AKIRA KUBOTA

September 2012

Postdoctoral Fellow
Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellow for Research Abroad
Biology Department, Woods Hole Oceanographic Institution,
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EDUCATION

2006 **Ehime University**, Japan
Ph.D. in Agriculture
Dissertation title: Cytochrome P450 1A in wild avian species: toxicological implications associated with dioxin and related compounds.
Advisors: Dr. Shinsuke Tanabe and Dr. Hisato Iwata

2003 **Ehime University**
M.Sc. in Agriculture

2001 **Ehime University**
B.A. in Agriculture

PROFESSIONAL EXPERIENCE

2012-present	JSPS Postdoctoral Fellow for Research Abroad, Biology Department, Woods Hole Oceanographic Institution (Advisor: John Stegeman)
2011-2012	Visiting Investigator, Biology Department, Woods Hole Oceanographic Institution
2010-2011	Postdoctoral Investigator, Biology Department, Woods Hole Oceanographic Institution
2009-2010	JSPS Postdoctoral Fellow, Biology Department, Woods Hole Oceanographic Institution
2007-2009	JSPS Postdoctoral Fellow, School of Veterinary Medicine, Rakuno Gakuen University, Japan
2006-2007	Postdoctoral Fellow, Center for Marine Environmental Studies, Ehime University, Japan

GRANTS AND AWARDS

April 2012-present	JSPS Postdoctoral Fellowships for Research Abroad, Japan Society for the Promotion of Science, "Development of biological assessment of chemicals focused on nuclear receptor, pregnane X receptor (PXR) in zebrafish" (¥10,500,000)
August 2012	Best Poster Presentation Award for Students, 32nd International Symposium on Halogenated Organic Pollutants and Persistent Organic Pollutants, Cairns, Australia (co-author)
December 2009-March 2010	Excellent Young Researcher Overseas Visit Program for JSPS Postdoctoral Fellow, Japan Society for the Promotion of Science, "Novel role of cytochromes P450 in kinetics and toxicity of dioxins in fish" (¥650,000)
October 2009	Karen Wetterhahn Award (Best Poster Presentation Award), 27th New England Membrane Enzyme Group Conference, Woods Hole, MA (primary presenter)
September 2008	Best Oral Presentation Award for Young Scientists, The Japanese Society of Comparative Pharmacology and Toxicology, 146th Meeting of Japan Society of Veterinary Science, Miyazaki, Japan (primary presenter)
April 2007-March 2010	Grant-in-aid for Scientific Research, Ministry of Education, Culture, Sports, Science and Technology, Japan, "Novel role of cytochromes P450 in kinetics and toxicity of dioxins in fish" (¥3,300,000)

April 2007-March 2010	JSPS Postdoctoral Fellowships, Japan Society for the Promotion of Science, "Novel role of cytochromes P450 in kinetics and toxicity of dioxins in fish" (¥13,000,000)
April 2006-March 2007	Young Scientists Award of 21st Center of Excellence (COE) from Ministry of Education, Culture, Sports, Science and Technology, Japan for Postdoctoral Researcher, "Functional characterization of avian cytochrome P450 1A enzymes; toward understanding of species-specific susceptibility to dioxins and related compounds" (¥800,000)
September 2005	Best Oral Presentation Award for Young Scientists, The Japanese Society of Environmental Toxicology, 11th Joint Meeting of the Japanese Society of Environmental Toxicology and Bioassay Research (primary presenter)
April 2003-March 2006	Grant-in-aid for Scientific Research, Ministry of Education, Culture, Sports, Science and Technology, Japan, "Contamination status of dioxin and related compounds and their effects on wild avian species" (¥2,700,000)
April 2003-March 2006	JSPS Doctoral Fellowships, Japan Society for the Promotion of Science, "Contamination status of dioxin and related compounds and their effects on wild avian species" (¥7,300,000)

PROFESSIONAL AFFILIATIONS

2006-present	Member, The Japan Society of Endocrine Disrupters Research
2008	Member, The Japanese Society of Veterinary Science
2008	Member, The Japanese Society of Comparative Pharmacology and Toxicology
2009	Member, Society of Environmental Toxicology and Chemistry
2009-present	Member, The Japanese Society of Environmental Toxicology
2010	Member, North Atlantic Chapter of the Society of Environmental Toxicology and Chemistry

