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## EDUCATION

- 2012-2015     Ph.D., Physiology, March 2015  
Graduate School of Natural Science and Technology, Kanazawa University, Japan  
Dissertation: *Role of Skeletal Muscle Myoglobin in Mitochondrial Respiration*  
Advisor: Dr. Kazumi Masuda
- 2012-2013     Visiting Student  
University of California at Davis, Davis, CA  
Research Focus: *How Does Diabetic Condition Affect the Expression of Skeletal Muscle Myoglobin?*  
Mentor: Dr. Thomas Jue
- 2010-2012     M.S., Physiology, March 2012  
Graduate School of Human and Socio-Environmental Studies, Kanazawa University, Japan  
Thesis: *Interaction between Skeletal Muscle Mitochondria and Myoglobin – Evidence-Based Policy Recommendation Aiming at Prevention of Metabolic Syndrome –*  
Advisors: Drs. Tetsuya Sagawa and Kazumi Masuda
- 2006-2010     B.A., Education, March 2010  
School of Education, Kanazawa University, Japan  
Thesis: *Colocalization of an Oxygen Binding Protein and Mitochondrial Proteins in Myocytes*  
Advisor: Dr. Kazumi Masuda

## PROFESSIONAL EXPERIENCE

- 2023-present     Assistant Professor  
University of Nebraska-Lincoln, Lincoln, NE  
Role: Principal Investigator
- Investigate the pathogenetic mechanism of mitochondria-related diseases
  - Elucidate the physiological mechanism that regulates systemic metabolism
  - Investigate the neural basis of the liver functions
- 2020-2023     Research Associate  
Johns Hopkins University, Baltimore, MD  
Mentor: Dr. Hiromi Sesaki
- Investigate the physiological and pathological role of the mitochondrial safeguard in vivo
  - Develop mitochondria-targeted therapy for the megamitochondria associated non-alcoholic steatohepatitis (NASH) using antisense oligonucleotides (ASO)
  - Identify the physiological cues that promote mitochondrial enlargement in vivo
- 2015-2020     Postdoctoral Fellow  
Johns Hopkins University, Baltimore, MD  
Mentor: Dr. Hiromi Sesaki
- Identified the mitochondrial safeguard system that suppresses mitochondrial hyper-fusion

- Identified the novel mitophagy induction pathway regulated by the p62-Keap1-Rbx1 dependent ubiquitination
- Developed in vivo mitophagy biosensor assay
- Discovered the significance of maintaining the healthy mitochondrial size for tissue integrity using genetically engineered mouse models
- Investigated the mechanisms of neurodegeneration caused by the mitochondrial enlargement

## PUBLICATIONS

Otomo, K., Omura, T., Nozawa, Y., Edwards, S. J., Sato, Y., Saito, Y., Yagishita, S., Uchida, H., Watakabe, Y., Naitou, K., Yanai, R., Sahara, N., Takagi, S., Katayama, R., Iwata, Y., Shiokawa, T., Hayakawa, Y., Otsuka, K., Watanabe-Takano, H., Haneda, Y., Fukuhara, S., Fujiwara, M., Nii, T., Meno, C., Takeshita, N., Yashiro, K., Rosales, Rocabado J.M., Kaku, M., **Yamada, T.**, Oishi, Y., Koike, H., Cheng, Y., Sekine, K., Koga, J. I., Sugiyama, K., Kimura, K., Karube, F., Kim, H., Manabe, I., Nemoto, T., Tainaka, K., Hamada, A., Brismar, H., Susaki, E. A. (2024) descSPIM: Affordable and Easy-to-Build Light-Sheet Microscopy for Tissue Clearing Technique Users. *Nat Commun.* 12: 4941.

Takakura, H., Banba, H., **Yamada, T.**, Koma, R., Shibaguchi, T., Nonaka, Y. and Masuda, K. (2024) Mitochondrial division and fusion adaptation take place in different time points during endurance training. *J Phys Fitness Sports Med.* accepted.

Koma, R., Shibaguchi, T., **Yamada, T.**, Nonaka, Y., Jue, T., Yamazaki, A. and Masuda, K. (2024) Endurance training and myoglobin interaction with complex IV: Implications for direct myoglobin-role in mitochondrial respiration. *Acta Physiol.* 240: e14139

Koma R, Shibaguchi T, Araiso Y, **Yamada T.**, Nonaka Y, Jue T and Masuda K (2023) TOM complex-independent transport pathway of myoglobin into mitochondria in C2C12 myotubes. *Physiol Rep.* 11: e15632.

