

**Curriculum vitae of
Anna L. Choi, ScD**

School of Science and Engineering
The Chinese University of Hong Kong, Shenzhen
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Education:

- ScD Environmental Epidemiology, Harvard University, 2005
Thesis title: “*PCB Exposures and Neurodevelopment of Children Residing Near a Superfund Site*”
Thesis advisors: Prof. Douglas Dockery, Prof. Louise Ryan
- SM Biostatistics, Harvard University, 2000
- M.S. Medical Statistics, University of Rochester, 1992
- B.A. Statistics, University of Rochester, 1979

Postdoctoral Training:

- 2005 - 2007 Postdoctoral fellow, Department of Environmental Health,
Harvard School of Public Health, Boston, MA

Academic Appointments:

- 2007 - 2009 Research Associate, Department of Environment Health, Harvard School of
Public Health, Boston, MA
- 2009 - 2016 Research Scientist, Department of Environmental Health, Harvard School of
Public Health, Boston, MA.
- 2014 - 2015 Visiting Senior Research Fellow, Department of Systems Engineering and
Engineering Management, City University of Hong Kong, Hong Kong.
- 2016 - 2017 Senior Research Fellow, Global Asia Institute, National University of
Singapore, Singapore
- 2017 Faculty (part-time), School of Science and Engineering, The Chinese University of Hong
Kong, Shenzhen
- 2018 - Associate Professor (fractional), School of Science and Engineering, The Chinese
University of Hong Kong, Shenzhen

Advisory Appointment:

- 2014 - 2017 Member, Science Advisory Board, Chemical Assessment Advisory Committee,
U.S. Environmental Protection Agency, Washington, D.C.

Institution Appointments:

- 1986 - 1998 Research Associate and Supervisor, Programming Group, Department of
Biostatistics, University of Rochester, Rochester, N.Y.

Other Professional Positions:

- 1984 - 1986 System Engineer, Computer Consoles Incorporated, Rochester, N.Y.
- 1982 - 1983 Programmer/Analyst, Hong Kong Government Data Processing Agency, Hong Kong
- 1980 - 1982 Programmer/Analyst, Arthur Anderson & Company, Hong Kong 1979-1980
Systems Engineer, Computer Consoles Incorporated, Rochester, N.Y.

