

DTSC Laboratory Update



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Report to Scientific Guidance Panel
Oakland, CA
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Status

- Progress with sample analysis
- Other DTSC activities that benefit the Program
- Instrumentation for identifying “unknowns”



chds
Child Health and
Development Studies

Three Generations (3Gs) Study

Barbara Cohn, Ph.D., PI.

Funded by NIEHS, NCI, CBCRP

Over 20,000 pregnancies at Kaiser, Oakland from 1959-1967

3Gs looks at Mothers, Daughters and Granddaughters:

- Mothers (N=472 perinatal samples from 1959-66)
- Adult Daughters (N=300, sampled in 2011-12)



chds

Child Health and
Development Studies

Maternal Serum Samples

- Perinatal samples (n=472) collected in 1959-1966

Age (years) of Mothers at Pregnancy

Range: 16-44

Median = 26

Race	n	%
White	297	62.9
Black	118	25.0
Latina	13	2.8
Asian	16	3.4
Mixed/other	28	5.9



chds

Child Health and
Development Studies

Contemporary Serum Samples

- Adult daughters (n=300) sampled in 2011-12

Age (years)
Range: 46-54
Median = 50

Race	n	%
White	137	45.7
Black	150	50.0
Latina	6	2.0
Asian	5	1.7
Mixed/other	2	0.7

Completed 3Gs Study

	n=472 Mothers (sampled 1959-1966)	n=300 Adult Daughters (sampled 2011-12)
PFCs	457*	300
PCBs, OCPs	457*	297**
PBDEs	N/A	297**
OH-BDEs	N/A	300
Lipids	457	300

* 15 samples had too small volume or were dried

** 3 samples failed QC

3Gs and Biomonitoring California

- Results will be returned to Daughters by 3Gs staff as part of a “Report-back” pilot study
- Following completion of the pilot study, aggregate results will be posted on the Biomonitoring California website

Synergy, Program sustainability

CA Teachers Study (CTS)

Peggy Reynolds, Ph.D., PI

- Funded by the California Breast Cancer Research Program
- Recruitment and sample collection: 2011-2014
- Blood samples from ~1,000 breast cancer cases and ~1,400 controls from entire state
- Females, 45-94 years old
- Analysis of PCBs, PBDEs, PFCs, thyroid hormones, lipids

Progress with the CA Teachers Study (CTS)

(as of March 20, 2014)

	n=2,439 received		
	PFC	PBDE	PCB/OCP
Aliquoted	1792	1792	1792
Extraction completed	856	1104	1104
Instrument analysis completed	856	912	264
Data review completed	856	517	176
Data released to PI, posted on website	856	517	176

Completed analyses for UCB Childhood Leukemia Study (as of March 2, 2014)

	Mothers (n=50*)	Children (n=195**)
PBDEs	48	191
PCBs	48	191
OCPs	48	191
* 2 samples failed QC ** 4 samples failed QC		

Current Work

- In collaboration with the Santa Rosa Birth Center
- First time mothers (n=65; sampled in 2010-12)
- Serum, cord blood and breast milk analyzed for PBDEs, OCPs, PCBs, PFCs, OH-BDEs
- House dust
- Exposure assessment questionnaire
- Partially funded by USEPA

Aggregate results will be shared with Biomonitoring CA

Future Work

- In collaboration with UCSF, will continue looking at PBDEs and OH-BDEs in serum of pregnant women from SF General Hospital
- Recruitment underway (2014: n=50; 2015: n=120)
- Comparable demographics with previous studies (2008-09 and 2011-12)
- Determine trends
- Funded by NIEHS, Tracey Woodruff, Ph.D., PI

Aggregate results will be shared with Biomonitoring CA

Publications

- Whitehead, TP et al. (2013). PAHs in residential dust: sources of variability. *Env Health Persp*, 121:543-550
- Whitehead TP et al. (2013). Levels of nicotine in dust from homes of smokeless tobacco users. *Nicotine & Tobacco Research*, 15: 2045-52
- Whitehead, TP et al. (2014). PCBs in residential dust: sources of variability. *Env Sci &Tech*, 48:157-64

Manuscripts

Manuscripts submitted:

- Comparison of blood drawing tubes for the analysis of POPs/PFCs/lipids (Guo et al.)
- Extraction of OH-BDEs from human serum and quantitative analysis by LC-MS/MS (Petropoulou et al.)
- Novel brominated FRs in dust (Brown et al.)

Manuscripts in preparation:

- FOX: Firefighters' exposures to POPs (Park et al.)
- POPs/PAHs in dust: firehouse vs. residential (Shen et al.)
- Serum BPA, Bromophenols, TBBPA by LC-MS/MS (Petropoulou et al.)

Instrumentation for Identifying Unknowns

- Chemicals identified via non-targeted screening may be important new candidates for biomonitoring
- Selected Agilent iFunnel QTOF 6550
- Shipment underway; installation/testing in April/May

Thanks for helping us select our system for identifying unknowns

- CDC for funding
- Program staff for reviewing and evaluating
- Dr. Fiehn and his staff for advice
- Users of various systems for sharing information
- Instrument Vendors for testing
- “Unknowns” committee (Drs. Park, She, Krowech)

QUESTIONS?