

Shuichi Sato, Ph.D., ATC

Bourgeois Hall Room 134-A

Lafayette, LA 70503

s.sato@louisiana.edu

1. Current position:

Assistant Professor (Tenure Track), Exercise Science, School of Kinesiology, University of Louisiana at Lafayette
Researcher, New Iberia Research Center, University of Louisiana at Lafayette

2. Education/Training:

| Institution & location | Degree | Year(s) | Field of Study |
|--|---------------|----------------|-----------------------|
| Sophia University, Tokyo, Japan | BS | 1994 | Chemistry |
| Sophia University, Tokyo, Japan | MS | 1996 | Chemistry |
| Univ. of Southern Mississippi, Hattiesburg, MS | BS | 2003 | Athletic Training |
| Univ. of Southern Mississippi, Hattiesburg, MS | MS | 2005 | Exercise Science |
| Univ. of South Carolina, Columbia, SC | Ph.D. | 2012 | Applied Physiology |
| Univ. of Louisville SOM, Louisville, KY | Post doc | 2015 | Cell Biology |

3. Research experience:

University of Louisiana at Lafayette, Lafayette, LA (2015 - Current)

Principle Investigator, Exercise Science, School of Kinesiology

University of Louisville, Louisville, KY (2012 – 2015)

Postdoctoral Research Associate, Department of Anatomical Sciences & Neurobiology, School of Medicine

Mentor: Dr. Ashok Kumar

University of South Carolina, Columbia, SC (2006 - 2012)

Graduate Research Assistant, Department of Exercise Science, Arnold School of Public Health

Mentor: Dr. James Carson (Integrative Muscle Biology Lab)

Dissertation: The effect of sex and exercise training during the progression of cancer cachexia in the ApcMin/+ Mouse.

Sophia University, Tokyo, Japan (1994 - 1996)

Graduate Student, Department of Chemistry, Faculty of Science and Technology

Mentors: Drs. Gen P. Sato and Haruko Ikeuchi (Analytical Chemistry Lab)

Thesis: The viscosities of [tris(acetylacetonato) cobalt(III)] in some organic solvents.

Sophia University, Tokyo, Japan (1993 – 1994)

Undergraduate Student, Department of Chemistry, Faculty of Science and Technology

Mentor: Dr. Gen P. Sato (Analytical Chemistry Lab)

Thesis: The partial molar volumes of [tris(acetylacetonato) cobalt(III)] in some organic solvents.

4. Publication:

1. Bohnert KR, Gallot YS, **Sato S**, Xiong G, Hindi SM, Kumar A. **Inhibition of ER stress and unfolding protein response pathways causes skeletal muscle wasting during cancer cachexia.** FASEB J. 2016

Sep;30(9):3053-68.