Journal Publications

- Timmermann CAG, **Choi AL**, Petersen MK, Nielsen F, Budtz-Jørgensen E, Weihe P, Grandjean P. Secondary sex ratio in relation to exposure to polychlorinated biphenyls and dichlorodiphenyl dichloroethylene. *Accepted. Int J Circumpolar Health*. 2017.
- Choi, AL**, Lai, DA, Lai, TL. Health analytics, economics and medicine toward a 21st-Century health care system. *Health* 2016. 8, 428-443.
- Choi AL**, Lai TL. Discussion on “Perils and potentials of self-selected entry to epidemiological studies and surveys” by Keiding N and Louis TA. *J. R. Statist. Soc. A*. 2016. 179:355.
- Choi AL**, Zhang Y, Wang KL, Yang XL, Li JS, Fu YL, Sun GF, Grandjean P. Comment on “Severe dental fluorosis and cognitive deficits”. *Neurotoxicol Teratol* 2015. 50:32. doi:10.1016/j.ntt.2015.05.003.
- Tøttenborg SS, **Choi AL**, Bjerne KS, Weihe P, Grandjean P. Effect of seafood mediated PCB on desaturase activity and PUFA profile in Faroese Septuagenarians. *Environ Res*. 2015. 140:699-703.
- Grandjean P, **Choi AL**. Community water fluoridation and intelligence. *Am J Public Health*. 2015. 105:e3. doi:10.2105/AJPH2014.302532.
- Choi AL**, Zhang Y, Wang KL, Yang XL, Li JS, Fu YL, Sun GF, Grandjean P. Association of cognitive deficits with prenatal exposure to fluoride in Chinese children: a pilot study. *Neurotoxicol Teratol* 2015. 47:96-101.
- Choi AL**, Mogensen UB, Bjerne KS, Debes F, Weihe P, Grandjean P, Budtz-Jørgensen E. Negative confounding by essential fatty acids in methylmercury neurotoxicity associations. *Neurotoxicol Teratol* 2014. 42:85-92.
- Kim BM, **Choi AL**, Ha EH, Pedersen L, Nielsen F, Weihe P, Hong YC, Budtz-Jørgensen E, Grandjean P. Effect of haemoglobin adjustment on the precision of mercury concentrations in maternal and cord blood. *Environ Res*. 2014. 132:407-412.
- Grandjean P, Weihe P, Debes F, **Choi AL**, Budtz-Jørgensen E. Neurotoxicity from prenatal and postnatal exposure to methylmercury. *Neurotoxicol Teratol* 2014. 43:39-44.
- de Freitas Fonseca M, Hacon SS, Grandjean P, **Choi AL**, Bastos WR. Iron status as a covariate in methylmercury-associated neurotoxicity risk. *Chemosphere* 2014. 100:89-96.
- Yorifuji T, Murata K, Bjerne KS, **Choi AL**, Weihe P, Grandjean P. Visual evoked potentials in children prenatally exposed to methylmercury. *Neurotoxicology*. 2013. 37:15-18.
- Choi AL**, Grandjean P, Sun G, Zhang Y. Developmental fluoride neurotoxicity: Choi et al. Respond. *Environ Health Perspect* 2013. 121:A70.
- Choi AL**, Sun GF, Zhang Y, Grandjean P. Developmental fluoride neurotoxicity: a systematic review and meta-analysis. *Environ Health Perspect* 2012. 120:1362-1368.
- Wu H, Bertrand KA, **Choi AL**, Hu FB, Laden F, Grandjean P, Sun Q. Persistent organic pollutants and type 2 diabetes: a prospective analysis in the Nurses’ Health Study and Meta- Analysis. *Environ Health Perspect* 2012. 121:153-161.
- Mason RP, **Choi AL**, Fitzgerald WF, Hammerschmidt CR, Lamborg C, Sunderland EM. Mercury biogeochemical cycling in the ocean and policy implications. *Environ Res*. 2012. 119:101-117.
- Oken E, **Choi AL**, Karagas MR, Marien K, McKelvey W, Rheinberger R, Schoeny R, Sunderland EM, S. Korrick S. 2012. Which fish should I eat? Perspectives influencing fish consumption choices. *Environ Health Perspect* 2012. 120:790-798.
- Karagas MR, **Choi AL**, Oken E, Horvat M, Schoeny R, Kamai E, Cowell W, Grandjean P,

