Central University, Durham, NC.
- xii) March 2006: “Regulatory mechanisms in cardiac muscle contractility” seminar to Department of Biomedical Engineering, Texas A&M University, College Station, TX.

Grant support:

Current

Title: Mechanobiology of Cardiomyocytes
Funding agency: National Institutes of Health; R21 EB003888-01A1
Direct cost: \$275,000; Indirect cost: \$125,000
Grant Period: 04/01/05-03/31/07
Role: Principal Investigator [20% effort]

Title: Molecular Mechanisms of Lymphatic Muscle Contractility
Funding agency: National Institutes of Health; RO1 HL080526-01
Direct cost: \$1,000,000; Indirect cost: \$420,000
Grant Period: 02/08/05-01/31/09
Role: Principal Investigator [20% effort]

Title: Role of Myosin Light Chain Phosphorylation in Lymphatic Muscle Contractility
Funding Agency: Lymphatic Research Foundation
Direct Cost: \$86,000
Grant Period: 7/1/2006 – 6/30/2008
Role: Sponsor for postdoctoral fellow, Dr. Zhanna Nepiyushchikh

Title: Coronary dysfunction in hypertrophic cardiomyopathy
Funding agency: National Institutes of Health; RO1 HL071761
Direct cost: \$1000,000; Indirect cost: \$455,000
Grant Period: 07/01/03-06/30/07
Role: Collaborating Investigator [5% effort]; PI: Dr. Lih Kuo

Title: Physiological basis of vascular contractility
Funding agency: National Institutes of Health; RO1 HL075199
Direct cost: \$500,000; Indirect cost: \$175,000
Grant Period: 10/01/03-09/30/07
Role: Co-Principal Investigator [10% effort]; PI: Dr. David Zawieja,

Pending

Title: Regulatory Mechanisms in Lymphatic Muscle Contraction
Funding agency: National Institutes of Health; KO2 - KHL086650-01A1 (resubmitted in November 2006, Priority Score was 173 for the first submission)
Direct cost: \$1,000,000; Indirect cost: \$420,000
Grant Period: 07/01/07 - 06/30/12
Role: Principal Investigator

Title: Mechanotransduction in Cardiomyocytes
Funding agency: National Institutes of Health; RO1 HL089578
Direct cost: \$1,500,000; Indirect cost: \$420,000
Grant Period: 07/01/07 - 06/30/12
Role: Principal Investigator [20% effort]

Past

Analysis of functional role of tropomyosin in the heart
NIH (1R29HL60758-01)
Investigator - Mariappan Muthuchamy, Ph.D (60% effort)
\$350,000; 7/01/98 - 6/30/04; one year no cost extension

Functional analysis of tropomyosin in the murine heart

Texas-American Heart Association (9800504)

Investigator – Mariappan Muthuchamy, Ph.D (30% effort)

\$92,880; 7/01/98 – 6/30/00; this grant was relinquished since it had overlap with the NIH grant

Functional and molecular analyses of coronary arterioles in the transgenic cardiomyopathy mice

Texas-American Heart Association (9950818Y)

Investigator - Mariappan Muthuchamy, Ph.D (20% effort)

\$120,000; 7/1/99 - 6/30/01

Real-time study of bio-molecular mechanisms of heart muscle contraction using laser excited surface plasmons; Interdisciplinary Research Initiative research award (IRI 98-50): research enhancement program through the Office of the Vice President for research and associate Provost for graduate studies, Texas A&M University.