2. Hardee JP, Mangum J, Gao S, **Sato S**, Hetzler KL, Puppa MH, Fix D, and Carson JA. **Effect of cachexia severity on eccentric contraction-induced myofiber growth in tumor-bearing mice.** J Appl Physiol (1985). 2016 Jan 1;120(1):29-37. doi: 10.1152/jappphysiol.00416.2015.
3. Ogura Y, Hindi SM, **Sato S**, Xiong G, and Kumar A. **TAK1 is a critical regulator of satellite stem cell homeostasis and skeletal muscle repair.** Nat Commun. 2015 Dec 9;6:10123. doi: 10.1038/ncomms10123.
4. **Sato S**, Ogura Y, Tajrishi MM, and Kumar A. **Elevated levels of TWEAK in skeletal muscle promote visceral obesity, insulin resistance, and metabolic dysfunction.** FASEB J. 2015 Mar;29(3):988-1002.
5. Hetzler KL, Hardee JP, Puppa MH, Narsale AA, **Sato S**, Davis JM, Carson JA. **Sex differences in the relationship of IL-6 signaling to cancer cachexia progression.** Biochim Biophys Acta. 2015 May;1852(5):816-25.
6. Ogura Y, Tajrishi MM, **Sato S**, Hindi SM, and Kumar A. **Therapeutic potential of matrix metalloproteinases in muscular dystrophy.** Front. Cell Dev. Biol., 01 April 2014 | doi: 10.3389/fcell.2014.00011.
7. Tajrishi MM, **Sato S (Equal contribution)**, Shin J, and Kumar A. **The TWEAK-Fn14 signaling axis mediates age-associated fiber atrophy, inflammation, and interstitial fibrosis in skeletal muscle of mice.** Biochem Biophys Res Commun. 2014 Mar 26. pii: S0006-291X(14)00533-6. doi: 10.1016/j.bbrc.2014.03.084.
8. **Sato S**, Ogura Y and Kumar A. **TWEAK/Fn14 signaling axis mediates skeletal muscle atrophy and metabolic dysfunction.** Front. Immunol. 5:18. doi: 10.3389/fimmu.2014.00018.
9. Hindi SM, **Sato S**, Choi Y, Kumar A. **Distinct roles of TRAF6 at early and late stages of muscle pathology in the mdx model of Duchenne muscular dystrophy.** Hum Mol Genet. 2014 Mar 15;23(6):1492-505.
10. **Sato S**, Ogura Y, Mishra V, Shin J, Bhatnagar S, Hill BG, Kumar A. **TWEAK promotes exercise intolerance by decreasing skeletal muscle oxidative phosphorylation capacity.** Skelet Muscle. 2013 Jul 8;3(1):18. doi: 10.1186/2044-5040-3-18.
11. White JP, Puppa MJ, Gao S, **Sato S**, Welle SL, and Carson JA. **Muscle mTORC1 suppression by IL-6 during cancer cachexia: a role for AMPK.** Am J Physiol Endocrinol Metab. 2013 May 15;304(10):E1042-52. doi: 10.1152/ajpendo.00410.2012. Epub 2013 Mar 26.
12. Lima M, **Sato S**, Enos RT, Baynes JW, and Carson JA. **Development of an UPLC mass spectrometry method for measurement of myofibrillar protein synthesis: application to analysis of murine muscles during cancer cachexia.** J Appl Physiol. 2013 Mar 15;114(6):824-8. doi: 10.1152/jappphysiol.01141.2012. Epub 2013 Jan 17.
13. White JP, Gao S, Puppa MJ, **Sato S**, Welle SL, and Carson JA. **Testosterone regulation of Akt/mTORC1/FoxO3a signaling in skeletal muscle.** Mol Cell Endocrinol. 2013 Jan 30;365(2):174-86. doi: 10.1016/j.mce.2012.10.019. Epub 2012 Oct 29.
14. White JP, **Sato S**, Puppa MJ, Baynes JW, Kostek, MC, Matesic LE and Carson JA. **IL-6 regulation of muscle mitochondrial biogenesis and fission/fusion dynamics during the progression of cancer cachexia.** Skeletal Muscle. 2012 Jul 6;2:14. doi: 10.1186/2044-5040-2-14.

15. Puppa MJ, White JP, Velasquez KT, Baltgalvis KA, Sato S, Baynes JW, and Carson JA. **The Effect of Exercise on IL-6-induced Cachexia in the *Apc^{Min/+}* mouse**. J Cachexia Sarcopenia Muscle. 2012 Jun;3(2):117-37. doi: 10.1007/s13539-011-0047-1. Epub 2011 Nov 30.
16. Puppa MJ, White JP, Sato S, Cairns M, Baynes JW, and Carson JA. **Gut barrier dysfunction in the *Apc^{Min/+}* mouse model of colon cancer cachexia**. Biochimica et Biophysica Acta – Molecular Basis of Disease. Dec;1812(12):1601-6. Epub 2011 Sep 2.
17. White JP, Baynes JW, Welle SL, Kostek MC, Matesic LE, Sato S, and Carson JA. **The regulation of skeletal muscle protein turnover during the progression of cancer cachexia in the *Apc^{Min/+}* mouse**. PLoS One. 2011. 6(9):e24650. Epub 2011 Sep 19.
18. Sato S. **The effect of growth factors and anabolic agents on skeletal muscle regeneration**. Journal of health, physical education, and recreation. Vol.61 No.4, 2011. p.277-283.
19. Washington TA, White JP, Davis JM, Wilson LB, Lowe LL, Sato S, and Carson JA. **Skeletal muscle mass recovery from atrophy in IL-6 knockout mice**. Acta Physiol (Oxf). Acta Physiol (Oxf). 2011 Aug;202(4):657-69.
20. White JP, Baltgalvis KA, Puppa MJ, Sato S, Baynes JW, Carson JA. **Muscle oxidative capacity during IL-6 dependent cancer cachexia**. Am J Physiol Regul Integr Comp Physiol; 2011 Feb;300(2):R201-11.
21. White JP, Baltgalvis KA, Sato S, Wilson LB, Carson JA. **The effect of nandrolone decanoate administration on recovery from bupivacaine-induced muscle injury**. J Appl Physiol. 2009 Nov;107(5):1420-30.
22. White JP, Reecy JM, Washington TA, Sato S, Le ME, Davis JM, Wilson LB, Carson JA. **Overload-induced skeletal muscle extracellular matrix remodelling and myofibre growth in mice lacking IL-6**. Acta Physiol (Oxf). 2009 Dec;197(4):321-32.