- Korrick S. 2012. Evidence on the human health effects of low levels methylmercury exposure. *Environ Health Perspect* 2012. 120:799-806.
- Grandjean P, Henriksen JE, **Choi AL**, Petersen MS, Dalgård C, Nielsen F, Weihe P. Marine food pollutants as a risk factor for hypoinsulinemia and type 2 diabetes. *Epidemiol.* 2011. 22:410- 417.
- Julvez J, Debes F, Weihe P, **Choi AL**, Grandjean P. Thyroid dysfunction as a mediator of organochlorine neurotoxicity in preschool children. *Environ Health Perspect.* 2011. 119:1429- 1435.
- Mahaffey KR, Sunderland EM, Chan HM, **Choi AL**, Grandjean P, Marien K, Oken E, Sakamoto M, Schoeny R, Weihe P, Yan CH, Yasutake A. Balancing the Benefits of n-3 polyunsaturated fatty acids and the risks of methylmercury exposure from fish consumption. *Nutr Rev* 2011. 69(9):493-508.
- Julvez J, Debes F, Weihe P, **Choi AL**, Grandjean P. Developmental organochlorine compound exposure, thyroid function, and neurobehavioral function up to age 5½ years. *Environ Health Perspect.* 2011. 119(10):1429-1435.
- Grandjean P, Henriksen JE, **Choi AL**, Petersen MS, Dalgård C, Nielsen F, Weihe P. Exposure to marine food pollutants as a risk factor for hypoinsulinemia and type 2 diabetes. *Epidemiology* 2011; 22:410-417.
- Julvez J, Debes F, Weihe P, **Choi A**, Grandjean P. Sensitivity of continuous performance test (CPT) at age 14 years to developmental methylmercury exposure. *Neurotoxicol Teratol* 2010; 32:627-632.
- Choi AL**, Weihe P, Budtz-Jørgensen E, Jørgensen PJ, Salonen JT, Tuomainen TP, Murata K, Nielsen HP, Petersen MS, Askham J, Grandjean P. Methylmercury exposure and adverse cardiovascular effects in Faroese whalingmen. *Environ Health Perspect* 2009; 117:367-72.
- Petersen MS, Weihe P, **Choi A**, Grandjean P. Impact of prenatal exposure to methylmercury on the risk of Parkinson's disease. *Neurotoxicol* 2008; 29:591-595.
- Sagiv SK, Nugent JK, Brazelton TB, **Choi AL**, Tolbert PE, Altshul LM, Korrick SA. Prenatal organochlorine exposure and measures of behavior in infancy using the neonatal behavioral assessment scale (NBAS). *Environ Health Perspect.* 2008. 116:666-673.
- Grandjean P, **Choi A**. The delayed appearance of a mercurial warning. 2008. *Epidemiology.* 19(1):10-11.
- Choi AL**, Grandjean P. Methylmercury exposure and health effects in humans. 2008. *Environ Chem.* 5:112-120.
- Choi AL**, Cordier S, Weihe P, Grandjean P. Negative confounding in the evaluation of toxicity: the case of methylmercury in fish and seafood. *Crit Rev Toxicol.* 2008. 38:877-893.
- Choi AL**, Budtz-Jørgensen E, Jørgensen PJ, Steuerwald U, Debes F, Weihe P, Grandjean P. Selenium as a potential protective factor against mercury developmental neurotoxicity. 2008. *Env Res.* 107:45-52.
- Choi AL**, Levy JI, Dockery DW, Ryan LM, Tolbert PE, Altshul LM, Korrick SA. Does Living near a superfund site contribute to higher polychlorinated biphenyl (PCB) exposure? 2006. *Environ Health Perspect* 114(7):1092-1098.
- Axtell CD, Cox C, Myers GJ, Davidson PW, **Choi AL**, Cernichiari E, Sloane-Reeves J, Shamlaye CF, Clarkson TW. Association between methylmercury exposure from fish consumption and child development at five and a half years of age in the Seychelles Child Development Study: an evaluation of nonlinear relationships. *Environ Res* 2000; 84:71-80.
- Palumbo DR, Cox C, Davidson PW, Myers GJ, **Choi A**, Shamlaye C, Sloane-Reeves J, Cernichiari E, Clarkson TW. Association between prenatal exposure to methylmercury and

