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Department of Exercise Science
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Jung A. Kim, Ph.D.

Education

New Mexico State University
2006: Ph.D., Biology

Pepperdine University
2000: M.A., Education

University of California, Los Angeles
1995: B.S., Physiological Science

Appointments

University of Puget Sound
2012-present: Assistant Professor, Department of Exercise Science and Neuroscience Program

University of California, Los Angeles
2010-2015: Assistant Researcher, Integrative Biology and Physiology

West Los Angeles College
2011-2012: Instructor, Biology, Microbiology, and Physiology

University of California, Los Angeles
2006-2010: Postdoctoral Researcher, Integrative Biology and Physiology

New Mexico State University
2006 (Summer): Instructor, Biology

Teaching

University of Puget Sound, Department of Exercise Science
2012-present: Human Physiology (with lab), Neuromuscular Adaptation, Advanced Neuromuscular Adaptation (with lab), Molecular and Cellular Advances in Neuroplasticity, Scientific Writing

West Los Angeles College
2011-2012: Human Physiology (with lab)

New Mexico State University
2006: General Biology

New Mexico State University
2001 (Fall): Graduate Teaching Assistant for Biology for non-majors (laboratory component)

Professional Service

Manuscript reviewer: 1) Journal of Applied Physiology; 2) Muscle and Nerve

University Service

2016: Seminar for Prelude freshman orientation
2014-present: Member of the Bioethics Program Steering Committee
2013-2016: Member of Institutional Review Board
2013-present: Member of the Institutional Animal Care and Use Committee
2013-present: Academic Advisor, Department of Exercise Science

Research Activities

2014-2017: W.M. Keck Foundation Award, "Keck Initiative for NeuroCulture." Participated as member of team led by Principal Investigator and Associate Professor Siddharth Ramakrishnan to establish a culture of neuroscience that integrates the Puget Sound campus with the greater area communities. $250,000.

2015 (Fall Semester): Martin Nelson Junior Sabbatical for project "The role of MMP-9 on skeletal muscle adaptation and remodeling under varying activity levels". Paid regular salary during sabbatical.

2015 (Summer): McCormick Faculty Mentor Award for student (Reilly Fitzpatrick) project "The role of MMP-2, -9, and -13 in the regulation of skeletal muscle hypertrophy." $4,000.

2014-2015: Faculty Research Grant from University of Puget Sound Enrichment Committee to support project, "The role of matrix metalloproteinases in skeletal muscle growth and repair". $2,000.

2013 (Summer): Burlington Northern Curriculum Development Award for development of new courses through continued collaboration with V. Reggie Edgerton at UCLA. $3,000.

2011-2013: Craig H. Neilsen Foundation Grant Award for project "Identification of locomotor circuits after a spinal cord injury". $275,000 (Principal Investigator).

Publications

1. Roy, R.R., Kim, J.A., Monti, R., Zhong, H. and Edgerton, V.R. (1997). Architectural and histochemical properties of cat hip "cuff" muscles. *Acta Anat*. 159:136-146.
2. Roy, R.R., Ishihara, A., Kim, J.A., Lee, M., Fox, K. and Edgerton, V.R. (1999). Metabolic and morphologic stability of motoneurons in response to chronically elevated neuromuscular activity. *Neurosci.* 92:361-366.
3. Roy, R.R., Bodine, S.C., Pierotti, D.J., Kim, J.A., Talmadge, R.J., Barkhoudarian, G., Fanton, J.W., Koslovskaya, I. and Edgerton, V.R. (1999). Fiber size and myosin phenotypes of selected Rhesus hindlimb muscles after a 14-day spaceflight. *J. Grav. Physiol.* 6:55-62.

