

BIOGRAPHICAL SKETCH

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NAME Hiromi Sesaki	POSITION TITLE Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login)	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Osaka University, Japan	B.S.	1990	Biology
University of Toronto, Canada	Visiting student	1994-1997	Cell Biology
Osaka University, Japan	Ph.D.	1997	Physiology
Johns Hopkins University, Baltimore, MD	Postdoc	1997-2002	Cell Biology

A. Positions

2002-2006 Research associate with Dr. Robert E. Jensen, Department of Cell Biology
Johns Hopkins University School of Medicine, Baltimore, MD

2006-2006 Assistant professor, Johns Hopkins Singapore, Singapore

2006-2012 Assistant professor, Department of Cell Biology
Johns Hopkins University School of Medicine, Baltimore, MD

2012-present Associate professor, Department of Cell Biology
Johns Hopkins University School of Medicine, Baltimore, MD

B. Honors

1997-1999 Japan Society for the Promotion of Science, Special Fellowship

1999-2001 Japan Society for the Promotion of Science, Fellowship for Research Abroad

2001-2004 Leukemia and Lymphoma Society, Special Fellowship

2004-2006 American Heart Association, Beginning Grant-in-Aid

2007-2010 American Heart Association, Scientist Development Grant

C. Publications

- Ogihara, S. and **Sesaki, H.** (1992). Twenty-eight-kilodalton phosphorylatable calcium- and lipid-binding proteins purified from *Physarum* plasmodia. *J. Biochem.* 112: 269-27
- Wong, E. F.S., Brar, S. K., **Sesaki, H.**, Yang, C., and Siu, C.-H. (1996). Molecular cloning and characterization of DdCAD-1, a Ca²⁺-dependent cell-cell adhesion molecule, in *Dictyostelium discoideum*. *J. Biol. Chem.* 271: 16399-16408.
- Sesaki, H.** and Siu, C.-H. (1996). Novel redistribution of the Ca²⁺-dependent cell adhesion molecule DdCAD-1 during development of *Dictyostelium discoideum*. *Dev. Biol.* 177: 504-516.
- Sesaki, H.**, Wong, E. F.S. and Siu, C.-H. (1997). The cell adhesion molecule DdCAD-1 in *Dictyostelium* is targeted to the cell surface via a non-classical transport pathway involving contractile vacuoles. *J. Cell Biol.* 138: 939-51.
- Sesaki, H.** and Ogihara, S. (1997). Protrusion of cell surface coupled with single exocytotic events of secretion of the slime in *Physarum* plasmodia. *J. Cell Sci.* 110: 809-818.