RESEARCH INTERESTS

- Use of zebrafish, model fish for environmental toxicology, to understand hydrophobic ligand receptor signaling pathways in regulation of cytochrome P450 (CYP) genes, and mechanisms of developmental toxicity caused by halogenated aromatic hydrocarbons, with particular attention to cardiovascular and cerebrovascular toxicities by dioxins.
- Wildlife and avian toxicology to understand biological consequences of chronic exposure to environmental contaminants, including dioxins.
- Functional characterization of hydrophobic ligand receptors and xenobiotic metabolizing enzymes to evaluate molecular mechanisms underlying species-specific responses and susceptibility to chemicals.
- Assessment of the functional correlates occurring during the molecular evolution of CYP enzymes and their regulatory systems in phylogenetically important organisms.

AREA OF EXPERTISE

Developmental toxicology, ecotoxicology, avian toxicology, molecular biology, developmental biology, biochemistry, environmental chemistry, analytical chemistry, biomarkers, CYPs, hydrophobic ligand receptors, zebrafish, dioxins, hydrocarbons

INVITED TALK

1. Wildlife ecotoxicology of chlorinated dioxins and cytochrome P450 1A – The Lake Biwa cormorant story. Woods Hole Oceanographic Institution, Woods Hole, MA, USA, August 2012.
2. Cytochrome P450 1A in wild avian species: Toxicological implications associated with dioxin and related compounds. National Wildlife Research Centre, Environment Canada, Ottawa, Canada, October 2007.

PEER-REVIEWED PUBLICATIONS

1. Jönsson, M. E.[*], **Kubota, A.**[*], Timme-Laragy, A. R., Woodin, B. R. and Stegeman, J. J. (2012): Ahr2-dependance of PCB126 effects on the swimbladder in relation to expression of *CYP1* and *cox-2* genes in developing zebrafish. *Toxicology and Applied Pharmacology*, **in press**. [*]Equal contribution.

