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1. Education:
B.S. (Agricultural Chemistry) - 1991, Kyoto University, Kyoto, Japan.
M.S. (Agricultural Chemistry) - 1993, Kyoto University, Kyoto, Japan.
Ph.D. (Agricultural Chemistry) - 1996, Kyoto University, Kyoto, Japan.

2. Professional Experience:

1996-1999	Post Doctoral Research Associate (Plant stress response) - Dept. Hort., Purdue University

3. Appointment:

1999-Aug, 2002	Research Plant Biologist, Dept of Hort. & LA, Purdue University
Aug, 2002-Aug 2008	Assistant Professor, Dept of Hort. Sci., Texas A&M University
Sep, 2008-present	Associate Professor, Dept of Hort. Sci., Texas A&M University

4. Awards:

1993-1996	Fellowship for Junior Scientists: Japanese Society for Promotion of Science Fellowship
2004	Faculty recognition award: Horticulture Graduate Student Council, Texas A&M University
2010	MEPS young investigator award, Texas A&M University

5. Invited Seminars/Lectures:
Seminars:
"*In vitro* directed molecular evolution of a plant defense protein" - 9/98, Plant Biology Program Brown Bag Seminar, Purdue University

"*In vitro/in vivo* genetics of plant stress tolerance" - 10/98, Department of Agricultural Chemistry, Kyoto University, Japan.

"*In vitro/in vivo* genetics of plant stress tolerance" - 10/98, Department of Biological Sciences, Nara Advanced Institute for Science and Technology, Japan.

"*In vitro/in vivo* genetics of plant stress tolerance" - 10/98, Department of Pharmacology, Chiba University, Japan.

"*In vitro/in vivo* genetics of plant stress tolerance - 10/98, Research Institute for Basic Biological Science, Japan.

"*In vitro* directed molecular evolution of plant defense proteins" - 3/99, Department of Horticulture and Landscape Architecture, Purdue University

"Functional genomics in plant osmotic stress tolerance" - 12/99, Division of Integrated Life Science, Graduate School of Biostudies, Kyoto University, Japan.

"Functional genomics in plant osmotic stress tolerance " - 12/99, Department of Biological Sciences, Nara Advanced Institute for Science and Technology, Japan.

“Genetic dissection of osmotic stress signalling”-1/01, Division of Integrated Life Science, Graduate School of Biostudies, Kyoto University, Japan.

"Stress response regulation by primary cellular components: new significance for old faces" - 6/03 Gyeongsang National University, Korea

"Genetic analysis of plant osmotic stress tolerance" 9/03 MEPS seminar, Texas A&M University

"Newer insights of plant transcriptional regulation and protein modifications:
Analysis of Arabidopsis osmotic stress mutants" - 11/04 Gyeongsang National University, Korea,

"Newer insights of plant transcriptional regulation and protein modifications:
Analysis of Arabidopsis osmotic stress mutants" - 11/04 Pohang University of Science and Technology, Korea,

"Genetic dissection of plant osmotic stress responses-Function of C-terminal domain phosphatases-"
Dept. Botany, Miami University, OH, 09/05

"Genetic dissection of plant osmotic stress responses-Function of C-terminal domain phosphatases-"
Dept. Chemistry and Biochemistry, Texas Tech University, 09/05

“Osmotic stress response- Role of the Protein N-Glycosylation Pathway”
Horticulture Seminar, Texas A&M University, 12/05

“Genetic dissection of osmotic stress tolerance in Arabidopsis thaliana: Function of protein N-glycosylation pathway” WWU Münster, Germany 11/07

“RNA pol II C-terminal domain phosphatase family in Arabidopsis thaliana”
Horticulture Seminar, Purdue University, 03/08

“RNA pol II C-terminal domain phosphatase family in Arabidopsis thaliana”- 03/08Horticulture Seminar, Purdue University,
“Genetic dissection of osmotic stress tolerance in Arabidopsis thaliana: Function of protein N-glycosylation pathway” Osaka University, Japan -12/08
“Genetic dissection of osmotic stress tolerance in Arabidopsis thaliana: Function of protein N-glycosylation pathway” Kyoto University, Japan -12/08

“Function of Arabidopsis RNA polymerase II C-terminal domain phosphatase-like 1 in iron deficiency response” 13th Annual Plant Biology Minisymposium, University of Maryland -3/12

“An Inducible Three-component Gene Expression System and Its Application for Inducible Flavonoid Overproduction in Transgenic Arabidopsis Thaliana” 2012 World Congress on In Vitro Biology, Bellevue, WA -6/12

6. Current Research Interests

Sensory mechanisms and defensive responses to biotic and abiotic stresses. Particular focus is identification of functional determinants that mediate plant adaptation or tolerance to environmental stresses and their structure-function relationship.