4. Scholarly/Conference presentations and abstract publications:

National/International Conference

1. Gooden LJ, Lim BW, & Sato S. The Role of Hippo Signaling Pathway on Muscle Wasting in *Apc^{Min/+}* Mice: A Pilot Study. Experimental Biology, Chicago, IL (2017).
2. Sato S. Hindi SM, Xiong G, & Kumar A. Skeletal muscle-specific deletion of TAK1 activates AMPK and autophagy in mice. The Integrative Biology of Exercise VII, Phoenix, AZ (2016).
3. Sato S, Hindi SM, Tajrishi MM Xiong G, Kumar A. TAK1 is a key regulator of skeletal muscle maintenance in mice. National ACSM's Annual Meeting and World Congresses, Boston, MA (2016)
4. Bohnert, K, Sato S, Xiong, G, and Kumar, A. Unfolding Protein Response Pathways Attenuates Skeletal Muscle Wasting in Mouse Models of Cancer Cachexia. Advances in Skeletal Muscle Biology in Health and Disease Conference. Gainesville, FL (2016).
5. Bohnert K, Sato S, Xiong G, and Kumar A. Unfolded protein response pathways mediates skeletal muscle wasting in mouse models of cancer cachexia. The 2015 Midwest membrane trafficking and signaling symposium. Louisville, KY (2015).