2. **Kubota, A.**, Watanabe, M. X., Kim, E.-Y., Yoneda, K., Tanabe, S. and Iwata, H. (2012): Accumulation of dioxins and induction of cytochrome P450 1A4/1A5 enzyme activities in common cormorants from Lake Biwa, Japan: Temporal trends and validation of national regulation on dioxins emission. *Environmental Pollution*, **168**, 131-137.
3. Teraoka, H., Ito, S., Ikeda, H., **Kubota, A.**, Elmagd, M. M. A., Kitazawa, T., Kim, E. Y., Iwata, H., Endoh, D. (2012): Differential display system with vertebrate-common degenerate oligonucleotide primers: uncovering genes responsive to dioxin in avian embryonic liver. *Environmental Science and Technology*, **46**, 27-33.
4. Honda, K., Komatsu, T., Koyama, F., **Kubota, A.**, Kawakami, K., Asakura, H., Uno, Y., Kitazawa, T., Hiraga, T. and Teraoka, H. (2011): Expression of two novel cytochrome P450 3A131 and 3A132 in liver and small intestine of domestic cats. *Journal of Veterinary Medical Science*, **73**, 1489-1492.
5. **Kubota, A.**, Stegeman, J. J., Woodin, B. R., Iwanaga, T., Harano, R., Peterson, R. E., Hiraga, T. and Teraoka, H. (2011): Role of zebrafish cytochrome P450 CYP1C genes in the reduced mesencephalic vein blood flow caused by activation of AHR2. *Toxicology and Applied Pharmacology*, **253**, 244-252.
6. **Kubota, A.**, Stegeman, J. J., Goldstone, J. V., Nelson, D. R., Kim, E.Y., Tanabe, S. and Iwata, H. (2011): Cytochrome P450 CYP2 genes in the common cormorant: evolutionary relationships with 130 diapsid CYP2 clan sequences and chemical effects on their expression. *Comparative Biochemistry and Physiology Part C*, **153**, 280-289.
7. Goldstone, J. V., McArthur, A. G., **Kubota, A.**, Zanette, J., Parente, T., Jonsson, M. E., Nelson, D. R. and Stegeman, J. J. (2010): Identification and developmental expression of the full complement of cytochrome P450 genes in zebrafish. *BMC Genomics*, **11**, 643.
8. Komatsu, T., Honda, K., **Kubota, A.**, Kitazawa, T., Hiraga, T. and Teraoka, H. (2010): Molecular cloning and expression of cytochrome P450 2D6 in the liver of domestic cats. *Journal of Veterinary Medical Science*, **72**, 1633-1636.
9. Teraoka, H., Ogawa, A., **Kubota, A.**, Stegeman, J. J., Peterson, R. E. and Hiraga, T. (2010): Malformation of certain brain blood vessels caused by TCDD activation of Ahr2/Arnt1 signaling in developing zebrafish. *Aquatic Toxicology*, **99**, 241-247.
10. **Kubota, A.**, Watanabe, M., Kunisue, T., Kim, E. Y., Tanabe, S. and Iwata, H. (2010): Hepatic CYP1A induction by chlorinated dioxins and related compounds in the endangered black-footed albatross from the North Pacific. *Environmental Science and Technology*, **44**, 3559-3365.
11. **Kubota, A.**, Kim, E.-Y. and Iwata, H. (2009): Alkoxyresorufin (methoxy-, ethoxy-, pentoxy- and benzyloxyresorufin) *O*-dealkylase activities by *in vitro*-expressed cytochrome P450 1A4 and 1A5 from common cormorant (*Phalacrocorax carbo*). *Comparative Biochemistry and Physiology Part C*, **149,** 544-551.
12. Teraoka, H., **Kubota, A.**, Dong, W., Kawai, Y., Yamazaki, K., Mori, C., Harada, Y., Peterson, R. E. and Hiraga, T. (2009): Role of the cyclooxygenase 2–thromboxane pathway in 2,3,7,8-tetrachlorodibenzo-*p*-dioxin-induced decrease in mesencephalic vein blood flow in the zebrafish embryo. *Toxicology and Applied Pharmacology*, **234**, 33-40.
13. **Kubota, A.**, Iwata, H. and Kim, E.-Y. (2008): Catalytic function of avian cytochrome P450 1A4 and 1A5 (CYP1A4 and CYP1A5) enzymes heterologously expressed using *in vitro* yeast system. *Marine Environmental Research*, **66**, 154-155.
14. **Kubota, A.**, Iwata, H., Goldstone, H. M. H., Kim, E.-Y., Stegeman, J. J. and Tanabe, S. (2006): Cytochrome P450 1A4 and 1A5 in common cormorant (*Phalacrocorax carbo*): Evolutionary relationships and functional implications associated with dioxin and related compounds. *Toxicological Sciences*, **92**, 394-408.
15. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S. (2006): Congener-specific toxicokinetics of PCDDs, PCDFs, and coplanar PCBs in black-eared kites, *Milvus migrans*: CYP1A-dependent hepatic sequestration. *Environmental Toxicology and Chemistry*, **25**, 1007-1016.
16. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S. (2005): Hepatic CYP1A induction by dioxin-like compounds, and congener-specific metabolism and sequestration in wild common

cormorants from Lake Biwa, Japan. *Environmental Science & Technology*, **39**, 3611-3619.

17. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S. (2004): Levels and toxicokinetic behaviors of PCDD, PCDF, and coplanar PCB congeners in common cormorants from Lake Biwa, Japan. *Environmental Science & Technology*, **38**, 3853-3859.
18. **Kubota, A.**, Someya, M., Watanabe, M. and Tanabe, S. (2002): Contamination status of PCBs (including coplanar congeners), polychlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs) in sediments from Uwa Sea, Japan. *Nippon Suisan Gakkaishi*, **68**, 695-700. (in Japanese)