7. Publications:

Refereed Research Papers:

1. Koiwa, H., Sato, F. and Yamada, Y., (1994) Characterization of accumulation of PR-5 proteins by IEF-immunoblot analysis. Plant Cell Physiol. 35, 821-827

2. Sato, F., Koiwa, H., Sakai, Y., Kato, N. and Yamada, Y., (1995) Synthesis and secretion of tobacco neutral PR-5 protein by transgenic tobacco and yeast. Biochem. Biophys. Res. Comm. 211, 909-913

3. Koiwa, H., Kato, H., Nakatsu, T., Oda, J., Yamada, Y. and Sato, F., (1997) Purification and characterization of tobacco pathogenesis-related protein PR-5d, an antifungal thaumatin-like protein. Plant Cell Physiol. 38, 783-791

4. Koiwa, H., Shade, R. E., Zhu-Salzman, K., Subramanian, L., Murdock, L. L., Nielsen, S. S., Bressan, R. A. and Hasegawa, P. M., (1998) Phage-display selection can differentiate insectisidal activity of soybean cystatins. Plant J. 14, 371-380

5. Zhu-Salzman, K., Salzman, R. A., Koiwa, H., Murdock, L. L., Bressan, R. A. and Hasegawa, P. M., (1998) Ethylene negatively regulates local expression of plant defense lectin genes. Physiol. Plant. 104, 365-372

6. Pardo, J. M., Reddy, M. P., Yang, S., Maggio, A., Hue, G.-H., Matsumoto, T., Coca, M. A., Paino-D'Urzo, M., Koiwa, H., Yun, D.-J., Watad, A. A., Bressan, R. A. and Hasegawa, P. M., (1998) Stress signaling through Ca2+/calmodulin-dependent protein phosphatase calcineurin mediates salt adaptation in plants. Proc. Natl Acad. Sci. *USA* 95, 9681-9686

7. Zhu-Salzman, K., Shade, R. E., Koiwa, H., Salzman, R. A., Murdock, L. L., Bressan, R. A. and Hasegawa, P. M., (1998) Carbohydrate-binding and resistance to proteolysis control insecticidal activity of *Griffonia simplicifolia* lectin II (GS-II). Proc. Natl Acad. Sci. *USA* 95, 15123-15128

8. Koiwa, H., Kato, H., Nakatsu, T., Oda, J.-I., Yamada, Y. and Sato, F., (1999) Crystal Structure of tobacco PR-5d protein at 1.8 Å resolution reveals a conserved acidic cleft structure in antifungal thaumatin-like proteins. J. Mol. Biol. 286, 1137-1145

9. Koiwa, H., Shade,R. E., Zhu-Salzman, K., Paino D'Urzo, M., Murdock, L. L., Bressan, R. A. and Hasegawa, P. M. (2000)A plant defensive cystatin (soyacystatin) targets cathepsin L-like digestive cysteine proteinases (DvCALs) in the larval midgut of western corn rootworm (*Diabrotica virgifera virgifera*). FEBS Lett. 471,67-70

10. Koiwa, H., Paino D'Urzo, M., Zhu-Salzman, K., Ibeas, J. I., Murdock, L. L., Shade,R. E., Bressan, R. A. and Hasegawa, P. M. (2000) An in-gel assay of a western corn rootworm (*Diabrotica virgifera virgifera*) cysteine proteinase expressed in yeast. Anal. Biochem.282, 153-155

11. Gong, Z., Koiwa, H., Cushman, M. A., Ray, A., Bufford, D., Kore-eda, S., Matsumoto, T., Zhu, J. C., Cushman, J., Bressan, R. A., Hasegawa, P. M. (2001) Genes that are uniquely stress-regulated in salt overly sensitive (sos) mutants. Plant Physiol., 126, 363-375.

