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# Some of these biological signatures point towards the potential biological effects of OP pesticide and phthalate metabolites on the nervous system

## Childhood exposure to non-persistent endocrine disrupting chemicals and multi-omic profiles: a panel study

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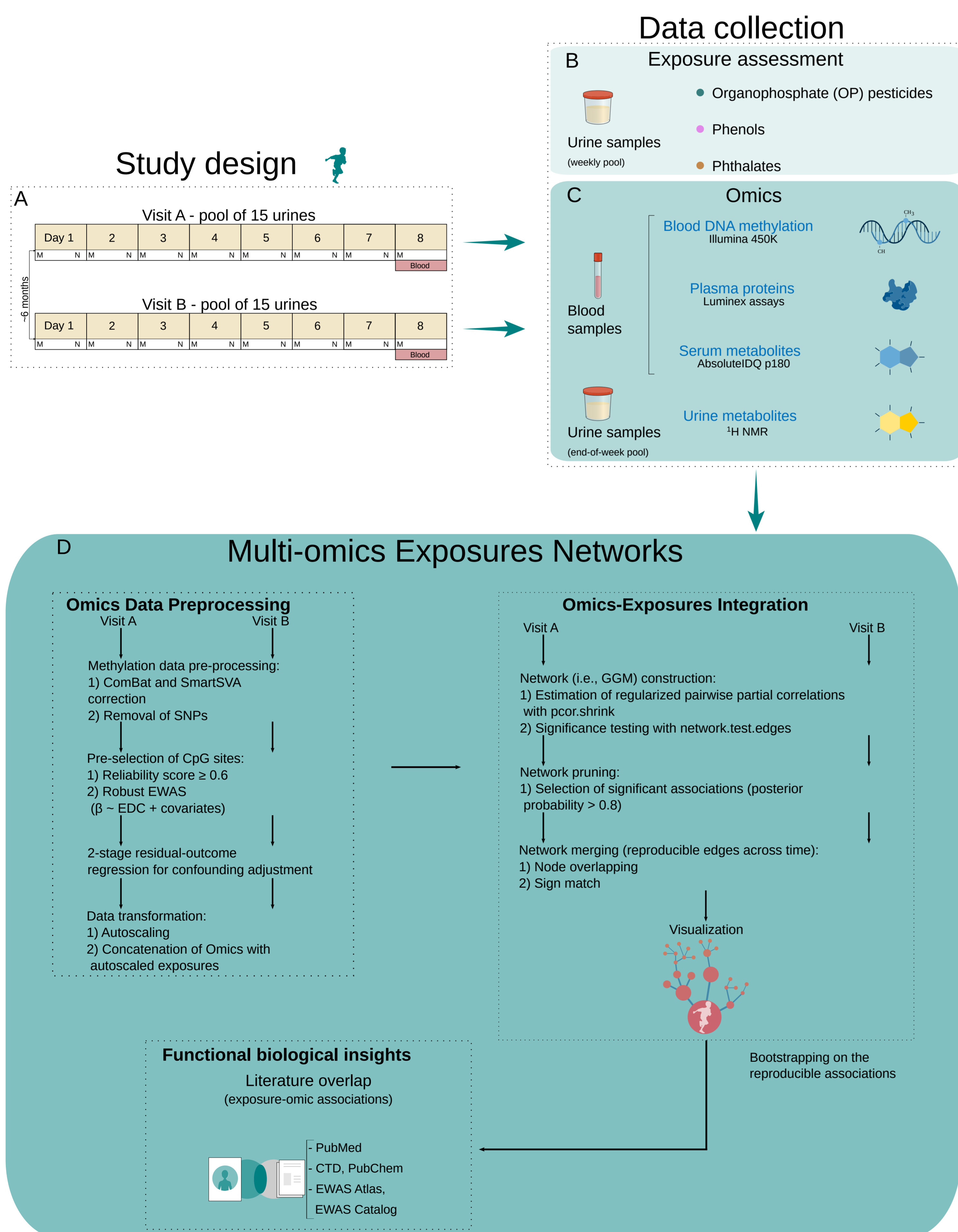
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### Background & Objectives

- Individuals are exposed to multiple environmental pollutants with endocrine disrupting activity (endocrine disruptors, EDCs)
- Few studies have integrated biomarkers of exposure to EDCs and multi-omics
- We aimed to identify multi-omic signatures associated with childhood exposure to non-persistent EDCs using a network approach