- cognitive functioning in Seychellois children: a reanalysis of the McCarthy scales of children's ability from the main cohort study. *Environ Res* 2000;84:81-88.
- Davidson PW, Myer GJ, Shamlaye C, Cox C, Gao P, Axtell C, Morris D, Sloane-Reeves J, Cernichiari E, **Choi A**, Palumbo D, Clarkson TW. *Neurotoxicology* 1999;20:833-841.
- Axtell CD, Myers GJ, Davidson PW, **Choi AL**, Cernichiari E, Sloane-Reeves J, Cox C, Shamlaye C, Clarkson TW. Semiparametric modelling of age at achieving developmental milestones after prenatal exposure to methylmercury in the Seychelles child development study. *Environ Health Perspect* 1998; 106:559-564.
- Myers GJ, Davidson PW, Shamlaye CF, Axtell CD, Cernichiari E, Choisy O, **Choi A**, Cox C, Clarkson TW. Effects of prenatal methylmercury exposure from a high fish diet on developmental milestones in the Seychelles Child Development Study. *Neurotoxicology* 1997;18:819-829.
- Bonnez W, Oakes D, **Choi A**, D'Arcy SJ, Pappas P, Corey L, Stoler MH, Demeter L, Reichman RC. Therapeutic efficacy and complications of excisional biopsy of condyloma acuminatum. *Sexually Transmitted Diseases* 1996; 23: 273-76.
- Myers GJ, Marsh DO, Davidson PW, Cox C, Shamlaye CF, Tanner M, **Choi A**, Cernichiari E, Choisy O, Clarkson TW. Main neurodevelopmental study of Seychellois children following in utero exposure to methylmercury from a maternal fish diet: outcome at six months. *Neurotoxicology* 1995; 16:653-664.
- Myers GJ, Marsh DO, Cox C, Davidson PW, Shamlaye CF, Tanner MA, **Choi A**, Cernichiari E, Choisy O, Clarkson TW. A pilot neurodevelopmental study of Seychellois children following in utero exposure to methylmercury from a maternal fish diet. *Neurotoxicology* 1995;16:629-638.

Chapters in Books

- Choi AL**, Grandjean P. Human health significance of dietary exposures to methylmercury. In: Liu G, Cai Y, O'Driscoll N (eds), *Environmental Chemistry and Toxicology of Mercury*. New Jersey: Wiley. 2012. pp. 545-568.
- Julvez J, Yorifuji T, **Choi AL**, Grandjean P. Epidemiological evidence of methylmercury neurotoxicity. In: Ceccatelli S, Aschner M, eds. *Methylmercury and neurotoxicity*. NY: Springer 2012. pp. 13-35.
- Grandjean P, **Choi AL**, Weihe P, Murata K. Methylmercury neurotoxicology: from rare poisonings to silent pandemic. In: Wang C, Slikker W, Jr (eds), *Developmental Neurotoxicology Research: Principles, Models, Techniques, Strategies, and Mechanisms*. New Jersey: Wiley 2011:335-356.

Manuscripts and Book in review and preparation

- Olayiwola JN, Sheth S, Sharma A, **Choi AL**. The impact of the patient-centered medical home on health disparities: A systematic review of the evidence. *Re-submitted*.
- Choi AL**, Deng S, Lai TL, Tsang KW. *Data Science and Decision Analytics in Healthcare, IT and Manufacturing* (To appear in 2018). Wiley.
- Choi AL**, Ho TH. Analysis of overdiagnosis and readmission of the emergency department in a local hospital in Singapore. *In preparation*.
- Choi AL**, Budtz-Jorgensen E, Pedersen L, Weihe P, Grandjean P. Effects of perfluorinated compounds on cardiovascular function in an elderly Faroese population. *In preparation*.

Petersen JD, **Choi AL**, Weihe P, Grandjean P. Mortality of Faroese septuagenarians highly exposed to environmental chemicals. *In preparation*.

Choi AL, Levy JI, Ryan L, Korrick SA. Association of infant cognitive functioning with prenatal smoking exposure. *In preparation*.

Invited Contributions

Invited speaker at the Sixth Singapore Conference on Statistical Science, organized by the Department of Statistics and Applied Probability, National University of Singapore: “Toward Efficient Design and Analysis of Observational Studies for Emerging Health Care Applications”. Singapore, 2016.

Invited speaker at the National Institute of Minamata Disease Forum: “Evaluation of methylmercury exposure and health effects in human”, and the “Let’s talk with scientists on mercury and its effects” Forum with local junior high school students on the 1st anniversary of the Minamata Treaty, Minamata, Japan, 2014.

Invited speaker at the 8th World Congress on Developmental Origins of Health and Disease: “Developmental Exposures and Abnormal Responses to Vaccinations in Children”. Singapore, 2013.

