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Education and Degrees

March 2002, *Ph.D. in Life Science,* Department of Biology, Graduate School of Science, Osaka University, Japan

March 1999, *M.S. in Life Science,* Department of Biology, Graduate School of Science, Osaka University, Japan

March 1997, *B.Sc. in Macromolecular Science,* School of Science, Osaka University, Japan

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Professional Experience

April, 2006 - Present

* Visiting Fellow/Postdoctoral Fellow, Section on Cellular Neurobiology, NICHD/NIH, Bethesda, MD

* Research Subject: *Elucidation of molecular mechanisms for chromogranin A-mediated Protease Nexin-1 gene expression to promote granule biogenesis in neuroendocrine cells*

April, 2002 - March, 2006

* Postdoctoral Researcher, Research Institute for Cell Engineering (RICE), National Institute of Advanced Industrial Science and Technology (AIST), Japan [Apr. 2003 – Mar. 2006, the Research Fellowship for Young Scientist from Japan Society for the promotion of Science (JSPS); Oct. 2002 - Mar. 2003, Nanomedicine Research

Fellow, Japan Association for the Advancement of Medical Equipment (JAAME); Apr. 2002 - Sep. 2002, Adjunct Researcher, AIST]

* Research Subject: *Molecular analysis of human Brain-derived Neurotrophic Factor (BDNF) polymorphisms variants*

Publications

Koshimizu H., Hazama S., Hara T., Ogura A., and Kojima M., Distinct signaling pathways of proapoptotic signaling of precursor BDNF and antiapoptotic signaling of mature form BDNF in cultured cerebellar granule neurons, *Neurosci. Lett.* (2010) 473, (3): 229-232.

Koshimizu H., Kim T., Cawley NX., Loh YP., Chromogranin A: A New Proposal for Trafficking, Processing and Induction of Granule Biogenesis, *Regulated Peptides* (2010) 160(1-3): 153-159.

Koshimizu H., Kiyosue K., Hara T., Hazama S., Suzuki S., Uegaki K., Nagappan G., Zaitsev E., Hirokawa T., Tatsu Y., Ogura A., Lu B., and Kojima M., Multiple functions of precursor BDNF to CNS neurons: negative regulation of neurite growth, spine formation and cell survival, *Mol. Brain* (2009) 2(1): article # 27

Woronowicz A., Cawley NX.., Chang S., Koshimizu H., Phillips AW., Xiong Z. and Loh YP., CARBOXYPEPTIDASE E KNOCK-OUT MICE EXHIBIT ABNORMAL DENDRITIC ARBORIZATION AND SPINE MOROHOLOGY IN CNS NEURONS *J. Neurosci. Res.* (2010) 88(1): 64-72

Koshimizu H., Senatorov V., Loh Y.P., Gozes I., NEUROPROTECTIVE ROLE OF ACTIVITY-DEPENDENT NEUROPROTECTIVE PROTEIN AND CARBOXYPEPTIDASE E. *J. Mol. Neurosci.*(2009) 39(1-2): 1-8.

Park JJ. Koshimizu H, Loh YP., Biogenesis and Transport of Secretory Granules to Release Site in Neuroendocrine Cells. *J. Mol. Neurosci.* (2009) 37, 151-159.

Woronowicz A., Koshimizu H., Chang SY., Cawley NX., Hill JM., Rodriguiz RM., Abebe D., Dorfman C., Senatorov V., Zhou A., Xiong ZG., Wetsel WC., Loh YP. Absence of carboxypeptidase E leads to adult hippocampal neuronal degeneration and memory deficits. *Hippocampus.* (2008) 18, 1051-1063

Suzuki S., Kiyosue K., Hazama S., Ogura A., Kashihara M., Hara T., Koshimizu H., Kojima M., Brain-derived neurotrophic factor regulates cholesterol metabolism for synapse development. *J. Neurosci.* (2007) 27, 6417-6427.

Nishiyama K., Konishi A., Nishio C., Yoshida-Araki K., Hatanaka H., Kojima M., Ohmiya Y., Yamada M., * Koshimizu H., Expression of cystatin C prevents oxidative stress-induced death in PC12 cells. *Brain Res. Bulletin* (2005) 67, 94-99. **Corresponding Author*

Suzuki S., Numakawa T., Shimazu K., Koshimizu H., Hara T., Hatanaka H., Mei L., Lu B., Kojima M., BDNF-induced recruitment of TrkB receptor into neuronal lipid rafts: roles in synaptic modulation. *J. Cell Biol.* (2004) 167, 1205-1215.

Numakawa T., Ishimoto T., Suzuki S., Numakawa Y., Adachi N., Matsumoto T., Yokomaku D., Koshimizu H., Fujimori KE., Hashimoto R., Taguchi T., Kunugi H,. Neuronal roles of the integrin-associated protein (IAP/CD47) in developing cortical neurons. *J. Biol. Chem.* (2004) 279, 43245-43253.