Hayashida, R., Kikuchi, R., Imai, K., Kojima, W., **Yamada, T.**, Iijima, M., Sesaki, H., Tanaka, K., Matsuda, N. and Yamano, K (2022) Elucidation of ubiquitin-conjugating enzymes that interact with RBR-type ubiquitin ligases using a liquid-liquid phase separation-based method. *J Biol Chem.* 299: 102822.

**Yamada, T.**, Murata, D., Kleiner, D., Anders, R., Rosenberg, A., Kaplan, J., Hamilton, J. P., Aghajan, M., Levi, M., Wang, N. Y., Powers, A. F., Iijima, M. and Sesaki, H (2022) Prevention and Regression of Megamitochondria and Steatosis by Blocking Mitochondrial Fusion. *iScience.* doi.org/10.1016/j.isci.2022.103996.

Takakura, H., **Yamada, T.**, Furuichi, Y., Hashimoto, T., Iwase, S., Jue, T. and Masuda, K. (2021) Muscle immobilization delays the abrupt change in myoglobin saturation at the onset of muscle contraction. *J Phys Fitness Sports Med.* 11: 87-96.

Hamidie. D. R. R., Shibaguchi, T., **Yamada, T.**, Koma, R., Ishizawa, R., Saito, Y., Hosoi, T. and Masuda, K. (2021) Curcumin induces mitochondrial biogenesis by increasing cAMP levels via PDE4A inhibition in skeletal muscle. *Br J Nutr.* 126: 1642–1650.

- Murata, D., **Yamada, T.**, Tokuyama, T., Arai, K., López-Otín, C., Iijima, M. and Sesaki, H. (2020) Mitochondrial Safeguard Offsets Extreme Fusion and Protects Respiratory Function via Flickering-induced Oma1 Activation. *EMBO J.* 39: e105074.
- Adachi, Y., Kato, T., **Yamada, T.**, Stahelin, R. V., Chan, D. C., Iijima, M. and Sesaki, H. (2020) Drp1 Directly Morphs the ER beyond Mechano GTPase. *Mol Cell.* 80(4): 621-632.
- Kato, T., **Yamada, T.**, Nakamura, H., Igarashi, A., Anders, A. A., Sesaki, H. and Iijima, M. (2020) The Loss of Nuclear PTEN Increases Tumorigenesis in a Preclinical Mouse Model for Hepatocellular Carcinoma. *iScience.* 23, 101548.
- Zhou, Z., Torres, M., Sha, H., Halbrook, J. C., Van den Bergh, F., Reinert, B. R., **Yamada, T.**, Wang, S., Luo, Y., Hunter, H. A., Wang, C., Sanderson, H. T., Liu, M., Taylor, A., Sesaki, H., Lyssiotis, A. C., Wu, J., Kersten, S., Beard, A. D., and Qi, L. (2020) Endoplasmic Reticulum-Associated Degradation Regulates Mitochondrial Dynamics in Brown Adipocytes. *Science.* 368(6486): 54-60.
- Yamada, T.**, Dawson T. M., Yanagawa, T., Iijima, M., and Sesaki, H. (2019) SQSTM1/p62 promotes mitochondrial ubiquitination independently of PINK1 and PRKN/parkin in mitophagy. *Autophagy.* 15(11): 2012-2018.
- Itoh, K., Murata, D., Kato, T., **Yamada, T.**, Araki, Y., Saito, A., Adachi, Y., Igarashi, A., Li, S., Pletonikov, M., Haganir R.L., Watanabe, S., Kamiya, A., Iijima, M. and Sesaki, H. (2019) Brain-Specific Drp1 Regulates Postsynaptic Endocytosis and Dendrite Formation Independently of Mitochondrial Division. *Elife.* DOI: 10.7554/eLife.44739.
- Yamada, T.**, Murata, D., Adachi, Y., Itoh, K., Kameoka, S., Igarashi, A., Kato, T., Araki, Y., Haganir R. L., Dawson, T. M., Yanagawa, T., Okamoto, K., Iijima, M. and Sesaki, H. (2018). Mitochondrial Stasis Reveals p62-Mediated Ubiquitination in Parkin-Independent Mitophagy and Mitigates Nonalcoholic Fatty Liver Disease. *Cell Metab.* 28(4): 588-604.
- Itoh, K., Adachi, Y., **Yamada, T.**, Suzuki, T.L., Otomo, T., McBride, H.M., Yoshimori, T., Iijima, M. and Sesaki, H. (2018). A Brain-enriched Drp1 Isoform Associates with Lysosomes, Late Endosomes and the Plasma Membrane. *J Biol Chem.* 293(30):11809-11822.
- Yamada, T.**, Adachi, Y., Yanagawa, T., Iijima, M. and Sesaki H. (2018). p62/sequestosome-1 knockout delays neurodegeneration induced by Drp1 loss. *Neurochem Int.* 117: 77-81.
- Takakura, H., Ojino, M., Jue, T., **Yamada, T.**, Furuichi, Y., Hashimoto, T., Iwase, S. and Masuda, K. (2017) Intracellular oxygen tension limits muscle contraction-induced change in muscle oxygen consumption under hypoxic conditions during Hb-free perfusion. *Physiol Rep.* 5(2). DOI: 10.14814/phy2.13112.
- Yamada, T.**, Adachi, Y., Fukaya, M., Iijima, M. and Sesaki, H. (2016) Dynamin-related Protein 1 Deficiency Leads to Receptor-interacting Protein Kinase 3-mediated Necroptotic Neurodegeneration. *Am J Pathol.* 186(11): 2798-2802.
- Adachi, Y., Ito, K., **Yamada, T.**, Cerveny, L. K., Suzuki, L. T., Macdonald, P., Frohman, A., M., Ramachandran, R., Iijima, M. and Sesaki, H. (2016) Coincident Phosphatidic Acid Interaction Restraints Drp1 in Mitochondrial Division. *Mol Cell.* 63(6): 1034-1043.