Invited speaker at the Early Life Exposures and Later Neurotoxic Effects Symposium, International Society of Environmental Epidemiology Conference, Columbia, South Carolina, 2012.

Invited collaborator, Coastal and Marine Mercury Ecosystem Research Collaborative of the Dartmouth Toxic Metals Research Program, 2011-2012.

Invited speaker at the Nutrition Special Interest Group on Mercury Toxicity and Seafood Intake at the Society for Maternal-Fetal Medicine in San Diego, 2009.

Invited and received travel grant to present at the Ninth International Conference on Mercury as a Global Pollutant, Guizhou, China, 2009.

Invited speaker at the Perinatal Nutrition Working Group, San Diego, California. “Methylmercury Toxicity and Seafood Intake”. 2009.

Invited and received travel grant to present at the National Institute of Minamata Disease Forum. “Selenium as a potential protective factor against mercury developmental neurotoxicity.” Minamata, Japan, 2006.

Presentations

Health Effects of Mercury: The child cohort studies in the Faroes Islands session. Eleventh International Conference on Mercury as a Global Pollutant, Edinburgh, Scotland.

“Negative confounding effects on methylmercury neurotoxicity estimates.” 2013.

Environmental Metals Core Chalk Talk. “Impact of fluoride on neurological development of children.” Harvard School of Public Health. 2013.

Early Life Exposures and Later Neurotoxic Effects Symposium, International Society of Environmental Epidemiology Conference, Columbia, South Carolina, USA. “Impacts of methylmercury and n-3 fatty acids on neurobehavioral performance” 2012.

International Society of Environmental Epidemiology Conference, Barcelona, Spain.

“Association of prenatal exposure to methylmercury, and n-3 fatty acids with neurobehavioral test performance at ages 7 and 10 years.” 2011.

Tenth International Conference on Mercury as a Global Pollutant, Halifax, Canada. “Selenium as a potential protective factor against mercury developmental neurotoxicity.” 2011.

International Neurotoxicology Conference, Xian, China. “Prenatal exposure to methylmercury and n-3 fatty acids with neurobehavioral test performance at ages 7 and 10 years.” 2011.

Public Health Impact of Long-term, low-level Mixed Element Exposure (PHIME) meeting, Seychelles Islands. “Association of prenatal exposure to methylmercury and fatty acids with neurobehavioral test performance” (invited). 2010.

International Society of Environmental Epidemiology Conference, Dublin, Ireland. “Association of prenatal exposure to methylmercury, persistent organochlorine pollutants and fatty acids with neurobehavioral test performance.” 2009.

XXXVII Conference of the International Society for Fluoride Research, Beijing, China. “Potentials for developmental fluoride neurotoxicity.” 2007.

Eighth International Conference on Mercury as a Global Pollutant, Madison, Wisconsin. “Selenium as a Potential Protective Factor Against Mercury Developmental Neurotoxicity.” August 2006.

The Environmental Factors in Neurodevelopmental Disorders Symposium, Bethesda, Maryland. “Methylmercury neurotoxicity in a Faroese birth cohort.” August 2005.

The International Conference on Fetal Programming and Developmental Toxicity IV. Boston, MA. “Developmental Fluoride Neurotoxicity in Chinese Children.” October 2014.

International Society of Environmental Epidemiology Conference, Columbia, South Carolina, USA. “Meta-analysis of 27 studies of fluoride neurotoxicity in Children.” E-Poster session. August 2012.

The International Conference on Fetal Programming and Developmental Toxicity. Faroe Islands. “Reproducibility of Neonatal Behavioral Assessments.” May 2007.

Future Research on Endocrine Disruption Conference, Durham, NC. “Estrogenic and Ah Receptor Mediated Activity in Serum of Pregnant Women.” August 2007.

Superfund Basic Research Program Annual Meeting, Hanover, NH. “Does Living Near a “ in a socioeconomically and ethnically diverse community.” July 2000.