BOOKS, PROCEEDINGS AND REPORTS

1. **Kubota, A.**, Lee, J.-S., Kim, E.-Y. and Iwata, H. (2011): Chapter 13, Avian ecotoxicology: diversity of AHR signal transduction and risk assessment of dioxins. In: Clinical Endocrinology (M. Yamada, Ed.), 93-102. Igakunosekaisha, Inc., Tokyo, Japan. (in Japanese)
2. **Kubota, A.** (2009): Participation report on SETAC North America 30th annual meeting. *Japanese Journal of Environmental Toxicology*, **12(2)**, 149-152. (in Japanese)
3. Teraoka, H. and **Kubota, A.** (2009): Chapter 6, Impact of environmental pollution on wildlife. In: *Modern Veterinary Public Health* (Y. Tamura, Ed.), 106-112. Midori Shobo Co., Ltd., Tokyo, Japan. (in Japanese)
4. Teraoka, H., **Kubota, A.**, Kawai, Y. and Hiraga, T. (2008): Prostanoid signaling mediates circulation failure caused by TCDD in developing zebrafish. In: *Interdisciplinary Studies on Environmental Chemistry–Biological Responses to Chemical Pollutants* (Y. Murakami, K. Nakayama, S. -I. Kitamura, H. Iwata and S. Tanabe, Eds.), 61-80. TERRAPUB, Tokyo, Japan.
5. **Kubota, A.**, Iwata, H., Yoneda, K. and Tanabe, S. (2007): Temporal trends of dioxins and related compounds concentrations and cytochrome P4501A-dependent catalytic activities in common cormorants from Lake Biwa, Japan through 2001 to 2005. *Organohalogen Compounds*, **69**, 1637-1640.
6. **Kubota, A.**, Iwata, H. and Kim, E.-Y. (2007): Enzymatic studies of avian cytochrome P450 1A4 and 1A5 isozymes heterologously expressed in yeast cells: analysis of interaction with alkoxyresorufins and 2,3,7,8-TCDF. *Organohalogen Compounds*, **69**, 198-201.
7. **Kubota, A.**, Iwata, H., Kim, E.-Y. and Tanabe, S. (2007): Functional characterization of avian cytochrome P450 1A4 and 1A5 enzymes using *in vitro* yeast expression system. In: *Chemical Pollution and Environmental Changes* (S. Tanabe, H. Takeoka, T. Isobe and Y. Nishibe, Eds), 123-126. UNIVERSAL ACADEMY PRESS, INC., Tokyo, Japan.
8. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S. (2004): Hepatic CYP1A involved in metabolism and sequestration of PCDD, PCDF and coplanar PCB congeners in common cormorants. *Organohalogen Compounds*, **66**, 2939-2944.
9. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S. (2004): Levels and toxicokinetic behaviors of PCDD, PCDF and coplanar PCB congeners in common cormorants from the Lake Biwa, Japan: life stage-related accumulation and tissue distribution. In: *Proceedings of 1st International Symposium on Environmental Behavior and Ecological Impacts of Persistent Toxic Substances*, 112-117.
10. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S. (2004): CYP1A-like protein expression related to accumulation, hepatic sequestration and metabolism of PCDD, PCDF and coplanar PCB congeners in common cormorants. In: *Proceedings of 1st International Symposium on Environmental Behavior and Ecological Impacts of Persistent Toxic Substances*, 199-203.
11. Iwata, H., Kim, E.-Y., **Kubota, A.**, Watanabe, M., Sakamoto, T., Hirakawa, S., Okamoto M. and Tanabe, S. (2004): Comparative characterization of CYP1As as a biomarker of PCDDs/DFs and Co-PCBs contamination in aquatic birds and mammals. In: *Proceedings of 1st International Symposium on Environmental Behavior and Ecological Impacts of Persistent Toxic Substances*, 167-172.
12. **Kubota, A.**, Iwata, H. and Tanabe, S. (2003): Persistent organochlorine contaminants and hepatic cytochrome P450s in common cormorants and black-eared kites. *Organohalogen Compounds*, **64**, 391-394.

13. Tanabe, S., **Kubota, A.** and Iwata, H. (2003): Chapter 3-2, Measurement of drug-metabolizing enzymes. In: *Dioxins Survey Manual for Wildlife of Japan*, Japan Wildlife Research Center. 150-153.