Investigator - Mariappan Muthuchamy, Ph.D

\$37,500; 7/1/98 – 6/30/99

Publications

1. Kamala, J. **Mariappan, M.**, and Rajamanickam, C. Changes associated with rat heart chromatin during cardiac hypertrophy, *Biochem. International* 13 (2): 271-286, 1986.
2. **Mariappan, M.**, Selvamurugan, N, and Rajamanickam, C. Purification and characterization of a high-molecular weight protein induced in rat serum during the development of cardiac hypertrophy. *Arch. Biochem. Biophys.* 281:287-297, 1990.
3. Pajak, L., **Mariappan, M.**, and Wieczorek, D. Reprogramming of myosin light chain 1/3 expression in muscle heterokaryons. *Dev. Biol.* 145:28-39, 1991.
4. Diebold, R., Koch, W., Ellinor, P., Wang, J., **Muthuchamy, M.**, Wieczorek, D., and Schwartz, A. Mutually exclusive exon splicing of the cardiac calcium channel alpha subunit gene generates developmentally regulated isoforms in the rat heart. *Proc. Natl. Acad. Sci. USA* 89:1497-1501, 1992.
5. **Muthuchamy, M.**, Pajak, L., and Wieczorek, D. Induction of endogenous myosin light chain 1 and cardiac alpha-actin expression in L6E9 cells by MyoD1. *J. Biol. Chem.* 267:18728-18734, 1992.
6. **Muthuchamy, M.**, Pajak, L., Howles, P., Doetschman, T., and Wieczorek, D. Developmental analysis of tropomyosin gene expression in embryonic stem cells and mouse embryos. *Mol. Cell. Biol.* 13:3311-3323, 1993.
7. **Muthuchamy, M.**, Grupp, I., Grupp, G., O'Toole, B., Kier, A., Boivin, G., Neumann, J., and Wieczorek, D. Molecular and physiological effects of overexpressing striated muscle β -tropomyosin in the adult murine heart. *J. Biol. Chem.* 270: 30593 - 30603, 1995.
8. Palmiter, K. A., Kitada, Y., **Muthuchamy, M.**, Wieczorek, D., and Solaro, R. J. Exchange of β - for α -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. 1996.
9. **Muthuchamy, M.**, Rethinasamy, P., and Wieczorek, D. Tropomyosin structure and function: New insights. *Trends in Cardiovascular Medicine.* 7, 124-128, 1997.
10. Rethinasamy, P., **Muthuchamy, M.**, Hewett, T., Boivin, G., Wolska, B., Evans, C., Solaro, R. J., and Wieczorek, D. Molecular and physiological effects of α -tropomyosin ablation in the mouse. *Circ. Res.* 82, 116-123, 1998 (*, equal contribution).