6. **Sato S**, Ogura Y, and Kumar A. Skeletal muscle-specific transgenic overexpression of TWEAK causes metabolic abnormalities and obesity in mice. *The Muscle Microenvironment: A Niche for the Next Generation of Biomedical Scientists*. Columbus, OH (2014).
7. Hetzler KL, **Sato S**, Narsale AA, Puppa MJ, and Carson JA. The effect of sex on IL-6 regulation of cancer cachexia progression in the *Apcmin/+* mouse. *Experimental Biology*. San Diego, CA (2014).
8. Hindi SM, **Sato S**, Tajrishi MM, Mishra V, Ogura Y, and Kumar A. Reciprocal interaction between TWEAK-FN14 system and PGC-1 α regulates skeletal muscle atrophy program. *EMBO workshop-molecular mechanisms of muscle growth and wasting in health and disease*. Ascona, Switzerland (2013).
9. Hindi SM, **Sato S**, and Kumar A. Distinct roles of TRAF6 at early and late stages of disease progression in the *mdx* model of Duchenne muscular dystrophy. *Cardiovascular Forum*, Louisville, KY (2013).
10. **Sato S**, Hetzler KL, Puppa MJ, Gao S, and Carson JA. The effect of acute and repeated eccentric muscle contractions on cachectic muscle anabolic signaling in the female mouse. *Southeast ACSM annual meeting*, Greenville, SC (2013).
11. **Sato S**, Puppa MJ, Gao S, and Carson JA. The effect of muscle contraction on cachectic muscle mTOR signaling and protein synthesis in *ApcMin/+* mouse. *APS Intersociety Meeting: Integrative Biology of Exercise*, Westminster, CO (2012).
12. **Sato S**, Gao S, Puppa MJ, Narsale AA, Aartun JD, and Carson JA. The effect of resistance training on muscle maintenance in the *ApcMin/+* mice. *Advances in Skeletal Muscle Biology in Health and Disease*, Gainesville, FL (2012).
13. Puppa MJ, White JP, **Sato S**, and Carson JA. IL-6 signaling regulates muscle FIS1 expression during the progression of cachexia. *Advances in Skeletal Muscle Biology in Health and Disease*, Gainesville, FL (2012).
14. Hardee JP, Velázquez KT, Puppa MJ, Aartun JD, Narsale AA, **Sato S**, Davis JM, and Carson JA. The effect of quercetin supplementation on volitional fatigue and skeletal muscle mass retention during cancer cachexia. *Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Jacksonville, FL (2012).
15. Puppa MJ, Narsale AA, Velazquez KT, **Sato S**, White JP, and Carson JA. The effect of exercise training on muscle energy status in IL-6 induced cachexia. *Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Jacksonville, FL (2012).
16. White JP, **Sato S**, Puppa MJ, and Carson JA. IL-6 receptor signaling antagonism maintains muscle oxidative capacity during the progression of cachexia in the *Apc^{Min/+}* mouse: a role for exercise. *6th Cachexia Conference*, Milan, Italy (2011).
17. White JP, **Sato S**, Puppa MJ, and Carson JA. Exercise training prevents IL-6 suppression of muscle PGC-1 α and Mitofusin 1 & 2 proteins during the progression of cachexia in the *ApcMin/+* mouse. *American Institute for Cancer Research (AICAR) Annual Research Conference*, Washington DC (2011).
18. **Sato S**, Puppa MJ, Velazquez KT, White JP, Narsale AA and Carson JA. The Effect of tumor growth and moderate exercise on *Apc^{Min/+}* mouse cage activity. *Annual Meeting of American College of Sports Medicine*, Denver, CO (2011).

19. White JP, Puppa MJ, **Sato S**, Baynes JW and Carson JA. IL-6 inhibition attenuates activation of ubiquitin proteasome-dependent degradation in cachectic muscle. *Experimental Biology*, Washington, DC (2011).
20. **Sato S**, Lima M, Enos RT, Baynes JW, and Carson JA. The effect of oxidative capacity on mouse muscle protein synthesis during cachexia. *Experimental Biology*, Washington, DC (2011).
21. Puppa MJ, Aartun JD, White JP, Velázquez KT, **Sato S**, and Carson JA. The Effect of Exercise Training on Neuromuscular Performance in Cachectic Mice. *Southeast ACSM*. Greenville, SC (2011).
22. White JP, **Sato S**, Puppa MJ, Velazquez KT, Baynes JW, Welle SL and Carson JA. Skeletal muscle protein synthesis and IL-6 induced cancer cachexia. *ACSM conference on integrative physiology of exercise*, Miami, FL (2010).
23. Puppa MJ, White JP, **Sato S**, Baynes JW and Carson JA. Role of gut barrier dysfunction and endotoxemia in development of colon cancer cachexia. *Experimental Biology*, Anaheim, CA (2010).
24. White JP, **Sato S**, Puppa MJ, Baynes JW, Welle SL and Carson JA. IL-6-induced cachexia and muscle IGF-1 signaling. *Experimental Biology*, Anaheim, CA (2010).
25. Velazquez KT, **Sato S**, White JP, Puppa MJ, Baynes JW and Carson JA. Skeletal muscle oxidative capacity in cachectic mice. *Experimental Biology*, Anaheim, CA (2010).
26. White JP, Puppa MJ, **Sato S**, Baynes JW, and Carson JA. Glucose Tolerance and Exercise in a Mouse Model of Cancer Cachexia. *Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Greenville, SC (2010).
27. Sheehan J, White JP, **Sato S**, and Carson JA. The association between glucose tolerance and cachexia in the APCMin/+ mouse. *Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Greenville, SC (2010).
28. White JP, **Sato S**, Baltgalvis KA, Baynes JW and Carson JA. Inflammatory Cytokine IL-6 and Cachectic Muscle Oxidative Capacity, *Experimental Biology*, New Orleans, LA (2009).
29. **Sato S**, White JP and Carson JA. Effect of castration on mouse skeletal muscle oxidative capacity. *Experimental Biology*, New Orleans, LA (2009).
30. White JP, **Sato, S** and Carson JA. Nandrolone Decanoate Administration and Growth-Related Signaling during Muscle Recovery from Myotoxin-induced Injury. *Annual Meeting of American College of Sports Medicine*. Seattle, WA (2009).
31. **Sato S**, White JP and Carson JA. Nandrolone Decanoate and Mouse Tibialis Anterior Muscle Regeneration: The Effect of Fiber Type. *Annual Meeting of American College of Sports Medicine*. Seattle, WA (2009).
32. **Sato S**, White JP and Carson JA. Nandrolone Decanoate administration and skeletal muscle recovery from disuse atrophy. *Annual Meeting of American College of Sports Medicine*, Indianapolis, IN (2008).
33. White JP, **Sato S**, Cairns M, and Carson JA. (Feb 2008). The effect of anabolic steroids on tibialis anterior muscle force production after recovery from myotoxin-induced injury (Poster). *Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Birmingham, AL (2008).