SELECTED PRESENTATIONS AT CONFERENCES

1. Mizukawa, H., Nomiyama, K., Nakatsu, S., Iwata, H., **Kubota, A.**, Yamamoto, M., Yoo, J., Koike, M., Nagano, Y. and Tanabe, S.: Organohalogen compounds and those metabolites in the blood of pet dogs and cats, and their pet food. *32nd International Symposium on Halogenated Organic Pollutants and Persistent Organic Pollutants*, Cairns, Australia, August 2012.
2. Thuruthippallil, L. M., Kim, E.-Y. **Kubota, A.** and Iwata, H.: Alternative approaches to wildlife testing for toxicological risk assessment: a case study on AHR-mediated CYP1A induction by dioxin and related compounds in the common cormorant (*Phalacrocorax carbo*). *21st Meeting of Japan Society for Environmental Chemistry*, Matsuyama, Japan, July 2012.
3. Yoo, J., Hirano, M., **Kubota, A.** Kim, E.-Y. and Iwata, H. *In vitro* and *in silico* analyses of the catalytic function of the Baikal seal (*Pusa sibirica*) CYP2 genes. *21st Meeting of Japan Society for Environmental Chemistry*, Matsuyama, Japan, July 2012.
4. **Kubota, A.**, Woodin, B. R., Hawley, E. T., Goldstone, J. V. and Stegeman, J. J.: Influence of pregnane X receptor knock-down on the expression of selected genes in developing zebrafish exposed to pregnenolone. *16th International Symposium on Pollutants Responses in Marine Organisms (PRIMO16)*, Long Beach, California, USA, May 2011.
5. Yamaguchi, K., Kim, E. Y., **Kubota, A.** and Iwata, H.: Functional characterization of *in vitro* expressed CYP1A1, 1A2 and 1B1 from the Baikal seal (*Pusa sibirica*). *16th International Symposium on Pollutants Responses in Marine Organisms (PRIMO16)*, Long Beach, California, USA, May 2011.
6. **Kubota, A.**, Bainy, A. C. D., Siebert, M., Woodin, B. R., Goldstone, J. V. and Stegeman, J. J.: Cytochrome P450 CYP2AA, CYP3A, and pregnane X receptor in zebrafish (*Danio Rerio*): expression in response to potential agonists for PXR. *Society of Toxicology 50th Annual Meeting*, Washington, D. C., USA, March 2011.
7. **Kubota, A.**, Stegeman, J. J., Goldstone, J. V., Nelson, D. R., Kim, E.Y., Tanabe, S. and Iwata, H.: Cytochrome P450 CYP2 genes in the common cormorant: evolutionary relationships with 130 diapsid CYP2 clan sequences and chemical effects on their expression. *10th International Symposium on Cytochrome P450 Biodiversity and Biotechnology*, Woods Hole, Massachusetts, USA, October 2010.
8. Jönsson, M. E., **Kubota, A.**, Timme-Laragy, A. R., Woodin, B. R. and Stegeman, J. J.: Effect of PCB126 on the swim-bladder and expression of CYP1 and COX2 genes in developing zebrafish. *10th International Symposium on Cytochrome P450 Biodiversity and Biotechnology*, Woods Hole, Massachusetts, USA, October 2010.
9. **Kubota, A.**, Harano, R., Iwanaga, T., Woodin, B. R., Stegeman, J. J., Hiraga, T. and Teraoka, H.: Role of zebrafish CYP1C genes in the reduced mesencephalic vein blood flow caused by activation of AHR2. *9th International Meeting on Zebrafish Development and Genetics*, Madison, Wisconsin, USA, June 2010.
10. **Kubota, A.**, Ogawa, A., Stegeman, J. J., Hiraga, T. and Teraoka, H.: AHR2-ARNT1 signaling-dependent disorder of blood vessel formation in the brain of developing zebrafish exposed to TCDD. *SETAC North America 30th Annual Meeting*, New Orleans, Louisiana, USA, November 2009.
11. **Kubota, A.**, Harano, R., Iwanaga, T., Woodin, B. R., Stegeman, J. J., Hiraga, T. and Teraoka, H.: Role of cytochrome P450 1C genes in the reduced mesencephalic vein blood flow caused by activation of aryl hydrocarbon receptor 2 in the zebrafish embryo. *21st Century Advances in the Molecular Toxicology of Environmental Chemicals and Pathogenesis of Disease*, Tokyo, Japan, October 2009.
12. **Kubota, A.**, Harano, R., Iwanaga, T., Woodin, B. R., Stegeman, J. J., Hiraga, T. and Teraoka, H.: Role of cytochrome P450 1C genes in the reduced mesencephalic vein blood flow caused by activation of aryl hydrocarbon receptor 2 in the zebrafish embryo. *27th New England Membrane*

Enzyme Group Conference, Woods Hole, Massachusetts, USA, October 2009.