11. **Muthuchamy, M.**, Boivin, G., Grupp, I., and Wieczorek, D. β -tropomyosin overexpression induces severe cardiac abnormalities. *J. Mol. and Cell. Cardiol.* 30:1545-1557, 1998.
12. Zajdel, R., Mclean, M, Lemanski, S., **Muthuchamy, M.**, Wieczorek, D, Lemanski, L. and Dube, D. Ectopic Expression of Tropomyosin promotes myofibrillogenesis in mutant axolotl hearts. *Dev. Dyn.* 213:412-420, 1998
13. Wolska, B., Keller, R., Evans, C., Palmiter, K., **Muthuchamy, M.**, Wieczorek, D., de Tombe, P., and Solaro, R.J. Correlation between myofilament response to Ca^{2+} and altered dynamics of contraction and relaxation in transgenic cardiac cells expressing β -tropomyosin. *Circ. Res.* 84:745-751, 1999.
14. **Muthuchamy, M.**, Pieples, K., Rethinasamy, P., Hoit, B., Grupp, I., Boivin, G., Wolska, B., Evans, C., Solaro, R., and Wieczorek, D. Mouse model of a familial hypertrophic cardiomyopathy mutation in α -tropomyosin manifests cardiac dysfunction. *Circ.Res.* 85:47-56, 1999.
15. Evans, C., Pena, J., Phillips, R., **Muthuchamy, M.**, Wieczorek, D., Solaro, J., Wolska, B. Altered hemodynamics and response to β -adrenergic stimulation in transgenic mice harboring a mutant tropomyosin (Asp175Asn) linked to hypertrophic cardiomyopathy. *Am.J. Physiol.* 279:H2414-H2423, 2000
16. Hein, T., Wang, W., Zoghi, B., **Muthuchamy, M.**, and Kuo, L. Functional and molecular characterization of receptor subtypes mediating coronary microvascular dilation to adenosine. *J. Mol. And Cell Cardiol.* 33: 271-282, 2001
17. Tong C, Kolemanskii A, Lioubimov, V., Schuessler, H, Granger, H., **Muthuchamy M.** Measurements of crossbridge attachment/detachment process within intact sarcomeres using surface plasmon resonance. *Biochemistry* 40: 13915-13924, 2001
18. Patel, J., Fitzsimons, D, Buck, S., **Muthuchamy, M.**, Wieczorek, D. and Moss, R. Protein kinase A reduces Ca^{2+} sensitivity of force and speeds crossbridge kinetics in mouse myocardium expressing α - or β -tropomyosin. *Am. J. Physiol.* 280: H2732-H2739, 2001.
19. **Muthuchamy, M.**, Gashev, A, Boswell, N., Dawson, N., and Zawieja, D. Molecular and functional analyses of the contractile apparatus in lymphatic muscle. *FASEB J.* 17: 920-923, 2003.
20. Gaffin, R, Gokulan, K, Sacchettini, J, Hewett, T, Klevitsky, R, Robbins, J, and **Muthuchamy, M.** Charged residue changes in the carboxy-terminus of α -tropomyosin alter mouse cardiac muscle contractility. *J. Physiol.* 556: 531-543, 2004
21. Tong C, Gaffin, R., Zawieja, D., **Muthuchamy M.** Roles of phosphorylation of Myosin Binding Protein-C and Troponin I in mouse cardiac muscle twitch dynamics. *J. Physiol.* 558.3: 927 – 941, 2004.
22. Robert D. Gaffin, Carl W. Tong, David C. Zawieja, Timothy E. Hewett, Raisa Klevitsky, Jeffrey Robbins, and **Mariappan Muthuchamy.** Charged Residue Alterations in the Inner-core Domain and Carboxy-Terminus of α -Tropomyosin Differentially Affect Mouse Cardiac Muscle Contractility. *J.physiol.* 561.3:777-791, 2004
23. Zajdel RW, Denz CR, McLean MD, Dube S, **Muthuchamy M**, Poiesz BJ, Wieczorek DF, Dube DK. Diminished myofibril organization in mutant axolotl hearts transfected with site-directed mutants of sarcomeric tropomyosins. *Cardiovascular Toxicology*, 5:75-90, 2005
24. Sarin, V, Gaffin, R, Meininger, G, **Muthuchamy, M.** RGD containing peptides inhibit the force production of mouse papillary muscle bundles via $\alpha_5\beta_1$ integrin *J. Physiol.* 564:603-617, 2005.
25. Trache, A., J.P. Trzeciakowski, L. Reeves, Z. Sun, M. **Muthuchamy, M.** Guo, S. Yuan, and G.A. Meininger. Histamine effects on endothelial cell fibronectin interaction studied by atomic force microscopy. *Biophys. J.* 89:2888-2898, 2005.
26. Gaffin, R, Gokulan, K, Sacchettini, J, Hewett, T, Klevitsky, R, Robbins, J, Sarin V, Zawieja, D, Meininger, G. and **Muthuchamy, M.** Changes in the end-to-end interactions of tropomyosin affect mouse cardiac muscle dynamics. *Am. J. Physiol* 291: H552-563, 2006.

27. Gaffin, R and **Muthuchamy M.** Functional domains of tropomyosin: new insights. *Physiology News* 65: 27-28, 2006.
28. Wu X, Sun Z, Trzeciakowski JP, Meininger GA and **Muthuchamy M.** Modulation of mechanical properties of the interactions between fibronectin and alpha5beta1 integrin in cardiomyocytes in a beat-to-beat basis. In Preparation. (An abstract form is accepted for AHA Scientific Meetings at Chicago, November 2006). *Circulation* 2006, Abstract.
29. Wang W, Zawieja, DC, Gashev AA, Davis MJ and **Muthuchamy M.** Inhibition of myosin light chain phosphorylation decreases tonic contraction of rat mesenteric lymphatics. In Preparation.
30. **Muthuchamy M,** Bridenbaugh E, Knippa K, Wang W, Gashev AA and Zawieja D. Differential expression of thin filament regulatory proteins in lymphatics. In preparation.