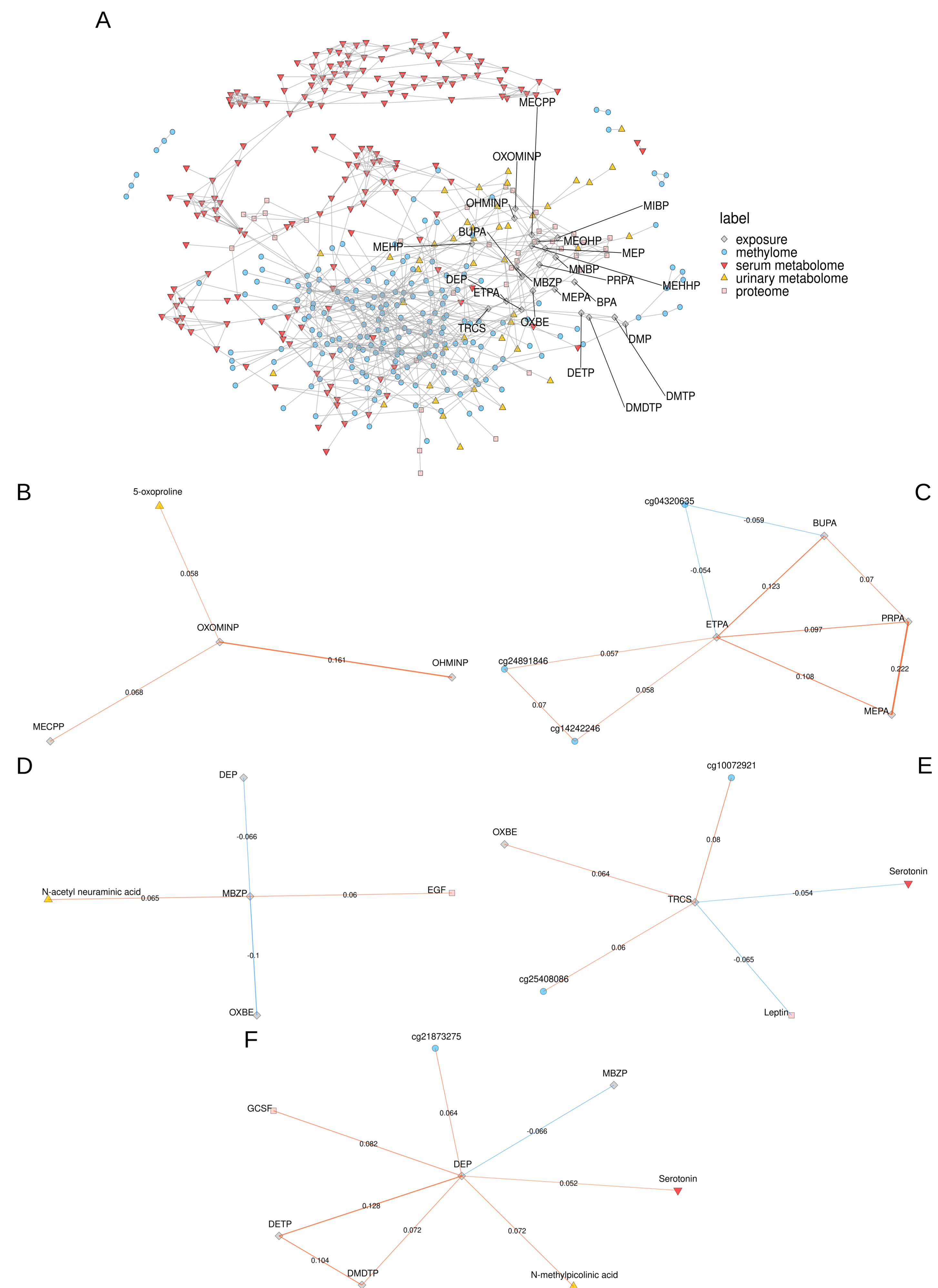
### Methods

- Data: HELIX (Human Early-Life Exposome) Child Panel Study ( $N_A = 140$ ,  $N_B = 143$ )



### Results

#### Merged network: reproducible associations across visits



- The process of network merging led to the exclusion of a significant number of edges, maintaining 950 edges compared to 4,083 and 4,908 in networks A and B, respectively

Chemical class	Compound	Omic layer	Omic feature	Median pcor	Literature review
OP pesticides	DEP	Serum metabolome	Serotonin	0.052	Exposure to pesticides and changes in the serotonergic system <sup>[1-3]</sup>
Phenols	TRCS	Serum metabolome	Serotonin	-0.055	Association between personal care products and serotonin <sup>[4]</sup>
Phthalates	oh-MiNP	Serum metabolome	Kynurenine	-0.056	Mediating effect of quinolic acid on exposure to phthalates and neurological disorders <sup>[5]</sup>
Phenols	TRCS	Proteome	Leptin	-0.066	Effect of mixtures of phenols and parabens <sup>[6]</sup>

### Conclusions

- We employed an integrative method to investigate reproducible associations between non-persistent EDCs and multi-omic profiles in a child cohort
- Strengths: repeated pooled samples of urines; quantifiable measurements of the metabolome
- Limitations: relatively small sample size; residual confounding
- Some of these biological signatures point towards the potential biological effects of OP pesticides and phthalates on the nervous system

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