Yamada, T., Adachi, Y., Iijima, M. and Sesaki, H. (2016) Making a Division Apparatus on Mitochondria. Trends Biochem Sci. 41(3): 209-210.

Yamada, T., Takakura, H., Jue, T., Hashimoto, T., Ishizawa, R., Furuichi, Y., Kato, Y., Iwanaka, N. and Masuda, K. (2016) Myoglobin and the Regulation of Mitochondrial Respiratory Chain Complex IV. J Physiol. 594(2): 483-495.

Hamidie, D. R. R., Yamada, T., Ishizawa, R., Saito, Y. and Masuda, K. (2015) Curcumin Treatment Enhances the Effect of Exercise on Mitochondrial Biogenesis in Skeletal Muscle by Increasing cAMP Levels. Metabolism, Clin Exp. 64(10): 1334-1347.

Takakura, H., Furuichi, Y., Yamada, T., Jue, T., Ojino, M., Hashimoto, T., Iwase, S., Hojo, T., Izawa, T. and Masuda K. (2015) Endurance Training Facilitates Myoglobin Desaturation During Muscle Contraction in Rat Skeletal Muscle. Sci Rep. 5: 9403. DOI: 10.1038/srep09403.

Masuda, K., Yamada, T., Ishizawa, R. and Takakura, H. (2013) Role of Myoglobin in Regulating Respiration during Muscle Contraction. J Phys Fitness Sports Med. 2: 9-16.

Masuda, K., Yamada, T. and Jue, T. (2013) Reply to Pancheva, Panchev, and Pancheva. J Appl Physiol (1985). 115(1):151.

Yamada, T., Furuichi, Y., Takakura, H., Hashimoto, T., Hanai, Y., Jue, T. and Masuda, K. (2013) Interaction between Myoglobin and Mitochondria in Rat Skeletal Muscle. J Appl Physiol (1985). 114(4): 490-497.