Abstracts

1. **Mariappan, M.,** Kamala, J., and Rajamanickam, C. Partial purification and characterization of a cytosolic factor stimulating transcription *in vitro* during the development of cardiac hypertrophy in rats. *J. Cell. Biochem. Supplement* 13E, p.181, 1989.
2. Prabhakar, R., **Mariappan, M.** and Rajamanickam, C. A high molecular weight serum protein induced during cardiac hypertrophy in patients' with arterial and ventricular septal defects. *J. cell. Biochem. Supplement* 15C, p. 190, 1991.
3. Pajak, L., Hughes, S., **Mariappan, M.,** and Wieczorek, D. Differential regulation of myosin light chain 1/3 expression in cell heterokaryons. *J. Cell. Biochem. Supplement* 15C, 1991.
4. **Muthuchamy, M.,** Pajak, L., Howles, P., Doetschman, T., and Wieczorek, D. Tropomyosin expression in ES cells. 1991 UCSD Asilomar conference: "Molecular and Cellular Biology of the Cardiac Myocyte".
5. **Muthuchamy, M.,** Pajak, L., Howles, P., Doetschman, T., and Wieczorek, D. Tropomyosin expression during murine development. *J. Cell. Biochem., Supplement* 17D, p. 128, 1993.
6. Pajak, L., **Muthuchamy, M.,** Howles, P., Doetschman, T., and Wieczorek, D. Analysis of contractile protein gene expression in developing embryoid bodies. *J. Cell. Biochem., Supplement* 17D, p. 129, 1993.
7. Wieczorek, D., Howles, P., Pajak, L., **Muthuchamy, M.,** and Doetschman, T. Molecular analysis of contractile protein gene expression in alpha-tropomyosin gene targeted embryonic stem cells. Scientific conference on the molecular biology of the normal, hypertrophied and failing heart, 1993.
8. **Muthuchamy, M.,** Neumann, J., and Wieczorek, D. Over-expression of β -tropomyosin during murine cardiac development. *J. Cell. Biochem., Supplement* 18D, p. 510, 1994.
9. **Muthuchamy, M.,** Neuman, J., Grupp, I., Grupp, G. and Wieczorek, D. Analysis of transgenic mice overexpressing striated β -Tropomyosin in adult heart. *Circulation*, 90: I-520, 1994.
10. **Muthuchamy, M.,** Grupp, I., Grupp, G., O'Toole, B., Kier, A., Boivin, G., Neumann, J., and Wieczorek, D. Functional analysis of tropomyosin in murine heart. *J. Cell. Biochem., Supplement* 19B, 1995.
11. Palmiter, K. A., Kitada, Y., **Muthuchamy, M.,** Wieczorek, D., and Solaro, R. J. Use of a transgenic (TG) mouse model to investigate the role of tropomyosin (TM) isoforms in the regulation of cardiac myofilament activation. *Biophysical J.* 1995.
12. **Muthuchamy, M.,** Grupp, I., Gunter, G., O'Toole, B., Boivin, G., and Wieczorek, D. Expression of β tropomyosin isoform affects cardiac development and function. *J. Mol. and Cell. Cardiology.* 1995.
13. Rethinasamy, P., **Muthuchamy, M.,** and Wieczorek, D. Targeted ablation of α -tropomyosin striated muscle isoform. *Keystone Symposia on Molecular Biology of Muscle Development,* Snowmass, CO, p. 366, 1997.