6. **Sesaki, H.** and Ogiwara, S. (1997). Secretion of slime, the extracellular matrix of the plasmodium, as visualized with a fluorescent probe and its correlation with locomotion on the substratum. *Cell Struct. Funct.* 22: 279-89
7. **Sesaki, H.** and Jensen, R.E. (1999). Division versus fusion: Dnm1p and Fzo1p antagonistically regulate mitochondrial shape. *J. Cell Biol.* 147: 699-706.
8. Jensen, R.E., Aiken Hobbs, A.E., Cerveny, K. and **Sesaki, H.** (2000). Yeast mitochondrial dynamics: fusion, division, segregation and shape. *Microsc. Res. Tech.* 51:573-583
9. **Sesaki, H.** and Jensen, R.E. (2001). *UGO1* encodes an outer membrane protein required for mitochondrial fusion. *J Cell Biol.* 152:1123-34.
10. **Sesaki, H.**, Southard, S.M, Yaffe, M.P., and Jensen, R.E. (2003). Mgm1p, a dynamin-related GTPase, is essential for fusion of the mitochondrial outer membrane. *Mol. Biol. Cell.* 14: 2342-2356.
11. **Sesaki, H.**, Southard, S.M, Aiken Hobbs, A.E. and Jensen, R.E. (2003). Cells lacking Pcp1p/Ugo2p, a rhomboid-related protease required for Mgm1p processing, lose mtDNA and mitochondrial structure in a Dnm1p-dependent manner, but remain competent for mitochondrial fusion. *Biochem. Biophys. Res. Commun.* 308: 276-283.
12. **Sesaki, H.** and Jensen, R.E. (2004). Ugo1p links the Fzo1p and Mgm1p GTPases for mitochondrial fusion. *J. Biol. Chem.* 279: 28298-28303.
13. Jensen, R.E., Dunn, C., Youngman, M. and **Sesaki, H.** (2004). Mitochondrial building blocks. *Trends Cell Biol.* 12: 215-218
14. **Sesaki, H.**, Dunn, C.D., Iijima, M., Shepard, K.A., Yaffe, M.P., Machamer, C.E., and Jensen, R.E. (2006). Ups1p, a conserved intermembrane space protein, regulates mitochondrial shape and alternative topogenesis of Mgm1p. *J. Cell Biol.* 173: 651-658
15. Jensen, R.E. and **Sesaki, H.** (2006) Ahead of the curve: mitochondrial fusion and phospholipase D. *Nat. Cell Biol.* 8:1215-2157.
16. Yoshino, R., Yamada, Y., Morio, T., Kuwayama, H., Tanaka, Y., **Sesaki, H.**, and Iijima, M. (2007). Regulation of ammonia homeostasis by the ammonium transporter AmtA in *Dictyostelium*. *Eucaryot. Cell.* 6: 2419-2428.
17. Cerveny, K.L., Studer, S.L., Jensen, R.E., and **Sesaki, H.** (2007). Yeast mitochondrial division and distribution requires the cortical Num1 protein. *Developmental Cell.* 12: 363-375.
18. Cerveny, K.L., Tamura, Y., Zhang, Z., and Jensen, R.E. and **Sesaki, H.** (2007). Regulation of mitochondrial fusion and division. *Trends Cell Biol.* 17: 563-569.
19. Dunn, C.D., Tamura, Y., **Sesaki, H.**, and Jensen, R.E. (2008). Mgr3p and Mgr1p are adaptors for the mitochondrial i-AAA protease complex. *Mol. Biol. Cell.* 19: 5387-5397
20. Tamura, Y., Harada, Y., Shiota, T., Yamano, K., Watanabe, K., Yokota, M., Yamamoto, H., **Sesaki, H.**, and Endo, T. (2009). Tim23-Tim50 pair coordinates functions of translocators and motor proteins in mitochondrial protein import. *J. Cell Biol.* 184: 129-141
21. Tamura, Y., Endo, T., Iijima, M., and **Sesaki, H.** (2009). Ups1p and Ups2p antagonistically regulate cardiolipin metabolism in mitochondria. *J. Cell Biol.* 185: 1029-1045
22. Wakabayashi, J., Zhang, Z., Wakabayashi, N., Tamura, Y., Fukaya, M., Kensler, T.W., Iijima, M., and **Sesaki, H.** (2009). The dynamin-related GTPase Drp1 is required for embryonic and brain development in mice. *J. Cell Biol.* 186: 805-816
23. Zhang, P., Wang, Y., **Sesaki, H.**, and Iijima, M. (2010). Proteomic identification of PtdIns(3,4,5)P3-binding proteins in *D. discoideum*. *Proc. Natl. Acad. Sci. USA.* 107: 11829-11834.
24. Tamura, Y., Iijima, M., and **Sesaki, H.** (2010). Mdm35p imports Ups proteins into the mitochondrial intermembrane space by functional complex formation. *EMBO J.* 29: 2875-2887.
25. Nakamura, K., Nemani, V.M., Azarbal, F., Skibinski, G., Levy, J.M., Egami, K., Munishkina, L., Zhang, J., Gardner, B., Wakabayashi, J., **Sesaki, H.**, Cheng, Y., Finkbeiner, S., Nussbaum, R.L., Masliah, E., and Edwards, R.H. (2011). Direct membrane association drives mitochondrial fission by the Parkinson Disease-associated protein α -synuclein. *J. Biol. Chem.* 286: 20710-20726.
26. Zhang, Z., Wakabayashi, N., Wakabayashi, J., Tamura, Y., Song, W.-J., Sereda, S., Clerc, P., Polster, B.M., Aja, S.M., Pletnikov, M.V., Kensler, T.W., Shirihai, O.S., Iijima, M., Hussain, M., and **Sesaki, H.** (2011). The Dynamin-related GTPase Opa1 is required for glucose-stimulated ATP production in pancreatic beta cells. *Mol. Biol. Cell.* 22: 2235-2245.
27. Tamura, Y., Itoh, K., and **Sesaki, H.** (2011). SnapShot: Mitochondrial dynamics. *Cell.* 145:1158-11581e