## RESEARCH GRANTS

### Active

2024-2025 Prem S. Paul New Faculty Scholar Award, 2024 Research Development Fellows Program Award. Role: PI  
Project start and end date; 8/1/2024 - 6/30/2025  
Total award amount; \$2,000

### Completed

2023-2024 Research Grant, Mechanisms of Megamitochondria Formation in NASH, NPOD project leader (Part of NIGMS 5P20GM104320 Nebraska Center for the Prevention of Obesity Diseases). Role: PI

Project start and end date; 9/19/2023 - 5/31/2024

Total award amount; \$176,670

2022 Research Grant, Role of Megamitochondria in Nonalcoholic Steatohepatitis, HOPKINS GI Core Center Pilot Project (Part of NIDDK P30DK089502 the Hopkins Conte GI Center for Basic and Translational Digestive Disorders Research). Role: PI

Project start and end date; 4/1/2021 - 5/31/2022

Total award amount; \$25,000

- 2021 Research Grant, Measuring mitophagy in vivo, Research Support for Johns Hopkins University IBBS core facility (80051432). Role: PI  
Project start and end date; 2/1/2021 - 8/31/2021  
Total award amount; \$5,000
- 2018-2020 Postdoctoral Fellowship for Research Abroad from the Japan Society for the Promotion of Science (JSPS project# 201860672). Role: PI  
Project start and end date; 4/1/2018 - 3/31/2020  
Total award amount; \$102,000
- 2012-2015 Predoctoral Fellowship for Young Scientists (DC1) from the Japan Society for the Promotion of Science (JSPS project# 12Jo6321). Role: PI  
Project start and end date; 4/1/2012 - 3/31/2015  
Total award amount; \$96,000

#### AWARDS/HONORS

- 5/9/2024 Research Development Fellows Program Award, Office of Research and Economic Development at University of Nebraska-Lincoln
- 9/17/2023 Best Article Award from Japanese Society of Physical Fitness and Sports Medicine (Co-author), 2023 (Tokyo, Japan)
- 4/20/2019 Poster Presentation Award from Japanese Medical Society of America New York Life Science Forum 2019 (New York, NY)
- 3/22/2015 Presentation Award from Hokuriku Society of Physical Education 2015 meeting (Kanazawa, Japan)
- 3/23/2014 Presentation Award from Hokuriku Society of Physical Education 2014 meeting (Kanazawa, Japan)
- 4/1/2012 Repayment Exemption for Students with Excellent Grades -FY2012-, Japan Student Services Organization Type I scholarship (JASSO scholarship# 610-06-009455)
- 5/16/2011 Travel Grant for Attending American College of Sports Medicine 2011 meeting from Japanese Society of Physical Fitness and Sports Medicine
- 2010-2015 Tuition Exemption for the Exemplary Graduate Students from Kanazawa University
- 2007-2009 Tuition Exemption for the Exemplary Undergraduate Students from Kanazawa University

#### RESEARCH PRESENTATIONS

- 8/22/2024 Understand the Physiological System from the Viewpoint of Mitochondrial Biology – Across Dimensions –, Annual Meeting of Japan Society of Exercise and Sports Physiology, Kanazawa, Japan (Plenary Lecture)
- 5/2/2024 Mitochondrial Size Matters - Getting in Shape to Be Healthy -, Complex Biosystems Seminar, University of Nebraska-Lincoln, Hosted by Jennifer Clarke (Invited Talk)