12. Koiwa, H., D'Urzo, M. P., Zhu-Salzman, K., Shade,R. E., Murdock, L. L., Bressan, R. A. and Hasegawa, P. M. (2001) High affinity inhibition of a cysteine proteinase by native and hairpin loop mutants of soyacystatin selected from a combinatorial phage display library. Plant J. 27, 383-391

13. D. Igarashi, H. Koiwa, F. Sato, N. Ito, K. Harada, and K. Kobayashi, (2001) Functional similarities of recombinant OLP and cytokinin-binding protein 2. Biosci. Biotechnol. Biochem. 65, 2806-2810.

14. Rus, A., Yokoi, S., Sharkhuu, A., Reddy, M., Lee, B.-H., Matsumoto, T. K., Koiwa, H., Zhu, J.-K., Bressan, R. A. and Hasegawa, P. M. (2001) AtHKT1 is a salt tolerance determinant that controls Na+ entry into plant roots. Proc. Natl Acad. Sci. USA 98, 14150-14155.

15. Li, X., Gong, Z., Koiwa, H., Niu, X., Espartero, J., Zhu, X., Veronese, P., Ruggiero, B., Bressan, R. A., Weller, S. C., Hasegawa, P. M. (2001) *Bar* expressing peppermint (*Mentha* x *Piperita* L. var. Black Mitcham) plants are highly resistant to the glufosinate herbicide Liberty. Mol. Breed.8, 109-118

16. Zhu-Salzman, K., Hammen, P. K., Salzman, R. A., Koiwa, H., Bressan, R. A., Murdock, L. L. and Hasegawa, P. M (2002) Calcium Modulates Proteinase Resistance and Insecticidal Activity of a Plant Defense Legume Lectin, *Griffonia simplicifolia* lectin II (GSII) Comp. Biochem. Physiol. B, 132, 327-334

17. Koiwa, H., Barb, A. W., Xiong, L., Li, F., McCully, M. G., Lee, B.-h., Sokolchik, I., Zhu, J., Gong, Z., Reddy, M., Sharkhuu, A., Manabe, Y., Yokoi, S., Zhu, J.-K., Bressan, R. A. & Hasegawa, P. M. (2002). C-terminal domain phosphatase-like family members (AtCPLs) differentially regulate Arabidopsis thaliana abiotic stress signaling, growth, and development. Proc. Natl. Acad. Sci. USA, 99, 10894-10898

18. Xiong, L., Lee, H., Ishitani, M., Tanaka, Y., Stevenson, B., Koiwa, H., Bressan, R. A., Hasegawa, P. M. & Zhu, J.-K. (2002). Repression of stress-responsive genes by FIERY2, a novel transcriptional regulator in Arabidopsis. Proc. Natl. Acad. Sci. USA, 99, 10899-10904

19. Zhu, J., Gong, Z., Zhang, C., Song, C.-P., Damsz, B., Inan, G., Koiwa, H., Zhu, J.-K., Hasegawa, P.M. and Bressan, R.A. (2002) OSM1/SYP61: A Syntaxin Protein in Arabidopsis Controls Abscisic Acid-Mediated and Non-Abscisic Acid-Mediated Responses to Abiotic Stress. Plant Cell, 14, 3009-3028.

20. Zhu-Salzman, K., Koiwa, H., Salzman, R. A., Shade, R. E., Lee, J.-E. (2003) Cowpea bruchid Callosobruchus maculates uses a three-component strategy to overcome a plant defensive cysteine protease inhibitor. Insect Mol. Biol., 12, 135-145

21. Koiwa, H., Li, F., McCully, M. G., Mendoza, I., Koizumi, N., Manabe, Y., Nakagawa, Y., Zhu, J.-H., Rus, A., Pardo, J. M., Bressan, R. A., Hasegawa, P. M. (2003) The STT3a subunit isoform of the Arabidopsis thaliana oligosaccharyltransferase controls adaptive responses to salt/osmotic stress, Plant Cell, 15, 2237-2284.

22. Zhu-Salzman, K., Ahn, J.-E., Salzman, R.A., Koiwa, H., Shade, R.E., and Balfe, S. (2003). Fusion of a soybean cysteine protease inhibitor and a legume lectin enhances anti-insect activity synergistically. Agri. Forest Entomol. 5, 317-323.

23. Zhu-Salzman, K., Salzman, R.A., Ahn, J.E., and Koiwa, H. (2004). Transcriptional Regulation of Sorghum Defense Determinants against a Phloem-Feeding Aphid. Plant Physiol. 134, 420-431.

