

**Progress Report: Columbia University SBRP, December, 2006
Publications**

Project 1: Genotoxic Mechanisms of Arsenic in Mammalian Cells

P.I.: Tom K. Hei

- Ivanov, V.N., , and Hei, T.K., Dual treatment with COX-2 inhibitor and sodium arsenite leads to induction of surface Fas Ligand expression and Fas-Ligand-mediated apoptosis in human melanoma cells. *Exp. Cell Research* 312: 1401-1417, 2006.
- Ivanov, V.N., Ze'ev, R., and Hei, T.K., Opposite roles of FAP-1 and dynamin in the regulation of Fas (CD95) translocation to the cell surface and susceptibility to Fas ligand-mediated apoptosis. *J. Biol. Chem.* 281: 1840-1852, 2006.
- Ivanov, V. N. and Hei, T.K., Sodium arsenite accelerates TRAIL-mediated apoptosis in melanoma cells through upregulation of TRAIL-R1/R2 surface levels and down-regulation of cFLIP expression. *Exp. Cell Research* 2006 Dec 10; 312(20); 4120-38. Epub 2006 Sep 28.

Project 2: A Cohort Study of Health Effects of Arsenic Exposure in Bangladesh

P.I.: Habibul Ahsan

- Ahsan, H., Y. Chen, et al. (2006). "Arsenic exposure from drinking water and risk of premalignant skin lesions in Bangladesh: baseline results from the Health Effects of Arsenic Longitudinal Study." *Am J Epidemiol* 163(12): 1138-48.
- Argos, M., M. G. Kibriya, et al. (2006). "Gene expression profiles in peripheral lymphocytes by arsenic exposure and skin lesion status in a Bangladeshi population." *Cancer Epidemiol Biomarkers Prev* 15(7): 1367-75.
- Chen, Y., P. Factor-Litvak, et al. (2006). "Nutritional influence on risk of high blood pressure in Bangladesh: a population-based cross-sectional study." *Am J Clin Nutr* 84(5): 1224-32.
- Chen, Y., J. H. Graziano, et al. (2006). "Modification of risk of arsenic-induced skin lesions by sunlight exposure, smoking, and occupational exposures in Bangladesh." *Epidemiology* 17(4): 459-67.
- Chen Y, Hakim ME, Parvez F, Islam T, Rahman AM, and Ahsan H. Arsenic exposure from drinking water and carotid artery intima-media thickness in healthy young adults in Bangladesh. *J Health Pop Res* 2006; 24(2): 000-000.
- Hafeman, D., H. Ahsan, et al. (2006). "Betel quid: Its tremor-producing effects in residents of Araihaazar, Bangladesh." *Mov Disord* 21(4): 567-71.
- Hall, M., Y. Chen, et al. (2006). "Blood arsenic as a biomarker of arsenic exposure: results from a prospective study." *Toxicology* 225(2-3): 225-33.
- Parvez, F., Y. Chen, et al. (2006). "Prevalence of arsenic exposure from drinking water and awareness of its health risks in a Bangladeshi population: results from a large population based study." *Environ Health Perspect* 114(3): 355-9.

Project 3: Consequences of Arsenic and Manganese Exposure on Childhood Intelligence (New Title)

PI: Joseph Graziano

Publications:

Wasserman, GA, Liu, X, Parvez, F, Ahsan, H, Levy, D, Factor-Litvak, P, Kline, J, van Geen, A, Slavkovich, V, Lolocono, NJ, Cheng, Z, Zheng, Y, Graziano, JH: Water manganese exposure and children's intellectual function in Araihasar, Bangladesh. *Environ Health Perspect* 114: 124-129, 2006a.

Project 4: One-Carbon Metabolism, Oxidative Stress and Arsenic Toxicity in Bangladesh

Gamble MV, Ahsan H, Slavkovich V, Liu X, Parvez F, Hussain I, Momotaj H, and Graziano JH. Folate and cobalamin deficiencies and hyperhomocysteinemia in Bangladesh. *Am J Clin Nutr* 2005; 81(6):1372-1377.