- 11/3/2023 Mitochondrial Size Matters - Getting in Shape to Be Healthy -, Friday Research Seminar, VA Nebraska-Western Iowa Health Care System, Hosted by John S. Davis. (Invited Talk)
- 10/2/2023 Mitochondrial Size Matters - Getting in Shape to Be Healthy -, Departmental Seminar (Department of Biochemistry and Molecular Biology), University of Nebraska Medical Center, Hosted by Micah Schott. (Invited Talk)
- 9/13/2023 Mitochondrial Size Matters - Getting in Shape to Be Healthy -, Mito Club, University of Nebraska-Lincoln, Hosted by Oleh Khalimonchuk. (Invited Talk)
- 9/11/2023 Mitochondrial Size versus Dynamics - Which came first: the Chicken or the Egg? Departmental Seminar (Department of Biological Science), Wichita State University (Invited Talk)
- 5/19/2023 Size Matters - Power of Mouse Genetics, NPOD Meeting Seminar (Nebraska Center for the Prevention of Obesity Disease), University of Nebraska-Lincoln. (Invited Talk)
- 4/17/2023 Mitochondrial Size Matters - Power of Mouse Genetics -, Monthly Meeting Seminar (Nebraska Center for Integrated Biomolecular Communication), University of Nebraska-Lincoln. Hosted by Dr. Jiantao Guo. (Invited Talk)
- 5/9/2022 Mitochondrial Size versus Dynamics - Which came first: the Chicken or the Egg?, Departmental Seminar (Biochemistry), Pennington Biomedical Research Center, Hosted by Dr. Jackie Stephens. (Invited Talk)
- 4/5/2022 Mitochondrial Size and Dynamics in Physiology and Pathology, Research Talk (Department of Pharmacology and Department of Chemistry and Biochemistry), University of California, San Diego. Hosted by Wei Wang. (Invited Talk)
- 3/25/2022 Mitochondrial Size versus Dynamics - Which came first: the Chicken or the Egg?, Departmental Seminar (Biochemistry), University of Nebraska, Lincoln. Hosted by Dr. Oleh Khalimonchuk. (Invited Talk)
- 6/17/2021 Size Matters: Mitochondrial Quality Control in Physiology and Pathology, Research Talk (Center for Molecular Genetics and Genomics), Wayne State University. Hosted by Kezhong Zhang. (Invited Talk)
- 2/4/2021 Size Matters: Mitochondrial Quality Control in Physiology and Pathology, Department Seminar (Physiology and Cell Biology), University of Arkansas for Medical Sciences. Hosted by Rosalia C. M. Simmen. (Invited Talk)
- 4/10/2019 Parkin/PINK1-independent Mitophagy: Molecular Identity and Role in Fatty Liver Disease, Japanese Medical Society of America New York Life Science Forum, New York, NY (Poster Presentation Award)
- 9/16/2017 Significance of Mitochondrial Division and Fusion, Japanese Society of Physical Fitness and Sports Medicine 72<sup>nd</sup> Annual Meeting, Matsuyama, Japan. (Invited Talk)
- 9/15/2017 Mitochondrial Dynamics Underlying Respiratory System, Society for Respiratory System 31<sup>st</sup> Annual Meeting, Matsuyama, Japan. (Invited Talk)
- 9/11/2017 Significance of Mitochondrial Division and Fusion, Seminar Series of Faculty of Health and Sports Science, Doshisha University (Kyotanabe, Japan), hosted by Dr. Hisashi Takakura. (Invited Talk)

9/8/2017	Mitochondrial Function in Skeletal Muscle and Brain during Exercise, Japan Society of Physical Education, Health and Sports Science 68 <sup>th</sup> Annual Meeting, Shizuoka, Japan. (Invited Talk)
10/7/2016	Significance of Mitochondrial Morphology in Mammalian Liver, Osaka-Mito 2016, Osaka University (Osaka Japan), hosted by Dr. Koji Okamoto. (Invited Talk)
5/29/2015	Role of Myoglobin on Mitochondria in Skeletal Muscle, Seminar Series of Japanese Science Seminar in Baltimore (Baltimore, MD), hosted by Dr. Takanari Inoue. (Invited Talk)
3/22/2015	Role of Myoglobin on Mitochondrial Respiration in Skeletal Muscle, Hokuriku Society of Physical Education 51 <sup>st</sup> Annual Meeting, Kanazawa, Japan. ( <i>Presentation Award</i> )
3/23/2014	Regulation of Mitochondrial Respiration Muscle is Dependent on Myoglobin in Skeletal Muscle Hokuriku Society of Physical Education 52 <sup>nd</sup> Annual Meeting, Kanazawa, Japan. ( <i>Presentation Award</i> )

## SERVICE

### Professional Service

Peer Review	International Journal of Molecular Science (IJMS) – awarded certified reviewer, Cells, Mitochondrion, Biomedicine, INNOSC Theranostics and Pharmacological Sciences, and Antioxidants
Committee	Departmental: Seminar (chair, started August 2023), Graduate recruitment and admission (started August 2023) Thesis: Tanni, Fatema (Graduate student in Sun lab) Thesis: Daudu, Oseeyi (Graduate student in Becker lab)
Development	Research Development Fellows Program, hosted by ORED of University of Nebraska-Lincoln, 10/12/2023 – 5/9/2024. Completed Isotope Tracer Course, hosted by Vanderbilt University, 11/17/2023

## MENTORING

2024-	Mithila, Mehenaz	Graduate student
2020-2024	Koma, Rikuhide	Graduate student
2019-2021	Hsu, William	Undergraduate student
2018-2020	Wai, May	Undergraduate student
2017-2018	Kimura, Reona	Undergraduate student
2015-2017	Suzuki, L. Takamichi	Undergraduate student
2013-2015	Hamidie, D. R. Ronald	Graduate student