34. **Sato S**, White,JP, Washington TA, and Carson JA. Anabolic steroid administration and muscle recovery from disuse. Annual Meeting of the Southeast Chapter of the American College of Sports Medicine, Birmingham, AL (2008).
35. **Sato S**, Okuno S, Sato R, Kanai T, Ikeuchi H, Satô GP. Partial molar volumes and viscosities of [tris (acetylacetonato)cobalt (III)] -dichloromethane and -benzene solutions. 2CP06. The 45th Symposium on Coordination Chemistry, Fukuoka, Japan (1995).

Local/State conference

1. Gooden LJ, Lim BW, and **Sato S**. The Change of MST1 Expression in Cancer Cachexia Mice. Student Research Symposium at the University of Louisiana at Lafayette, Lafayette, LA. (2017).
2. Bohnert, K, **Sato S**, Xiong G, and Kumar A. Unfolding protein response pathways mediate skeletal muscle wasting in mouse models of cancer cachexia. Research!Louisville, Louisville, KY. (2015).
3. **Sato S**, Ogura Y, Tajrishi MM, and Kumar A. Overexpression of TWEAK in skeletal muscle promote visceral obesity, insulin resistance, and metabolic dysfunction. Research!Louisville, Louisville, KY. (2014).
4. **Sato S**, Ogura Y, Hill B, and Kumar A. Skeletal muscle-specific transgenic overexpression of TWEAK causes metabolic abnormalities and obesity in mice. Research!Louisville, Louisville, KY. (2013).

5. Research grants:

Funded

Sato S (PI)

10/01/2016 – 09/30/2017

Yamada Research Grant

Approx. \$9,400 (1 year)

Title: The effect of royal jelly on satellite cell activation in aged nonhuman primate *in vitro*

Sato S (PI)

07/01/2017 – 06/30/2020

Louisiana Board of Regents Support Fund

\$150,761 (Total costs, 3 years)

Research Competitiveness Subprogram

Title: The effect of Yes-associated protein YAP during the development of cancer cachexia

6. Honors:

- Award for Excellence in Academic Advising, University of Louisiana at Lafayette (May 2017)
- Rising Star Award, Center for Research, Innovation, and Economic Development at the University of Louisiana at Lafayette (November 2016)
- Summer Research Award, University of Louisiana at Lafayette (June 2016)
- Research!Louisville, 1st place in Postdoctoral Fellow Award (September 2014)
- Norman J. Arnold Foundation Doctoral Student Fellowship (August 2011)
- Mississippi Athletic Trainers' Association Scholarship (August 2002)

7. Books:

Translation into Japanese. Essentials of Strength and Training and Conditioning, 3rd edition. (2nd chapter, biochemistry of exercise and metabolism, Book House HD Ltd., ISBN 4938335085)