13. **Kubota, A.**, Ogawa, A., Hiraga, T. and Teraoka, H.: AHR2-ARNT1 signaling-dependent disarrangement of cephalic vascular network in developing zebrafish. *27th New England Membrane Enzyme Group Conference*, Woods Hole, Massachusetts, USA, October 2009.
14. **Kubota, A.**, Harano, R., Stegeman, J. J., Hiraga, T. and Teraoka, H.: Role of cytochrome P450 1C genes in the reduced mesencephalic vein blood flow caused by activation of aryl hydrocarbon receptor 2 in the zebrafish embryo. *15th International Symposium on Pollutants Responses in Marine Organisms (PRIMO15)*, Bordeaux, France, May 2009.
15. **Kubota, A.**, Harano, R., Hiraga, T. and Teraoka, H.: Role of cytochrome P450 1C genes in mesencephalic circulation failure caused by 2,3,7,8-tetrachlorodibenzo-*p*-dioxin and β-naphthoflavone in the zebrafish embryo. *Interdisciplinary Symposium on Environmental Sciences: To Establish an Asian Network of Environmental Researchers*, Matsuyama, Japan, November 2008.
16. **Kubota, A.**, Harano, R., Igarashi, K., Hiraga, T. and Teraoka, H.: Role of cytochrome P450 1C genes in the reduced mesencephalic vein blood flow caused by activation of aryl hydrocarbon receptor 2 in the zebrafish embryo. *26th New England Membrane Enzyme Group Conference*, Woods Hole, Massachusetts, USA, October 2008.
17. Teraoka, H., Kawai, Y., **Kubota, A.** and Hiraga, T.: Prostanoid singaling mediates circulation failure caused by 2,3,7,8-tetrachlorodibenzo-*p*-dioxin in developing zebrafish. *International Symposium on Biological Responses to Chemical Pollutants: Toward Establishing an Asian Network of Environmental Toxicology*, Matsuyama, Japan, March 2008.
18. **Kubota, A.**, Iwata, H. and Kim, E.-Y.: Enzymatic studies of avian cytochrome P450 1A4 and 1A5 isozymes heterologously expressed in yeast cells: analysis of interaction with alkoxyresorufins and 2,3,7,8-TCDF. *25th New England Membrane Enzyme Group Conference*, Woods Hole, Massachusetts, USA, October 2007.
19. **Kubota, A.**, Iwata, H., Yoneda, K. and Tanabe, S.: Temporal trends of dioxins and related compounds concentrations and cytochrome P4501A-dependent catalytic activities in common cormorants from Lake Biwa, Japan through 2001 to 2005. *27th International Symposium on Halogenated Organic Pollutants and Persistent Organic Pollutants*, Tokyo, Japan, August 2007.
20. **Kubota, A.**, Iwata, H. and Kim, E.-Y.: Enzymatic studies of avian cytochrome P450 1A4 and 1A5 isozymes heterologously expressed in yeast cells: analysis of interaction with alkoxyresorufins and 2,3,7,8-TCDF. *27th International Symposium on Halogenated Organic Pollutants and Persistent Organic Pollutants*, Tokyo, Japan, August 2007.
21. **Kubota, A.**, Iwata, H., Kim, E-Y., and Tanabe, S.: Functional characterization of avian cytochrome P450 1A4 and 1A5 enzymes using *in vitro* yeast expression system. *Pioneering Studies of Young Scientists on Chemical Pollution and Environmental Changes*, Matsuyama, Japan, November 2006.
22. **Kubota, A.**, Iwata, H., Kim, E-Y., Tanabe, S. and Yoneda, K.: Identification of CYP1A4/1A5 cDNAs, and their mRNA expressions related to TEQ levels of dioxin-like compounds in wild common cormorants (*Phalacrocorax carbo*). *13th International Symposium on Pollutants Responses in Marine Organisms (PRIMO13)*, Alessandria, Italy, June 2005.
23. **Kubota, A.**, Iwata, H., Kim, E-Y., Tanabe, S. and Yoneda, K.: Molecular cloning of novel CYP2 family using a cDNA library from the liver of wild common cormorant (*Phalacrocorax carbo*) *13th International Symposium on Pollutants Responses in Marine Organisms (PRIMO13)*, Alessandria, Italy, June 2005.
24. Nakayama, K., Iwata, H., Kim, E-Y., **Kubota, A.**, Tashiro, K. and Tanabe, S.: Screening of genes with altered expression by environmental contaminants in cormorant liver with a microarray. *4th SETAC World Congress and 25th Annual Meeting in North America*, Portland, Oregon, November 2004.
25. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S.: Hepatic CYP1A involved in metabolism and sequestration of PCDD, PCDF and coplanar PCB congeners in common cormorants. *24th International Symposium on Halogenated Organic Pollutants and Persistent Organic Pollutants*, Berlin, Germany, September 2004.

26. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S.: Hepatic CYP1A induction by dioxin-like compounds, and congener-specific metabolism and sequestration in wild common cormorants from Lake Biwa, Japan. *7th International Symposium on Cytochrome P450 Biodiversity and Biotechnology*, Awaji Island, Hyogo, Japan, August 2004.
27. Iwata, H., Kim, E. Y., **Kubota, A.**, Watanabe, M., Sakamoto, T., Hirakawa, S., Okamoto, M. and Tanabe, S.: Cytochrome P450s and persistent organic pollutants in wild populations of aquatic mammals and birds. *7th International Symposium on Cytochrome P450 Biodiversity and Biotechnology*, Awaji Island, Hyogo, Japan, August 2004.
28. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S.: Levels and toxicokinetic behaviors of PCDD, PCDF and coplanar PCB congeners in common cormorants from the Lake Biwa, Japan: life stage-related accumulation and tissue distribution. *1st International Symposium on Environmental Behavior and Ecological Impacts of Persistent Toxic Substances*, Matsuyama, Japan, March 2004.
29. **Kubota, A.**, Iwata, H., Tanabe, S., Yoneda, K. and Tobata, S.: CYP1A-like protein expression related to accumulation, hepatic sequestration and metabolism of PCDD, PCDF and coplanar PCB congeners in common cormorants. *1st International Symposium on Environmental Behavior and Ecological Impacts of Persistent Toxic Substances*, Matsuyama, Japan, March 2004.
30. Iwata, H., Kim, E.-Y., **Kubota, A.**, Watanabe, M., Sakamoto, T., Hirakawa, S., Okamoto M. and Tanabe, S.: Comparative characterization of CYP1As as a biomarker of PCDDs/DFs and Co-PCBs contamination in aquatic birds and mammals. *1st International Symposium on Environmental Behavior and Ecological Impacts of Persistent Toxic Substances*, Matsuyama, Japan, March 2004.
31. **Kubota, A.**, Iwata, H. and Tanabe, S.: Persistent organochlorine contaminants and hepatic cytochrome P450s in common cormorants and black-eared kites. *23rd International Symposium on Halogenated Organic Pollutants and Persistent Organic Pollutants*, Boston, Massachusetts, August 2003.
32. **Kubota, A.**, Iwata, H. and Tanabe, S.: Bioaccumulation of dioxin-like compounds and induction of cytochrome P450 in cormorant and kite. *SETAC 23rd Annual Meeting in North America*, Salt Lake City, Utah, November 2002.

RESEARCH EXPERIENCES

April 2009-Present **Postdoctoral Fellow/Investigator/Visiting Investigator**
Biology Department, Woods Hole Oceanographic Institution

- Phenotypic observation in early development of zebrafish following chemical exposure. Phenotypes include circulation, pericardial/cranial/rostral edemas, swim-bladder inflation, and morphological changes in certain brain blood vessels.
- Evaluation of effects of gene knock-down of CYP1s on the cardio- and cerebro-vascular toxicity caused by dioxins in developing zebrafish.
- Quantitative evaluation of responses to potential agonists for zebrafish PXR and assessing the involvement of the PXR pathway with the gene knock-down technique, to establish target genes in this species.
- Quantitative evaluation of maternally derived mRNA deposition for a variety of CYP genes in eggs and their expression in early development of zebrafish and killifish, with the qPCR method.
- Functional characterization of fish and bird CYP1s expressed in yeast by focusing on enzymatic activity and profile of benzo[a]pyrene metabolism.
- Examining genomes of diapsids (chicken, zebra finch, and anole lizard) for identifying novel CYP2 clan sequences, to better understand evolutionary relationships of this complex CYP subfamily in vertebrates.
- Mentored and trained undergraduate summer fellows in molecular biology techniques.