Yamagishi S., Yamada M., Koshimizu H., Takai S., Hatanaka H., Takeda K., Ichijo H., Shimoke K., Ikeuchi T., Apoptosis-signal regulating kinase-1 is involved in the low potassium-induced activation of p38 mitogen-activated protein kinase and c-Jun in cultured cerebellar granule neurons. *J. Biochem. (Tokyo).* (2003) 133, 719-724. Erratum in: *J. Biochem. (Tokyo).* (2003) 134, 173.

Koshimizu H., Araki T., Takai S., Yokomaku D., Ishikawa Y., Kubota M., Sano S., Hatanaka H., Yamada M., Expression of CD47/integrin-associated protein induces death of cultured cerebral cortical neurons. *J. Neurochem.* (2002) 82, 249-257.

Yamada M., Numakawa T., Koshimizu H., Tanabe K., Wada K., Koizumi S., Hatanaka H., Distinct usages of phospholipase C gamma and Shc in intracellular signaling stimulated by neurotrophins. *Brain Res.* (2002) 955, 183-190.

Takai S., Yamada M., Araki T., Koshimizu H., Nawa H., Hatanaka H., Shp-2 positively regulates brain-derived neurotrophic factor-promoted survival of cultured ventral mesencephalic dopaminergic neurons through a brain immunoglobulin-like molecule with tyrosine-based activation motifs/Shp substrate-1. *J. Neurochem.* (2002) 82, 353-364.

Imamoto Y., Koshimizu H., Mihara K., Hisatomi O., Mizukami T., Tsujimoto K., Kataoka M., Tokunaga F., Roles of amino acid residues near the chromophore of photoactive yellow protein. *Biochemistry.* (2001) 40, 4679-4685.

International Conference Papers

Koshimizu H., Cawley NX., Kim T., and Loh YP., Serpinin, a novel Chromogranin A-derived peptide regulates granule biogenesis in endocrine cells by induction of protease nexin-1 transcription in a cAMP-Sp1-

dependent manner. *Neuroscience 2009, Society for Neuroscience 39th Annual Meeting,* Oct. 2008, Chicago, IL.

* Koshimizu H., Cawley NX., Kim T., and Loh YP., Serpinin, a novel Chromogranin A-derived peptide regulates granule biogenesis in endocrine cells by induction of protease nexin-1 transcription via a cAMP-Sp1-dependent signaling pathway. *ENDO 09, 91st The Endocrine Society's Annual Meeting,* Jun. 2009, Washington, DC. **Oral Presentation*

Woronowicz A., Cawley CX., Chang SY., Koshimizu H., Phillips AW., Xiong ZG., and Loh YP., CARBOXYPEPTIDASE E KNOCK-OUT MICE EXHIBIT ABNORMAL DENDRITIC ARBORIZATION AND SPINE MORPHOLOGY IN CNS NEURONS. *Gordon Research Conference, Neurotrophic Factors,* Jul. 2009, Newport, RI

Koshimizu H., Kim T., Cawley NX., Loh YP., Serpinin: A novel Chromogranin A-derived peptide promotes secretory granule biogenesis in pituitary cells. *Neuroscience 2008, Society for Neuroscience 38th Annual Meeting,* Nov. 2008, Washington, DC.

Woronowicz A., Koshimizu H., Chang SY., Cawley NX., Hill JM., Rodriguiz RM., Abebe D., Dorfman C., Senatorov V., Zhou A., Xiong ZG., Wetsel WC., Loh YP. ABSENCE OF CARBOXYPEPTIDASE E LEADS TO ADULT HIPPOCAMPAL NEURONAL DEGENERATION AND MEMORY DEFICITS *Neuroscience 2008, Society for Neuroscience 38th Annual Meeting,* Nov. 2008, Washington, DC.

Koshimizu H, Kim T, Cawley NX, Loh YP. Serpinin, a novel Chromogranin A-derived peptide promotes secretory granule biogenesis in endocrine cells. *Gordon Research Conference, Proprotein Processing, Trafficking & Secretion.* Jul. 2008, New London, NH

Koshimizu H, Kim T, Loh YP. Serpinin, a novel Chromogranin A-derived peptide promotes secretory granule biogenesis in endocrine cells. *ENDO 08, 90th The Endocrine Society's Annual Meeting,* Jun. 2008, San Francisco, CA.

Koshimizu H, Kim T, Loh YP. Serpinin, a novel Chromogranin A (CgA)-derived peptide induces granule biogenesis in endocrine cells. *the 47th Annual meeting of American Society for Cell Biology (ASCB),* Nov. 2007, Washington, DC.

* Koshimizu H, Kim T, Loh YP. SERPININ, A NOVEL CHROMOGRANIN A-DERIVED PEPTIDE INDUCES GRANULE BIOGENESIS IN ENDOCRINE CELLS *the 14th International Symposium on Chromaffin Cell Biology (ISCCB),* Oct. 2007, Sestri Levante, Italy, **Oral Presentation*

Koshimizu H, Kiyosue K, Tatsu T, Hirokawa T, Suzuki S, Hara T, Kashihara M, Kohsaka S, Lu B, Kojima M, BDNF polymorphisms preventing the cleavage of proBDNF and the biological influences on CNS neurons, *Neuroscience 2005, Society for Neuroscience 35th Annual Meeting,* Nov. 2005, Washington, DC.