4. Roy, R.R., Kim, J.A., Grossman, E.J., Bekmezian, A., Talmadge, R.J., Zhong, H. and Edgerton, V.R. (2000). Persistence of myosin heavy chain-based fiber types in innervated but silenced rat fast muscle. *Muscle Nerve* 23:735-747.
5. Roy, R.R., Zhong, H., Monti, R.J., Vallance, K.A., Kim, J.A. and Edgerton, V. R. (2000). Mechanical properties and fiber type composition of chronically inactive muscles. *J. Grav. Physiol*. 7:P103-104.
6. Tavakol, M., Roy, R.R., Kim, J.A., Zhong, H., Hodgson, J.A., Hoban-Higgins, T.M., Fuller, C.A. and Edgerton, V.R. (2002). Fiber size, type, and myosin heavy chain content in rhesus hindlimb muscles after 2 weeks at 2G. *Aviat. Space Environ. Med.* 73:551-557.
7. Kim, J.A., Jonsson, C.B., Calderon, T. and Unguez, G.A. (2004). Transcription of MyoD and myogenin in the non-contractile electrogenic cells of the weakly electric fish, *S. macrurus. Dev. Genes Evol.* 214:380-392.
8. Kim, S.J., Roy, R.R., Kim, J.A., Manning, K.M., Zhong, H., Bigbee, A.J., Gosselink, K.L., Grindeland, R.E. and Edgerton, V.R. (2004). Differential effects of long-term hindlimb unloading on a slow and fast extensor and a fast flexor in adult rats. *J. Grav. Physiol.* 11:35-46.
9. Cuellar, H., Kim, J.A., and Unguez, G.A. (2006). Evidence of post-transcriptional regulation in the maintenance of a partial muscle phenotype by electrogenic cells of *S. macrurus. FASEB J.* 20:2540-2549.
10. Zhong, H., Roy, R.R., Woo, J., Ortiz, C., Kim, J.A. and Edgerton, V.R. (2007). Differential modulation of MHC phenotype in an inactive extensor and flexor muscle of adult rats. *J. Anatomy* 210:19-31.
11. Kim, J.A., Laney, C., Curry, J. and Unguez, G.A. (2008). Expression of myogenic regulatory factors in the muscle derived electric organ of *Sternopygus macrurus. J. Exp. Biol.* 211:2172-2184.
12. Kim, S.J., Roy, R.R., Kim, J.A., Zhong, H., Haddad, F., Baldwin, K.M. and Edgerton, V.R. (2008). Gene expression during inactivity-induced muscle atrophy: Effects of brief bouts of a forceful contraction countermeasure. *J. Appl. Physiol.* 105:1246-1254.
13. Kim, J.A., Roy, R.R., Kim, S.J., Zhong, H., Haddad, F., Baldwin, K.M. and Edgerton, V.R. (2010). Electromechanical modulation of catabolic and anabolic pathways in chronically inactive, but neurally intact, muscle. *Muscle Nerve* 42:410-421.
14. Roy, R.R., Zhong, H., Monti, R.J., Kim, J.A. and Edgerton V.R. (2011). Selectively reshaping a muscle phenotype: functional overload of cat plantaris. *Muscle Nerve* 43:489-99.
15. Duru, P.O., Tillakaratne, N.J., Kim, J.A., Zhong, H., Stauber, S.M., Pham, T.T., Xiao, M.S., Edgerton, V.R. and Roy, R.R. (2015). Spinal neuronal activation during locomotor-like activity enabled by epidural stimulation and 5-hydroxytryptamine agonists in spinal rats. *J. Neurosci. Res.* 93:1229-1239.
16. Kim, J.A., Roy, R.R., Zhong, H., Alaynick, W.A., Embler, E., Jang, C., Gomez, G., Sonoda, T., Evans, R.M. and Edgerton, V.R. (2016). PPARδ preserves a high resistance to fatigue in the mouse medial gastrocnemius after spinal cord transection. *Muscle Nerve* 53:287-296.
17. Bowdle, R.H.W., Warren, B.L., Kim, J. (2016). Time of day effect on isokinetic peak torque during knee flexion and extension. *Isokinetics Ex Sci* 24:285-293.

Book Chapters

1. Kim, J.A., Roy, R.R., and Edgerton, V.R. (2012). Neuromechanical triggers for skeletal muscle homeostasis. *Muscle: Fundamental Biology and Mechanisms of Disease.* K.K. Griendling, R.N. Kitsis, J.T. Stull, J. Hill, E. Olson (eds). Elsevier, New York, pp. 789-800.