8. Participated in reviewing manuscripts for the following journals:

- FASEB journal
- AJP: Cell Physiology
- AJP: Regulatory, Integrative and Comparative Physiology
- AJP: Endocrinology and Metabolism
- AJP: Gastrointestinal and Liver Physiology
- Journal of Applied Physiology
- BMC Cancer
- BMC International
- PLOS One
- Muscle & Nerve
- BBA - Molecular Basis of Disease
- Molecular and Cellular Endocrinology
- Acta Physiologica
- Frontier in Physiology
- Experimental Gerontology
- International Journal of Orthopaedics

9. Other activities:

Editorial Board Member: International Journal of Orthopaedics (ISSN 2311-5106)

2013-present

Editorial Board Member: Journal of Bones and Muscles Study

2017

10. Professional affiliations:

- American Physiological Society (APS)
- Southeast Chapter of American College of Sports Medicine (SEACSM)
- American College of Sports Medicine (ACSM)
- Athletic Trainer, Certified (ATC, NATA Board of Committee)
- National Athletic Trainers' Association (NATA)
- Louisiana Athletic Trainers' Association (LATA)

11. Mentoring/Teaching experience:

Research mentor

2008-present

Undergraduate Students (August 2016-Spring 2017)

Janisha Gooden & Benjamin Lim, School of Kinesiology, University of Louisiana at Lafayette, LA (Sato's lab)

Graduate Student (Fall 2014)

Kyle Bohnert, Doctoral student, Anatomical Sciences and Neurobiology, Univ. of Louisville School of Medicine, Louisville, KY

Topic: Skeletal muscle loss due to ER stress in C26 cancer cachexia mice

High School Student science project (August 2013 – May 2014)

Aman Mann, duPont Manual High School, Louisville, KY

Topic: Relationship between TWEAK/FN14 system and skeletal muscle loss

Master's Project (Spring 2012)

Mark Hilla & Joseph Panchella, Athletic Training Graduate Program, University of South Carolina, Columbia, SC
Topic: Methacillin Resistant Stapholococcus Aureus (MRSA) in athletic facilities

Master's thesis (Spring 2011)

Nick Thomas, Athletic Training Graduate Program, University of South Carolina, Columbia, SC
Topic: Methacillin Resistant Stapholococcus Aureus (MRSA) in collegiate football players and their equipment

EXPORT Summer Research Internship Program (Summer 2008)

Erica Littles, Claflin University, Orangeburg, SC

Topic: The effect of testosterone on skeletal muscle oxidative capacity

Assistant Professor

2015-present

University of Louisiana at Lafayette – School of Kinesiology

Undergraduate courses

KNES 303 – Physiology of Exercise

KNES 304 – Physiology of Exercise Lab

KNES 499 – Internship in Kinesiology

Graduate courses

KNES 502 – Measurement and Evaluation Instrumentation in Exercise Physiology (taught wet lab section)

KNES 507 – Bioenergetics

KNES 509 – Organization and Management of Exercise and Activity Programs

KNES 510 – Research Methods in Kinesiology

KNES 512 – Muscle physiology

KNES 600 – Internship in Kinesiology

Graduate Teaching Assistant

2006-2012

University of South Carolina - School of Public Health

Undergraduate courses

EXSC 223 - Anatomy / Physiology I Lab

EXSC 224 - Anatomy / Physiology II Lab

Graduate courses

EXSC 742 - Clinical Exercise Testing

EXSC 743 - Laboratory Measurements for Exercise Testing

EXSC 780 - Physiology of Exercise

EXSC 785 - Advanced techniques in Exercise Physiology Lab

Guest speaker/ Temporary Instructor

EXSC 223 - Anatomy / Physiology I, Topic: Fluid, electrolyte, and acid-base balance

EXSC 224 - Anatomy / Physiology II, Topic: Lymphatic System

EXSC783 - Seminar Series in Public Health

- Topic: Skeletal muscle adaptations to gravitational loading
 - Topic: The role of testosterone and androgen receptor during the development of cancer cachexia
- EXSC780 - Physiology of Exercise, Topic: Cardiovascular physiology & Nervous system and motor control

Approved Clinical Instructor

2003-2004

Athletic Training Educational Program, Quinnipiac University, Hamden, Connecticut