Koshimizu H, Kiyosue K, Suzuki S, Hara T, Kojima M, Molecular analysis of polymorphisms in human BDNF gene generating uncleaved proBDNF variants, *ISN-ESN 2005, the 20th Biennial Meeting of the International Society For Neurochemistry (ISN) jointly with the European Society for Neurochemistry (ESN),* Aug. 2005, Innsbruck, Austria.

Suzuki S., Kashihara, M., Koshimizu, H., Hara, T., Kojima, M. BDNF increases cholesterol and synaptic vesicle proteins in neuronal rafts., *ISN-ESN 2005, the 20th Biennial Meeting of the International Society For Neurochemistry (ISN) jointly with the European Society for Neurochemistry (ESN),* Aug. 2005, Innsbruck, Austria.

Koshimizu H, Kiyosue K, Suzuki S, Hara T, Zaitsev E, Lu B, Kojima M, MOLECULAR ANALYSIS OF UNCLEAVED PROBDNF POLYMORPHISMS VARIANTS, *Neuroscience 2004, Society for Neuroscience 34th Annual Meeting,* Oct. 2004, San Diego, CA.

Suzuki S., Numakawa T., Shimazu K., Koshimizu H., Mei L., Lu B., Kojima M., BDNF-induced translocation of TrkB into lipid rafts., *Neuroscience 2004, Society for Neuroscience 34th Annual Meeting,* Oct. 2004, San Diego, CA.

Koshimizu H, Suzuki S, Lu B, Kojima M, Molecular analysis of SNPs in human BDNF gene. *6th Biennial Meeting, Asia Pacific Society for Neurochemistry (APSN)* Feb. 2004, Hong Kong.

Suzuki S., Numakawa T., Koshimizu H., Kojima M., Brain-derived neurotrophic factor induced a recruitment of receptor tyrosine kinase TrkB into lipid rafts., *6th Biennial Meeting, Asia Pacific Society for Neurochemistry (APSN),* Feb. 2004, Hong Kong.

Koshimizu H, Suzuki S, Zaitsev E, Lu B, Kojima M, Functional consequences of mutations affecting the intracellular cleavage of pro-BDNF, *Neuroscience 2003, Society for Neuroscience 33rd Annual Meeting,* Nov. 2003, New Orleans, LA.

Koshimizu H, Araki T, Yamada M, Kubota M, Sano S, Hatanaka H, OVEREXPRESSION OF CD47/IAP INDUCES DEATH OF CULTURED CEREBRAL CORTICAL NEURONS, *The 18th Biennial Meeting of the International Society for Neurochemistry (ISN) and the 32nd Annual Meeting of the American Society for Neurochemistry (ASN),* Aug. 2001, Buenos Aires, Argentina.

Invited Talks

Koshimizu H., "Serpinin Signaling and Dense Core Granule Biogenesis", Nov. 10, 2009, *Protein Trafficking Interest Group Workshop,* NIH, Bethesda, MD

Koshimizu H., "Serpinin, a novel Chromogranin A-derived peptide promotes secretory granule biogenesis in endocrine cells.", Sep. 5, 2008, *Protein Trafficking Interest Group Workshop,* NIH, Bethesda, MD

Patents

2007, Mutant BDNF gene introducing knockin mouse, Kojima, Masami, Hara, Tomoko, Koshimizu, Hisatsugu, Kashihara, Megumi, Taguchi, Takahisa, The invention relates to a non-human knockin animal having a mutation in a proBDNF gene wherein conversion from proBDNF to BDNF has been inhibited by the mutation. *United States Patent Application: 20070186301*

2007, MUTANT BDNF GENE INTRODUCING KNOCK-IN MOUSE. KOJIMA, MASAMI, HARA, TOMOKO, KOSHIMIZU, HISATSUGU, KASHIWABARA, MEGUMI, TAGUCHI, TAKAHISA, *JP2007306899 (A),*

2006, NERVE CELL DEATH-PROMOTING FACTOR AND METHOD FOR HIGHLY SENSITIVELY DETECTING THE FACTOR, KOJIMA, MASAMI, HARA, TOMOKO, KOSHIMIZU, HISATSUGU, KAMIGAKI, KOICHI, KASHIWABARA, MEGUMI, *JP2006345787 (A)*

Awards and Scholarships

Jul. 2010, the Fellows Award for Research Excellence (FARE) 2010 from the National Institutes of Health (NIH).

Sep. 2007, the Scholarship from International Symposium on Chromaffin Cell Biology (ISCCB) 2007.

Aug. 2007, the Fellows Award for Research Excellence (FARE) 2008 from the National Institutes of Health (NIH).

Apr. 2003 – Mar. 2006, the Research Fellowship for Young Scientist from Japan Society for the promotion of Science (JSPS)

Apr. 1997 – Mar. 2002, the Graduate Student Scholarship from Japan Scholarship Foundation.