14. **Muthuchamy, M.**, Grupp, I., Grupp, G., Wolska, B., Solaro, R. J., and Wieczorek, D. Increased α -tropomyosin 175 mutation (D175N) leads to abnormal cardiac function. Keystone Symposia on Molecular Biology of Muscle Development, Snowmass, CO, p. 351, 1997.
15. Wolska, B., Evans, C., Palmiter, K., **Muthuchamy, M.**, Oehlenschlaeger, J., Wieczorek, D., and Solaro, R.J. Transgenic mouse hearts with a shift in the population of tropomyosin isoforms or point mutations of α -TM show altered myofilament sensitivity to Ca^{2+} . Biophys. J. A57, M-Pos182, 1997.
16. **Muthuchamy, M.**, Pieples, K., Rethinasamy, P., Wolska, B., Evans, C., Solaro, R.J., Grupp, I., Boivin, G., and Wieczorek, D. Mouse hearts with FHC mutation in α -tropomyosin manifest cardiac dysfunction. Keystone symposia on Molecular biology of the cardiovascular system, Steamboat springs, CO, A225, p48, 1998.
17. Dube, D., Spinner, B., Zajdel, R., **Muthuchamy, M.**, and Lemanski, L. Studies on a developmentally regulated cardiac tropomyosin from the Mexican axolotl (*Ambystoma mexicanum*). Keystone symposia on Molecular biology of the cardiovascular system, Steamboat springs, CO, A111, p34, 1998.
18. Rethinasamy, P., **Muthuchamy, M.**, Boivin, G., and Wieczorek, D. Development and rescue of murine cardiomyopathy in a controlled transgenic system. Keystone symposia on Molecular biology of the cardiovascular system, Steamboat springs, CO, A342, p62, 1998.
19. Evans, C., Wolska, B., **Muthuchamy, M.**, Wieczorek, D., and Solaro, R.J. Transgenic mouse hearts with a point mutation in α -tropomyosin show altered myofilament sensitivity to calcium, independent of phosphorylation state. Biophys. J. A346, Th-Pos1, 1998.
20. **Muthuchamy, M.**, and Zawieja, D. Molecular and Cellular Characterization of Lymphatic Muscle. Circulation, 98:supplement I, pp 826, 1998.
21. Wolska, B., Keller, R., Evans, C., Palmiter, K., **Muthuchamy, M.**, Wieczorek, D., de Tombe, P., Solaro R.J. Correlation between myofilament response to Ca^{2+} and altered dynamics of contraction and relaxation in transgenic cardiac cells expressing β -tropomyosin. Circulation, 98:supplement I, pp 465, 1998.
22. Hein, T.W., Ma, Y., **Muthuchamy, M.**, Kuo, L. Functional and molecular studies of adenosine receptors and KATP channels in the coronary microcirculation. Circulation, 98:supplement I, pp 139, 1998.
23. Tong, C., Granger, H., **Muthuchamy, M.** Functional interaction between troponin-I and Myosin binding protein C. Scientific conference on Molecular, Cellular, and Integrated physiological approaches to the heart, AHA, Council on Basic Cardiovascular Sciences, Aug, 1999.
24. Tong, C., Krishnamoorthy, G., Granger, H.J., **Muthuchamy, M.** Phosphorylation status of cardiac myosin binding protein C impacts acto-myosin ATPase activity. Circulation, 100:supplement 1, p625, 1999.
25. Tong, C., Kolomenski, A., Schuessler, H., Granger, H.J., **Muthuchamy, M.** Determination of myosin to actin attachment and detachment within intact cardiac sarcomeres in real time by using surface plasmon resonance. Keystone Symposia, 2000.
26. Tong, C., Kolemanski, A., Schuessler, H., Granger, H.J., **Muthuchamy, M.** Using surface plasmon resonance to monitor acto-myosin attachment/detachment within intact sarcomeres. Biophysical Journal, 78:p1386, 2000.
27. Gaffin, R, Boswell, N, Hein, T, Kuo, L, **Muthuchamy, M.** Impaired adenosine-induced dilation in coronary arteries from transgenic mouse hearts expressing a familial hypertrophic cardiomyopathy mutation. The FASEB J, 633.12, 2001
28. Tong, C, Gaffin, R, Zawieja, D, **Muthuchamy, M.** Role of tropomyosin and myosin binding protein C in force frequency relationship of cardiac muscle. The FASEB J, 417.7, 2001
29. Gaffin, R, Trache, A, Robinson, S, **Muthuchamy, M.** Charge changes of amino acids in α -tropomyosin in hearts of transgenic mice alter cardiac function. Keystone Symposia on Molecular Biology of the heart. Keystone, Colorado, P304, 2002.