Abstracts and Published Conference Proceedings

1. Unguez G.A., Jonsson C.B., Kim J.A. and Peck M. (2001). Expression of myogenic regulatory factors in electric organ, skeletal muscle, and regenerating tails of the weakly electric fish *Sternopygus macrurus*. *Am. Soc. Cell Bio.l Abstr.*, 12:2777.
2. Unguez, G.A., Jonsson, C.B. and Kim, J.A. (2002). Detection of myogenic transcription factors in the myogenically-derived electrocytes lacking sarcomeric proteins in *S. macrurus*. *Soc. Dev. Biol. Abstr.* 61:494.
3. Clinton, A.S., Kim, J.A., Tapscott, S.J. and Unguez, G.A. (2003). Molecular correlates of tail regeneration in the teleost fish, *Sternopygus macrurus. Soc. Neurosci. Abstr.* 41.15.
4. Zhong, H., Roy, R.R., Ortiz, C., Woo, J., Kim, J.A. and Edgerton, V.R. (2003). Differential response of a fast extensor and fast flexor muscle to prolonged inactivity in adult rats. *Soc. Neurosci. Abstr.* 392.26.
5. Kim, J.A., Cuellar, H. and Unguez, G.A. (2004). Transcription of myogenic regulatory factors in the non-contractile electrogenic cells of the electric fish, *S. macrurus*. *Soc. Dev. Biol. Abstr.*
6. Kim, J.A. (2004). Neural regulation of mature skeletal muscle and electric organ phenotype in the weakly electric fish, *Sternopygus macrurus*. *17th Annual Biology Research Symp Abstr.*
7. Kim, J.A. and Unguez, G.A. (2004). Transcription of myogenic regulatory factors in the non-contractile electrogenic cells of the electric fish, *S. macrurus*. *New Mexico Biomedical Research Infrastructure Network Abstr*. 39.
8. Kim, J.A. and Unguez, G.A. (2005). Transcriptional regulation of myogenic factors by electrical activity in myogenically derived tissues of *Sternopygus macrurus. Am. Soc. Cell Biol. Abstr.* L311.
9. Duru, P.O., Kim, J.A., Xiao, M., MikhaeilI, M., Esquivel, V., Joseph, M., Zhong, H., Roy, R.R., Edgerton, V.R. and Tillakaratne, N.J. (2013). Activation of cholinergic interneurons surrounding the central canal during stepping in adult intact and spinal cord transected rats. *Soc Neurosci Abstr*. 831.17
10. Kim, J.A., Xiao, M.S., Hornak, A. J., Mikhaeil, M., Esquivel, V., Gonzalez, E.J., Duru, P.O., Joseph, M.S., Zhong, H., Roy, R.R., Edgerton, V.R. and Tillakaratne, N.J.K. (2013). Activated spinal neurons during quadrupedal stepping in adult intact mice injected with pseudorabies virus into the tibialis anterior. *Soc Neurosci Abstr.* 832.04.
11. Tillakaratne, N.J., Duru, P.O., Xiao, M., Kim, J.A., Zhong, H., Edgerton, V.R. and Roy, R.R. (2014). Spinal cord epidural electrical stimulation activates more lumbar motoneurons in adult spinal rats when combined with load-bearing activity. *Soc Neurosci Abstr.*
12. Dale, E.A., Ng, M., Zhong, H., Roy, R.R., Tillakaratne, N.J., Edgerton, V.R. and Kim, J.A. (2014). Characterization of spinal interneurons responsible for stepping in spinally transected mice. *Soc Neurosci Abstr.*
13. Raefsky, S., Joseph, M.S., Xiao, M.S., Hornak, A.J., Kim, J.A., Tillakaratne, N.J.K. and Edgerton, V.R. (2014). The neural circuitry associated with paw withdrawal learning in spinal mice. *Int. J. Exer. Sci.: Conf. Proc.* 8(2): Article 45.