The XXth International Biometric Conference, Berkeley, CA. “Methods of assessing cluster consistency of the Brazelton Neonatal Behavioral Assessment Scale in a socioeconomically and ethnically diverse community.” July 2000.

Research Support

Epidemiology of Immunotoxicant Exposure in Children NIEHS R01ES012199, PI: Grandjean Role: Epidemiologist	07/01/11-02/28/16
Immunotoxicity in Humans with Lifetime Exposure to Ocean Pollutants NIH/NSF R01ES021993, PI: Grandjean Role: Co-Investigator	09/24/12-07/31/17
Glucose Metabolism in Adults Prenatally Exposed to Diabetogenic Pollutants R01ES02144, PI: Grandjean Role: Co-Investigator	02/01/13-10/31/17
Pollutant-related Diabetes in the Nurses’ Health Study II NIEHS 1R01ES021372, PI: Sun, Grandjean Role: Co-Investigator	06/14/13-02/28/18

Gut Microbiome in Adults with Early Life Exposures to Environmental Chemicals
01/29/14-12/31/16

NIEHS R21ES023376-01, PI: Grandjean
Role: Co-Investigator

Health Effects of Lifetime Exposure to Food Contaminants
2006-2011
NIEHS R01ES013692-01A, PI: Grandjean
Role: Epidemiologist

Mercury-Associated Neurobehavioral Deficit in Children
2007-2012
NIEHS 5U01ES009797-05, PI: Grandjean
Role: Epidemiologist

Manuscript and External grant reviewer

Regular reviewer for peer-reviewed journals, including British Medical Journal Open, Ecotoxicology and Environmental Safety, Environmental Health, Environmental Health Perspectives, Environmental International, Environmental Monitoring and Assessment, Environmental Research, Environmental Science and Technology, International Journal of Environmental Research and Public Health, Journal of Biomedicine and Biotechnology, Neurotoxicology, Neurotoxicology and Teratology, Neurotoxicity Research, New England Journal of Medicine, Pediatrics, Science and the Total Environment, and Toxicology and Industrial Health.

External reviewer (since 2013), the Health and Medical Research Fund (HMRF), Food and Health Bureau of Hong Kong SAR, China.

External reviewer for a grant application. Food and Health Bureau, Hong Kong SAR, China. 2013.

External reviewer for a research grant proposal. Department of Pediatrics, Chinese University of Hong Kong. 2010.

Teaching Experience

Co-Instructor, Department of Statistics and Applied Probability, National University of Singapore. “Data Science and Healthcare Analytics.” January-April, 2017.

Invited guest lecturer, Department of Epidemiology, Harvard School of Public Health. “Prenatal Experience and Brain Development: Epidemiological Evidence on Genetic predisposition to methylmercury neurotoxicity”. Fall 2013.

Teaching Assistant/Assistant Instructor, Department of Environmental Health, Harvard School of Public Health. “Introduction to Environmental Health”, 2012

Teaching Assistant, Department of Epidemiology, Harvard School of Public Health. “Analysis of Case-Control, Cohort, and Other Epidemiologic Data”, 2011

Teaching Assistant, Department of Environmental Health “Advanced Regression in Environmental Epidemiology”, Harvard School of Public Health. 2009

Teaching Assistant, Department of Biostatistics, Harvard School of Public Health.

“Regression and Analysis of Variance” 1999, 2000
Advising responsibilities including study designs, modeling, and analysis issues to postdoctoral fellows and graduate students, Harvard School of Public Health. 2007 to 2016

Administrative Responsibilities

Co-chair in the Department of Environmental Health’s strategic planning Curriculum and Training Working Group, Harvard School of Public Health. 2012 – 2013.

Professional Societies

International Society for Environmental Epidemiology
Society for Epidemiologic Research
American Statistical Association

Computing Experience

SAS, R, Mplus, Stata, ArcGIS, Unix.