Gamble MV and Liu X. Letter of Correspondence re: Barr et al., Urinary creatinine concentrations in the u.s. Population: implications for urinary biologic monitoring measurements. *Env Health Perspect* 2005; 113:A442.

Gamble MV, Liu X, Ahsan H, Pilsner JR, Ilievski V, Slavkovic V, Parvez F, Levy D, Factor-Litvak P, Graziano J. Folate, homocysteine and arsenic metabolism in Bangladesh. *Env Health Perspect* 2005; 113(12):1683-1688.

Gamble, MV, Liu X, Ahsan H, Pilsner JR, Ilievski V, Slavkovich V, Parvez F, Chen Y, Levy D, Factor-Litvak P, Graziano JH. Folate and Arsenic Metabolism: A double-blind placebo controlled folic acid supplementation trial in Bangladesh, *Am J Clin Nutr* 2006; 84:1093-1101.

Project 5: Arsenic mobilization in Bangladesh Groundwater

Since the renewal on April 1, 2006, new title:

Project 5: Mobilization of Natural Arsenic in Groundwater

Y. Zheng, M. Stute, and A. van Geen

Datta S., Mailloux B., Hoque M. A., Jung H.-B., Stute M., Ahmed K. M., and Zheng Y. (submitted) Enrichment of Arsenic in Sediments from the Meghna River Bank in Bangladesh: Implication for Recycling of Arsenic. *Proc Natl Acad Sci U S A*.

Jung H. B. and Zheng Y. (2006) Enhanced recovery of arsenite sorbed onto synthetic oxides by L-ascorbic acid addition to phosphate solution: calibrating a sequential leaching method for the speciation analysis of arsenic in natural samples. *Water Research* 40(11), 2168.

Yu G.-Q., Sun D.-J., and Zheng Y. (2006) Health Effect of Exposure to Natural Arsenic from Groundwater and Coal in China: An Overview of Occurrence. *Environ Health Perspect* doi:10.1289/ehp.9268 available via <http://dx.doi.org/> [Online 9 January 2007].

Project 6: Mobilization of anthropogenic arsenic in groundwater

P.I.s: Steven Chillrud, Martin Stute, H. James Simpson, Brian Mailloux, John Stolz

Project 7: Mitigation of Arsenic Mobilization in Groundwater (new title)

P.I.: Alexander van Geen

Peer-reviewed publications in 2006:

- Chen, Y., M. Hall, J. H. Graziano, V. Slavkovich, A. van Geen, F. Parvez, and H. Ahsan, A prospective study of blood selenium levels and the risk of arsenic-related premalignant skin lesions, *Cancer Epidemiology, Biomarkers and Prevention*, November 2006.
- Ahmed, M.F., S. Ahuja, M. Alauddin, S. J. Hug, J.R. Lloyd, A. Pfaff, T. Pichler, C. Saltikov, M. Stute, and A. van Geen, Ensuring safe drinking water in Bangladesh, *Science (Policy Forum)*, December 2006.
- van Geen, A., M. Trevisani, J. Immel, Md. Jakariya, N. Osman, Z. Cheng, A. Gelman, and K.M. Ahmed, Targeting low-arsenic groundwater with mobile-phone technology in Araihaazar, *J. Health Population and Nutrition*, March 2006.
- Hall, M., Y. Chen, H. Ahsan, V. Slavkovich, A. van Geen, F. Parvez and J. Graziano, Blood arsenic as a biomarker of arsenic exposure: results from a prospective study, *Toxicology*, available online 18 June 2006.
- van Geen, A., Y. Zheng, Z. Cheng, H. Yi, R. Dhar, J. M. Garnier, J. Rose, A. A. Seddique, M. A. Hoque, and K.M. Ahmed, Impact of irrigation with groundwater elevated in arsenic on rice paddies in Bangladesh, *Science of the Total Environment*, 367, 769-777, 2006.
- Ahsan, H., A., Y. Chen, F. Parvez, L. Zablotska, M. Argos, A.Z.M. Iftikhar Hussain, H. Momotaj, D. Levy, Z. Cheng, V. Slavkovich, A. van Geen, G.R. Howe, J.H Graziano, Arsenic exposure from drinking water and risk of premalignant skin lesions in Bangladesh: Baseline results from the Health Effects of Arsenic Longitudinal Study (HEALS), *American Journal of Epidemiology*, available on-line on April 19, 2006; doi: doi:10.1093/aje/kwj154.
- Chen, Y., J. H. Graziano, F. Parvez, I. Hussain, H. Momotaj, A. van Geen, G. R. Howe, H. Ahsan, Modification of risk of arsenic-induced skin lesions by sunlight exposure, smoking, and occupational exposures in Bangladesh, *Epidemiology* 17, 459-467, 2006.
- Parvez F, Chen Y, Argos M, Hussain AZMI, Momotaj H, Dhar R, van Geen A, Graziano JH, Ahsan H, Prevalence of arsenic exposure from drinking water and awareness of its health risks in a Bangladeshi population: Results from a large population-based study, *Environmental Health Perspectives* 114, 355-359, 2006.
- Ahsan H, Chen Y, Parvez F, Argos M, Hussain AI, Momotaj H, Levy D, Van Geen A, Geoffrey HA, Graziano J, Health Effects of Arsenic Longitudinal Study (HEALS): Description of a multidisciplinary epidemiologic investigation, *J. Exposure Science and Environmental Epidemiology* 16, 191-205, 2006.
- van Geen, A., Y. Zheng, Z. Cheng, Z. Aziz, A. Horneman, R. K. Dhar, B. Mailloux, M. Stute, B. Weinman, S. Goodbred, A. A. Seddique, M. A. Hoque, and K. M. Ahmed, A transect of groundwater and sediment properties in Araihaazar, Bangladesh: Further evidence of decoupling between As and Fe mobilization, *Chemical Geology* 228, 85-96, 2006.
- Cheng, Z., A. van Geen, A. A. Seddique, and K.M. Ahmed, Response to comments on "Limited temporal variability of arsenic concentration in 20 wells monitored for 3 years in Araihaazar, Bangladesh", *Environmental Science and Technology*, 40, 1718-1720, 2006.
- Wasserman, G. A., X. Liu, F. Parvez, H. Ahsan, D. Levy, P. Factor-Litvak, J. Kline, A. van Geen, V. Slavkovich, N. J. Lolocono, Z. Cheng, Y. Zheng, J. H. Graziano, Water manganese exposure and children's intellectual function in Araihaazar, Bangladesh, *Environmental Health Perspectives*, 114, 124-129, 2006.

Research Translation Core

Collaborating with Government & the Public: As & Mn Exposure via Groundwater

Co P.I.s: H. James Simpson, Meredith L. Golden

Ahmed, M. F., et al. "Ensuring Safe Drinking Water in Bangladesh". *Science* 314: 1687-1688, 15 December 2006.

Pariso, S., A.R. Keimowitz, H.J. Simpson, A. Lent, and V. Blackman. Arsenic-rich iron floc deposits in seeps downgradient of solid waste landfills, *Soil & Sediment Contamination* 15: 443-453, 2006.

Zaks, David. "Text messaging for Safe Water". Published online 27 October 2006. <http://www.worldchanging.com/archives/005170.html> (reader comments included).

Link to the application: <http://www.ldeo.columbia.edu/welltracker/>

Core A: Data Management Core

Core B: Trace Metals Core Laboratory

Core D: Hydrogeology Support Laboratory

SBRP Training Core