14. Vieira, R.L, Long, C.M., McCall G.E., Mehan, R.S. and Kim, J.A. (2015). BDNF and NT-4/5 expression in mouse plantaris and spinal cord after functional overload and voluntary wheel running. *Int. J. Exer. Sci.: Conf. Proc.* 8(3): Article 45.
15. Hundemer, K.N., McCall, G.E., Hyatt, J.P. and Kim, J.A. (2016) The role of MMp-9 in skeletal muscle regeneration after cardiotoxin-induced injury. *Int. J. Exer. Sci.: Conf. Proc.* 8:(4): Article 3.
16. Fitzpatrick, R.E., McCall, G.E., Mehan, R.S., Hyatt, J.P. and Kim, J.A. (2016). The role of MMP-2, -9, and -13 in the regulation of skeletal muscle hypertrophy. *Int. J. Exer. Sci.: Conf. Proc.* 8:(4): Article 9.
17. Pang, M.H., McCall, G.E., Mehan, R.S., Hyatt, J.P. and Kim, J.A. (2016). The role of MMP-9 in satellite cell activation after increased activity. *Int. J. Exer. Sci.: Conf. Proc.* 8(4): Article 5.
18. Williams, J.S., McCall, G.E., Hyatt, J-P. and Kim, J.A. (2017). The role of MMP-9 in muscular fibrosis following cardiotoxin-induced injury. *Int. J. Exer. Sci.: Conf. Proc.* 8(5): Article 38.
19. Clarke, K., Palmer, J., Kalenscher, E., Moller, E., Donckels, E., McCall, G.E., Hyatt, J.P. and Kim, J.A. (2017). Fiber type composition after cardiotoxin-induced injury in MMP-9 null mice. *Int. J. Exer. Sci.: Conf. Proc.* 8(5): Article 42.
20. McNutt, C., Sylvester, S., Richman, M., Pena, J., Wang, L., Brener, D., Murakami, J., McCall G.E., Hyatt, J.P. and Kim, J.A. (2017). The effect of MMP-9 on satellite cell activation following cardiotoxin-induced injury. *Int. J. Exer. Sci.: Conf. Proc.* 8(5): Article 65.
21. Hyatt, J.P.K., Caprio, L.A., Bienenstock, E.J., Kim, J.A. and McCall G.M. (2017). Introduction of a high-fat/sucrose diet modulates voluntary wheel running activity in adult female rats. *Med. Sci. Sport Exer.c* 49(5): S330. ACSM Conference: Denver, CO May 31-Jun 4.

Invited Presentations

2010 Thompson Hall Science and Mathematics Seminars, University of Puget Sound, Tacoma, WA *Can maintaining hindimb muscle mass improve locomotor recovery after a spinal cord injury*

2014 Thompson Hall Science and Mathematics Seminars, University of Puget Sound, Tacoma, WA *Labeling neurons involved in quadrupedal stepping in mice using a viral marker*

2017 American College of Sports Medicine Northwest Regional Chapter, Bend, OR *Beyond force transduction: Exploring the role of muscle's extracellular matrix in injury adaptation*

Professional Memberships

2004-2006	Society for Developmental Biology
2005	American Society for Cell Biology
2009	American Physiological Society
2010-2015	American Association for the Advancement of Science
2016-present	American College of Sports Medicine: Northwest Regional Chapter

Undergraduate Student Research Advising

Jayme Murakami, 2017. Independent Study: “Troubleshooting gel zymography protocol to observe MMP-2 and MMP-9 activity during muscle regeneration.”

Jacob Palmer, 2016-2017. Senior Thesis: “The effects of MMP-9 knockout on TA muscle fiber size in CTX-injured mice.”

Kaitie Clarke, 2016-2017. Senior Thesis: “Fiber type composition after cardiotoxin-induced injury in MMP-9 null mice.”

Jack Williams, 2016-2017. Senior Thesis: “The role of MMP-9 in muscular fibrosis following cardiotoxin-induced injury”. Received 2016 Summer Research Grant ($4000).

Faith Copenhaver, 2015-2017. Senior Thesis: “The role of MMP-9 in muscle regeneration after cardiotoxin-induced injury.”

Michael Pang, 2015-2016. Senior Thesis: “The role of MMP-9 in satellite cell activation after increased activity.” Received 2015 Summer Research Grant ($3250).

Reilly Fitzpatrick, 2015-2016. Senior Thesis: “The role of MMP-2, -9, and -13 in the regulation of skeletal muscle hypertrophy.” Received 2015 McCormick Scholar Award ($3750).

Kai Hundemer, 2015-2016. Senior Thesis: “The role of MMp-9 in skeletal muscle regeneration after cardiotoxin-induced injury.” Received University Enrichment Committee Funds ($440)

Elizabeth Blonden, 2015. Independent Study: “The role of MMP-9 in muscle regeneration after cardiotoxin injury.”

Kallan Christiansen, 2014-2015. Senior Thesis: “The role of MMP-9 in satellite cell activation and hypertrophy after increased activity.”

Robin Vieira, 2014-2015. Neuroscience Research Experience: “BDNF and NT-4/5 expression in mouse plantaris and spinal cord after functional overload and voluntary wheel running.”

Sophia Raefsky, 2012-2013. Senior Thesis: “Mapping of the spinal circuitry associated with paw withdrawal learning in spinal mice.” Received 2013 Summer Research Grant ($2750).