30. Tong C, Gaffin, B, Zawieja, D., Muthuchamy M. Role of myosin binding protein C phosphorylation in force frequency relationship of the heart. *Circulation*, abstract, 2002
31. Gaffin, B, Tong, C., Zawieja, D, Muthuchamy, M. Charge changes in striated α -TM protein affect cardiac function in transgenic mice , *Biophysical J.*, abstract, 2003.
32. Gaffin, B, Tong, C., Zawieja, D., Muthuchamy, M. Charge changes in α -tropomyosin alter myocardial function. *Circulation*. abstract, 2003
33. Gaffin, R, Tong, C, Zawieja, D, Hewett, T, Robbins, J, Muthuchamy, M. Charged residue alterations in the inner-core domain and carboxy-terminus of a-tropomyosin differentially affect mouse cardiac muscle contractility. *Circulation*, abstract, 2004
34. Gaffin, R, Zawieja, D, Hewett, T, Robbins, J, Muthuchamy, M. Alterations in a-tropomyosin's carboxy overlap region affect mouse cardiac function. *Circulation*, abstract, 2004.
35. Shipley, R.D., Hein, T., Ren, Y., Muthuchamy, M., and Kuo, L. Dysregulation of coronary arteriolar response to the metabolic vasodilator adenosine in hypertrophic cardiomyopathy: Role of NO and O₂⁻. *FASEB J.* 19 (4): A685. April 2005.
36. Muthuchamy M, Knippa K, Bridenbaugh E, Gashev A and Zawieja D. Differential expression of thin filament regulatory proteins in rat lymphatics. *FASEB J.* 19 (4): A771. April 2005.
37. Wang W, Zawieja D, Gashev A, Greiner S and Muthuchamy, M. Myosin light chain kinase inhibitor decreases lymph function in rat mesenteric lymphatics. *FASEB J.* 19 (4): A766. April 2005.
38. Wang W, Zawieja D, Gashev A, Greiner S and Muthuchamy, M. Extracellular signal-regulated kinase inhibition attenuates contractile activity in rat mesenteric lymphatics. *FASEB J.* 19 (4): A767. April 2005.
39. Wang W, Zawieja D, Gashev A, Wink L, and **Muthuchamy M**. Inhibition of myosin light chain phosphorylation decreases rat mesenteric lymphatic pump function. *FASEB J.* 20(4):A279, 2006.
40. Nepiyushchikh Z, Gashev A, Zawieja D, Heuertz R, Ezekiel U and **Muthuchamy M**. Effects of C-reactive protein on rat mesenteric lymphatic contractility. *FASEB J.* 20(4):LB43, 2006.
41. A.A. Gashev and **M. Muthuchamy**. "Differential functional and molecular effects on lymphatic pumping in aged-rat mesenteric lymphatics and thoracic duct". *FASEB Journal* 20 (4): A279, 2006.
42. Julian AM, Ezekiel U, Zawieja D, and **Muthuchamy M**. Hypoxia and ECM Proteins Influence Angiogenesis and Lymphangiogenesis in Mouse Embryoid Bodies. *Circulation* 114(18): A1679, 2006.
43. Wu X, Sun Z, Trzeciakowski JP, Meininger GA and **Muthuchamy M**. Mechanical properties of the interactions between fibronectin and alpha5beta1 integrin on cardiomyocytes studied by atomic force microscopy. *Circulation* 114 (18): A536, 2006.
44. Wang W, Zawieja D, Gashev A, Davis M, and **Muthuchamy M**. Inhibition of Myosin Light Chain Decreases SP-induced Tonic Contraction of Rat Mesenteric Lymphatics. Presented at the Gordon Research Conference: Molecular Mechanisms in Lymphatic Function and Disease; September 3-8, 2006; Les Diablerets, Switzerland.
45. Dougherty PJ, Zawieja D, **Muthuchamy M**, and Davis M. Unique mechanical and contractile properties of mesenteric lymphatic vessels. Presented at the Gordon Research Conference: Molecular Mechanisms in Lymphatic Function and Disease; September 3-8, 2006; Les Diablerets, Switzerland.
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