



New and veteran CEG investigators have recently merited major funding awards in keeping with the Center's plans to become a regional and global leader in the study of gene-environment interactions: NIEHS award R00 ES024116 (06/01/17–05/31/20) will allow new faculty member **Kelly Brunst, PhD**, to add to a growing body of research linking prenatal exposure to urban air pollutants and maternal stress to mitochondrial dysfunction and poor neurodevelopment in children.

**Xiang Zhang, PhD**, manager of the Genomics and Epigenomics Sequencing Core (GESC), is utilizing a **Core Enhancement Funding Award** from the UC College of Medicine and Center for Clinical and Translational Science & Training (CCTST) for the capacity-building project, "Validation of Infinium Methylation EPIC assay for DNA methylation and hydroxymethylation study." Epigenetic regulation of 5hmC and 5mC plays a key role in multiple areas including stem cell renewal, cancer development and



Kelly Brunst, PhD



Xiang Zhang, PhD

progression, and neurological disorders. Such **technology development** funds and forward vision are enabling Dr. Zhang and the Core to continue to provide the latest platforms and techniques for next-generation sequencing. In work reflecting the CEG's synergistic use & effective stewardship of its extramural funding, the GESC is collaborating with Dr. Brunst to conduct mitochondrial whole genome sequencing in placenta samples to look for differences in mutation rates and heteroplasmy levels as a result of prenatal exposure to traffic pollution and maternal psychosocial stress. Genetic variations in this genome have been associated with the onset of neurological diseases. The Core and Dr. Brunst have teamed to refine the Illumina protocol for amplifying the mitochondrial whole genome and thereby optimize the protocol for the samples. The Core recently completed mitochondrial whole genome sequencing & the data are being analyzed.

The [Ohio School Boards Association](#) journal devoted its June cover story to ongoing collaboration between our COEC and students and teachers in six school districts in Ohio's Guernsey, Muskingum and Noble Counties. Through the work of COEC Director **Erin Haynes, DrPH**, and program coordinator Rachael Shepler, the CEG has provided 120 water testing kits for these "citizen scientists" to help investigate potential contaminants in regional lakes, streams, wells, and tap water. At completion, the study will have involved more than 2,230 students and educators. For its work COEC received the Ohio School Boards Association **2017 Business Roll Honor Award**.

CEG Director **Shuk-Mei Ho, PhD**, has received the [Drake Medal](#), the highest honor bestowed by the UC College of Medicine. Dr. Ho was appointed to the **National Advisory Environmental Health Sciences Council** for a 4-year term. The Council is a Congressionally mandated body that advises the secretary of the U.S. Department of Health and Human Services, the director of NIH and the director of the National Institute of Environmental Health Sciences (NIEHS) on research priorities, research support, and training and career development supported by the NIEHS.

## CEG scientists in regional and national media:

[The Cincinnati Enquirer](#)  
[WCPO TV 9](#)  
[WLWT- TV 5](#)  
[WFPL 89.3 FM](#)  
[SELF magazine](#)  
[Parkersburg WV News](#)  
[Butler County Journal News](#)  
[WTTW Chicago](#)  
[WEVV TV 44](#)  
[BuzzFeed](#)  
[Newsweek](#)

## New Publications

- Chen T, Lu L, Xu C, Lin X, **Leung YK**, **Ho SM**, Ruan XZ, Lian X. Inhibition Role of Atherogenic Diet on Ethyl Carbamate Induced Lung Tumorigenesis in C57BL/6J Mice. *Sci Rep*. 2017 Jul 5;7(1):4723. [PMID: 28680122](#); PMID: PMC5498653
- **Brunst KJ**, Sanchez Guerra M, Gennings C, Hacker M, Jara C, Bosquet Enlow M, Wright RO, Baccarelli A, Wright RJ. Maternal lifetime stress and prenatal psychological functioning are associated with decreased placental mitochondrial DNA copy number in the PRISM study. *Am J Epidemiol*. 2017 Jun 8. [PMID: 28595325](#)
- **Herrick RL**, **Buckholz J**, **Biro FM**, Calafat AM, Ye X, **Xie C**, **Pinney SM**. Polyfluoroalkyl substance exposure in the Mid-Ohio River Valley, 1991-2012. *Environ Polut*. 2017 Sep;228:50-60. doi: 10.1016/j.envpol.2017.04.092. [PMID:28505513](#).
- Kingsley SL, Kelsey KT, Butler R, **Chen A**, Eliot MN, Romano ME, Houseman A, Koestler DC, Lanphear BP, **Yolton K**, Braun JM. Maternal serum PFOA concentration and DNA methylation in cord blood: A pilot study. *Environ Res*. 2017 Jun 20;158:174-178. [PMID: 28645023](#)
- **Leung YK**, Govindarajah V, **Cheong A**, **Veevers J**, **Song D**, Gear R, Zhu X, **Ying J**, Kendler A, **Medvedovic M**, Belcher S, **Ho SM**. Gestational high-fat diet and bisphenol A exposure heightens mammary cancer risk. *Endocr Relat Cancer*. 2017 Jul;24(7):365-78. [PMID: 28487351](#); PMID: PMC5488396.