28. Kageyama, Y., Zhang, Z., and **Sesaki, H.** (2011). Mitochondrial division: molecular machinery and physiological functions. *Curr. Opin. Cell Biol.* 23: 427-34.
29. Wang, Y., Steimle, P.A., Ren, Y., Ross, C.A., Robinson, D.N., Egelhoff, T.T., **Sesaki, H.**, and Iijima, M. (2011). *Dictyostelium* huntingtin controls chemotaxis and cytokinesis through the regulation of myosin II phosphorylation. *Mol. Biol. Cell.* 22: 2270-2281.
30. Estela, A., Pla-Martin, D., Sanchez-Piris, M., **Sesaki, H.**, and Palau F. (2011). The Charcot-Marie-Tooth related gene GDAP1 complements cell cycle delay at G2/M in *S. cerevisiae* fis1 defective cells. *J. Biol. Chem.* 286: 36777-36786
31. Chen, C-L., Wang, Y., **Sesaki, H.**, and Iijima, M. (2012). Myosin I links PIP₃ signaling to remodeling of the actin cytoskeleton in chemotaxis. *Science Signaling.* 5: ra10
32. Manczak, M., **Sesaki, H.**, Kageyama, Y., and Reddy, P.H. (2012). Dynamin-related protein 1 heterozygote knockout mice do not have synaptic and mitochondrial deficiencies. *Biochim Biophys Acta.* 1822(6):862-74.
33. Trushina, E., Nemutlu, E., Zhang, S., Christensen, T., Camp, J., Mesa, J., Siddiqui, A., Tamura, Y., **Sesaki, H.**, Wengenack, T.M., Poduslo, J., and Dzeja, P. (2012). Defects in mitochondrial dynamics and metabolomic signatures of evolving energetic stress in mouse models of familial Alzheimer's disease. *PLoS ONE.* 7(2): e32737.
34. Tamura, Y., Onguka, O., Aiken Hobbs, A.E., Jensen, R.E., Iijima, M., Claypool, S.M., and **Sesaki, H.** (2012). Role for two conserved intermembrane space proteins, Ups1p and Up2p, in intra-mitochondrial phospholipid trafficking. *J. Biol. Chem.* 287(19):15205-15218.
35. Tamura, Y., Onguka, O., Itoh, K., Endo, T., Iijima, M., Claypool, S.M., and **Sesaki, H.** (2012). Phosphatidylethanolamine biosynthesis in mitochondria: phosphatidylserine (PS) trafficking is independent of a PS decarboxylase and intermembrane space proteins, Ups1p and Ups2p. *J. Biol. Chem.* 287:43961-43971.
36. Kageyama, Y., Zhang, Z., Roda, R., Fukaya, M., Wakabayashi, J., Wakabayashi, N., Kensler, T.W., Reddy, P.H., Iijima, M. and **Sesaki, H.** (2012). Mitochondrial division ensures the survival of postmitotic neurons by suppressing oxidative damage. *J. Cell Biol.* 197(4):535-51.
37. Zhang, Z., Kageyama, Y., and **Sesaki, H.** (2012). Mitochondrial division prevents neurodegeneration. *Autophagy.* 8: 1531-1533
38. Itoh, K., Nakamura, K., Iijima, M., and **Sesaki, H.** (2013). Mitochondrial dynamics in neurodegeneration. *Trends Cell Biol.* 23: 64-71
39. Yang, Z., Grinchuk, V., Smith, A., Qin, B., Bohl, J., Sun, R., Notari, L., Zhang, Z., **Sesaki, H.**, Urban, J., Shea-Donohue, T., and Zhao, A. (2013). Parasitic nematode-induced modulation of body weight and associated metabolic dysfunction in mouse models of obesity. *Infection and Immunity.* 81: 1905-1914
40. Tamura, Y., Harada, Y., Nishikawa, S., Yamano, K., Megumi, K., Shiota, T., Kuroda, T., Kuge, O., **Sesaki, H.**, Imai, K., Tomii, K., and Endo, T. (2013). Tam41 is a novel CDP-diacylglycerol synthase for cardiolipin biosynthesis in mitochondria. *Cell Metabolism.* 17: 709-18.
41. Itoh, K., Tamura, Y., Iijima, M., and **Sesaki, H.** (2013). Effects of Fcj1-Mos1 and mitochondrial division on aggregation of mitochondrial DNA nucleoids and organelle morphology. *Mol. Biol. Cell.* 24: 1842-1851

D. Book chapters

1. Siu, C.H., Harris, T.J.C., Wong, E.F.S., Yang, D., **Sesaki, H.**, and Wang, J. (1997). Cell adhesion molecules in *Dictyostelium*, In *Dictyostelium-a model system for cell and developmental biology* (ed. H. Ochiai), Universal Academic Press, Inc.
2. Tamura, Y., Iijima, M., and **Sesaki, H.** (2009). Mitochondrial dynamics: fusion and division, In *The Handbook of Cell Signaling* (ed. Ralph Bradshaw and Edward Dennis), Elsevier, Inc.