24. Salzman, R.A., Koiwa, H., Ibeas, J.I., Pardo, J.M., Hasegawa, P.M., and Bressan, R.A. (2004). Inorganic cations mediate plant PR5 protein antifungal activity through fungal Mnn1- and Mnn4-regulated cell surface glycans. Mol Plant Microbe Interact .17, 780-788.

25. Moon, J., Salzman, R.A., Ahn, J.E., Koiwa, H., and Zhu-Salzman, K. (2004). Transcriptional regulation in cowpea bruchid guts during adaptation to a plant defence protease inhibitor. Insect Mol. Biol. 13, 283-291.

26. Ruggiero, B., Koiwa, H., Manabe, Y., Quist, T.M., Inan, G., Saccardo, F., Joly, R.J., Hasegawa, P.M., Bressan, R.A., and Maggio, A. (2004). Uncoupling the effects of abscisic acid on plant growth and water relations. Analysis of *sto1/nced3*, an abscisic acid-deficient but salt stress-tolerant mutant in Arabidopsis. Plant Physiol. 136, 3134-3147

27. Koiwa, H., Hausmann, S., Bang, W.Y., Ueda, A., Kondo, N., Hiraguri, A., Fukuhara, T., Bahk, J.D., Yun, D.J., Bressan, R.A., Hasegawa, P.M., and Shuman, S. (2004). Arabidopsis C-terminal domain phosphatase-like 1 and 2 are essential Ser-5-specific C-terminal domain phosphatases. Proc. Natl. Acad. Sci. USA 101, 14539-44

28. Ahn, J.E., Salzman, R.A., Braunagel,, S. C., Koiwa, H., and Zhu-Salzman, K. (2004). Functional roles of specific bruchid protease isoforms in adaptation to a soybean protease inhibitor. Insect Mol. Biol. 13, 649-657

29. Amirhusin, B., Shade, R. E., Koiwa, H., Hasegawa, P. M., Bressan, R. A. and Murdock, L. L., Zhu-Salzman, K. (2004) Soyacystatin inhibits proteolysis of α-amylase inhibitor and potentiates toxicity against cowpea weevil, *Callosobruchus maculatus*. J. Econ. Entomol. 97, 2095-2100

30. Hiraguri, A., Itoh, R., Kondo, N., Nomura, Y., Aizawa, D.,, Murai, Y., Koiwa, H., Seki, M., Shinozaki, K., and Fukuhara, T. (2005) Specific interactions between Dicer-like proteins and HYL1/DRB-family dsRNA-binding proteins in Arabidopsis thaliana. Plant Mol. Biol. 57, 173-188

31, Liu, Y., Ahn, J., Datta, S., Salzman, R. A., Huyghues-Despointes, B., Pittendrigh, B., Murdock, L.L., Koiwa, H., and Zhu-Salzman, K. (2005) Arabidopsis Vegetative Storage Protein Is An Anti-Insect Acid Phosphatase. Plant Physiol. 139, 1545-1556.

32. Hausmann, S., Koiwa, H., Krishnamurthy, S., Hampsey, M., and Shuman, S. (2005) Different Strategies for CTD Recognition by Serine5-specific CTD Phosphatases. J. Biol. Chem., 280, 37681-37688.

33. Kang, C. H., Jung, W. Y., Kang, Y. H., Kim, J. Y., Kim, D. G., Jeong, J. C., Baek, D. W., Jin, J. B., Lee, J. Y., Kim, M. O., Chung, W. S., Mengiste, T., Koiwa, H., Kwak, S. S., Bahk, J. D., Lee, S. Y., Nam, J. S., Yun, D. J., and Cho, M. J. (2006) AtBAG6, a novel calmodulin-binding protein, induces programmed cell death in yeast and plants. Cell Death Differ. 13, 84-95.

34. Koiwa, H., Bressan, R.A., and Hasegawa, P.M. (2006). Identification of plant stress-responsive determinants in arabidopsis by large-scale forward genetic screens. J. Exp. Bot. 57, 1119-1128.

35. Bang, W.Y., Kim, S.W., Ueda, A., Vikram, M., Yun, D.-J., Bressan, R.A., Hasegawa, P.M., Bahk, J.D., and Koiwa, H. (2006) Arabidopsis carboxyl-terminal domain phosphatase-like (CPL) isoforms share common catalytic and interaction domains but have distinct in planta functions. Plant Physiol. 372, 907-912.