April 2007-
March 2010

JSPS Postdoctoral Research Fellow
Department of Toxicology, School of Veterinary Medicine, Rakuno Gakuen University, Japan

- Managed veterinary toxicology and pharmacology research project as a principal investigator.
- Measured blood flow and evaluated morphological changes in certain brain blood vessels in developing zebrafish exposed to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) and β-naphthoflavone (BNF).
- Evaluated effects of gene knock-down of CYP1s, cyclooxygenase-2, and thromboxane A2 synthase on the vascular toxicity of TCDD and BNF in developing zebrafish.
- Mentored and trained undergraduate students in molecular, biochemical and microscopy techniques.

April 2006-
March 2007

Postdoctoral Researcher
Center for Marine Environmental Studies, Ehime University, Japan.

- Managed environmental chemistry and toxicology research project as a principal investigator.
- Constructed an *in vitro* yeast expression system for avian CYP1A enzymes.
- Investigated enzymatic properties of recombinant avian CYP1A enzymes.
- Mentored and trained undergraduate students in molecular and biochemical techniques.
- Managed international symposium "Pioneering Studies of Young Scientists on Chemical Pollution and Environmental Changes" held at Matsuyama, Japan, November 2006.

April 2003-
March 2006

Doctoral Course Student
The United Graduate School of Agricultural Science, Ehime University

- Managed environmental chemistry and toxicology research project as a representative researcher.
- Cloned and sequenced CYP genes, including novel subfamily, in common cormorant.
- Quantified mRNA expression levels of CYP enzymes in common cormorants.
- Performed phylogenetic analyses with nucleotide and amino acid sequences as part of collaborative work with Dr. H.M. Goldstone (Josephine Bay Paul Center for Comparative Molecular Biology and Evolution, Marine Biological Laboratory) and Dr. J.J. Stegeman (Biology Department, Woods Hole Oceanographic Institution).
- Prepared hepatic microsomes from birds, and measured cross-reactive proteins of various CYP enzymes with polyclonal antibodies in western blot experiments.
- Dissected birds and terrestrial mammals and collected fresh tissue samples.
- Collected surface sediments and sediment core samples from offshore waters of Vietnam.
- Prepared more than ten reports and submitted to the Ministry of the Environment, Japan (either in Japanese or English).
- Mentored and trained graduate and undergraduate students in molecular and biochemical techniques.
- Organized weekly meetings.

April 2001-
March 2003

Master's Student
Ehime University

- Designed experiments on understanding contamination status and accumulation patterns of persistent organic pollutants (POPs) in tissues of wild birds.

- Measured concentrations of POPs in tissues of wild birds and interpreted data using appropriate statistical analyses.
- Prepared hepatic microsomes from birds and fish, and measured cross-reactive proteins of CYP1A isozyme with polyclonal antibodies in western blotting.
- Measured CYP catalytic activities by a spectrofluorometer.
- Dissected birds and fish to collect fresh tissue samples.
- Mentored and trained undergraduate students in molecular and biochemical techniques.

April 1997-
March 2001

Undergraduate Student
Ehime University (Initiated my research from the 3rd year of undergraduate student.)

- Measured concentrations of POPs in surface sediments and sediment cores collected from Uwa Sea, Japan.

SELECTED FIELD EXPERIENCES

June 2009	Scorton Creek, Massachusetts, USA (collected *Fundulus heteroclitus*)
July 2005	Offshore of Vung Tau, Vietnam (sampled sediments).
May 2004	Lake Biwa, Shiga, Japan (collected cormorants).
May 2003	Lake Biwa, Shiga Japan (collected cormorants).
August 2001	Gunma, Japan (collected black-eared kites).
May 2001	Lake Biwa, Shiga, Japan (collected cormorants).

SKILLS

- Laboratory techniques for *in vivo* imaging of blood vessels and blood flow in live fishes, gene knock-down by microinjection method, biochemistry, immunochemistry, molecular biology, and analytical chemistry.
- Bioinformatics software: MacVector, BioEdit and Sequencher.
- Analytical instruments: microscopy, microinjector, spectrophotometer, image analyzer, quantitative real time PCR system, HPLC, GC-MS and GC-ECD.
- Dissection of wildlife and experimental animals, including birds and fish.