36. Amirhusin, B., Shade, R.E., **Koiwa, H.,** Hasegawa, P.M., Bressan, R.A., Murdock, L.L., and Zhu-Salzman, K. (2007) Protease inhibitors from several classes work synergistically against Callosobruchus maculatus. J. Insect Physiol. 53, 734-40.

37. Ahn, J.E., Lovingshimer, M.R., Salzman, R.A., Presnail, J.K., Lu, A.L., **Koiwa, H.,** and Zhu-Salzman, K. (2007) Cowpea bruchid Callosobruchus maculatus counteracts dietary protease inhibitors by modulating propeptides of major digestive enzymes. Insect Mol. Biol. 16, 295-304.

38. Inan, G., Goto, F., Jin, J.B., Rosado, A., **Koiwa, H.**, Shi, H., Hasegawa, P.M., Bressan, R.A., Maggio, A., and Li, X. (2007) Isolation and characterization of shs1, a sugar-hypersensitive and ABA-insensitive mutant with multiple stress responses. Plant Mol. Biol. 65, 295-309

39. Manabe, Y., Bressan, R.A., Wang, T., Li, F., **Koiwa, H.**, Sokolchik, I., Li, X., and Maggio, A. (2008) The Arabidopsis kinase-associated protein phosphatase regulates adaptation to Na+ stress. Plant Physiol. 146, 612-622.

40. Koo, Y.D., Ahn, J.E., Salzman, R.A., Moon, J., Chi, Y.H., Yun, D.J., Lee, S.Y., **Koiwa, H.**, and Zhu-Salzman, K. (2008) Functional expression of an insect cathepsin B-like counter-defense protein. Insect Mol. Biol. 17, 235-245.

41. Kang, J.S., Frank, J., Kang, C.H., Kajiura, H., Vikram, M., Ueda, A., Kim, S., Bahk, J.D., Triplett, B., Fujiyama, K., Lee, S.Y., von Schaewen, A., and **Koiwa, H.** (2008) Salt tolerance of Arabidopsis thaliana requires maturation of N-glycosylated proteins in the Golgi apparatus. Proc .Natl. Acad. Sci. USA 105, 5933-5938.

42. von Schaewen, A., Frank, J., and Koiwa, H. (2008) Role of complex N-glycans in plants, Plant Signaling Behavior 3, 871-873

43. Ueda, A. Li, P., Feng, Y., Vikram, M., Kim, S., Kang, C.H., Kang, J.S., Bahk, J.D., Lee, S.Y., Fukuhara, T., Staswick, P.E., Pepper, A.E., and **Koiwa, H.** (2008) The Arabidopsis thaliana carboxyl-terminal domain phosphatase-like 2 regulates plant growth, stress and auxin responses, Plant Mol. Biol. 67, 683-697.

44. Bang, W.Y., Kim, S.W., Jeong, I.S., **Koiwa, H**., Bahk, J.D. (2008) The C-terminal region (640-967) of Arabidopsis CPL1 interacts with the abiotic stress- and ABA-responsive transcription factors, Biochem Biophys Res Comm, 372, 907-912.

45. Frank, J., Kaulfurst-Soboll, H., Rips, S., **Koiwa, H.,** von Schaewen, A. (2008) Comparative Analyses of Arabidopsis cgl1 (complex glycan 1) Mutants and Genetic Interaction with stt3a (staurosporin & temperature-sensitive 3a). Plant Physiol. 148, 1354-1367

46. Vikram, M., **Koiwa, H.** (2009) Glyphosate resistance as a versatile selection marker for Arabidopsis transformation. Plant Mo. Biol. Rep. 27, 132-138

47. Kang, C.H., Feng, Y., Vikram, M., Jeong, I.S., Lee, J.R., Bahk, J.D., Yun, D.J., Lee, S.Y., and **Koiwa, H.** (2009) Arabidopsis thaliana PRP40s are RNA polymerase II C-terminal domain-associating proteins. Arch. Biochem. Biophys. 484, 30-38.

48. Feng Y, Kang JS, Kim S, Yun DJ, Lee SY, Bahk JD, Koiwa H (2010) Arabidopsis SCP1-like small phosphatases differentially dephosphorylate RNA polymerase II C-terminal domain. Biochem. Biophys. Res. Commun. 397: 355-360

49. Haweker H, Rips S, Koiwa H, Salomon S, Saijo Y, Chinchilla D, Robatzek S, von Schaewen A (2010) Pattern recognition receptors require N-glycosylation to mediate plant immunity. J. Biol. Chem. 285: 4629-4636

50. Kajiura H, Koiwa H, Nakazawa Y, Okazawa A, Kobayashi A, Seki T, Fujiyama K (2010) Two Arabidopsis thaliana Golgi alpha-mannosidase I enzymes are responsible for plant N-glycan maturation. Glycobiology 20: 235-247

51. Chi YH, Jing X, Lei J, Ahn JE, Koo YD, Yun DJ, Lee SY, Behmer ST, Koiwa H, Zhu-Salzman K (2011) Stability of AtVSP in the insect digestive canal determines its defensive capability. J. Insect Physiol. 57: 391-399

52. Feng Y, Cao CM, Vikram M, Park S, Kim HJ, Hong JC, Cisneros-Zevallos L, Koiwa H (2011) A three-component gene expression system and its application for inducible flavonoid overproduction in transgenic Arabidopsis thaliana. PLoS One 6: e17603

53. Jin YM, Jung J, Jeon H, Won SY, Feng Y, Kang JS, Lee SY, Cheong JJ, Koiwa H, Kim M (2011) AtCPL5, a novel Ser-2-specific RNA polymerase II C-terminal domain phosphatase, positively regulates ABA and drought responses in Arabidopsis. New Phytol.

54. Kaulfuerst-Soboll H, Rips S, Koiwa H, Kajiura H, Fujiyama K, von Schaewen A (2011) Reduced immunogenicity of Arabidopsis hybrid glycosylation1 (hgl1) N-glycans due to altered accessibility of xylose and core fucose epitopes. J. Biol. Chem.

55. Wu X, Koiwa H (2011) One-step casting of Laemmli discontinued sodium dodecyl sulfate-polyacrylamide gel electrophoresis gel. Anal. Biochem.

56. Guo F, Lei J, Sun Y, Chi YH, Ge F, Patil BS, Koiwa H, Zeng R, and Zhu-Salzman K (2012). Antagonistic regulation, yet synergistic defense: effect of bergapten and protease inhibitor on development of cowpea bruchid Callosobruchus maculatus. PLoS One 7, e41877.

Reviews:

1. Koiwa H., Bressan R. A. and Hasegawa P. M. (1997) Regulation of protease inhibitors and plant defense. Trends Plant Sci. 2, 379-384.

2. Bohnert H. J., Ayoubi P., Borchert C., Bressan R. A., Burnap R. L., Cushman J. C., Cushman M. A., Deyholos M., Fisher R., Galbraith D. W., Hasegawa P. M., Jenks M., Kawasaki S., Koiwa H., Kore-eda S., Lee B.-H., Michalowski C. B., Misawa E., Nomura M., Oztuk N., Postier B., Prade R., Song C.-P., Tanaka Y., Wang H. & Zhu J.-K. (2001). A genomics approach towards salt stress tolerance. Plant Physiol. Biochem., 39, 295-311.

Conference Proceeding:

1. Vikram M., Feng Y, Park S., Yoo, K. S., and Koiwa, H. (2009) Designing a molecular switch to optimize phenylpropanoid neutraceuticals in vegetables Acta Hort 841:615-618

Book Chapters:

1. Koiwa, H., Bressan, R. A. and Hasegawa, P. M. (2000) Regulation of plant defense against herbivorous pests., (2000) *In* Recombinant protease inhibitors in plants-The plant response to herbivorous pests., Biotechnology Intelligence Unit 3, (D. Michaud, ed), pp65-79, Eurekah.com, Texas.

2. Koiwa, H. (2004) Salt stress and ion homeostasis. *In* Crosstalks between plant environmental responses and development. (K. Shinozaki, K. Okada, and A. Oka, eds) Springer-Verlag, Tokyo pp. 181-188. (in Japanese)

3. Koiwa, H. (2006) Phosphorylation of RNA polymerase II C-terminal domain and plant osmotic-stress responses *In* Genetic Engineering of Stress Tolerant Plant. Toward the Improvement of Global Environment and Food Supply. (A. K. Rai and T. Takabe, ed.) , Science Publishers, inc, pp. 47-58

4. Koiwa, H. (2009) Pathways and genetic determinants for cell wall-based osmotic stress tolerance in Arabidopsis thaliana root system, In Genes for Plant Abiotic Stress. Wiley-Blackwell, pp 35-53