

## The Mab003 data product

<b>Original number of samples</b>	950
<b>Number of samples (per 06.10.2023)</b>	947
<b>Number of unique participants</b>	947
<b>Biological sample type</b>	Plasma
<b>Participant type(s)</b>	MoBa mothers
<b>Collection timepoint</b>	Gestational week ~17
<b>Selection criteria</b>	Subfecundity
<b>Metabolite type(s)</b>	Environmental chemicals (perfluorinated compounds)
<b>Original reference article</b>	<a href="#">Whitworth et al. 2012</a>
<b>Analytical method(s)</b>	LC-MS
<b>Related MoBaBIO product(s)</b>	Pro001
<b>FHI Project number(s)</b>	PDB646

## The project that generated these data

### Perfluorinated alkyl levels in plasma in relation to time-to-pregnancy

*Project lead: Merethe Eggesbø*

The purpose of this study was to test the hypothesis that higher blood levels of PFOS and PFOA are associated with a longer time-to-pregnancy in a nested case-control study of women in the Norwegian Mother and Child Cohort (MoBa) study.

### Study population

The original Mab003 metabolomics data source is based on plasma samples from **950 mothers** and comprises a case-control study design. Cases consist of 400 mothers whose time-to-pregnancy exceeded 12 months (thus defined as subfecund), and whose pregnancy was planned, while controls were comprised of 550 randomly selected MoBa mothers who reported a time to pregnancy of any duration. MoBa mothers were eligible for inclusion based on the availability of plasma samples collected in the second trimester (ca. 17-18 weeks gestation) and if their child was live-born. The sample was further restricted to only include women who enrolled in the MoBa study between 2003-2004.

### Available metabolic measures (variable names in bold)

Perfluorobutanoic acid (**PFBA**)  
Perfluoroheptanoic acid (**PFHpA**)  
Perfluorooctanoic acid (**PFOA**)  
Perfluorononanoic acid (**PFNA**)  
Perfluorodecanoic acid (**PFDA**)  
Perfluoroundecanoic acid (**PFUnDA**)  
Perfluorododecanoic acid (**PFDoDA**)  
Perfluorotridecanoic acid (**PFTTrDA**)  
Perfluorotetradecanoic acid (**PFTeDA**)  
Perfluorohexane sulfonic acid (**PFHxS**)  
Perfluoroheptane sulfonic acid (**PFHpS**)  
Perfluorooctane sulfonic acid (**PFOS**)  
Perfluorooctane sulfonamide (**PFOSA**)

### Definition of cases and controls in the dataset

The variable *CaseControlGrp* that is provided with the Mab003 dataset defines cases by "Case" and controls by "Control".

## Biological sampling and processing

Non-fasting blood samples were collected from mothers at 17-18 weeks' gestation into ethylenediaminetetraacetic acid (EDTA) tubes, centrifuged within 30 minutes, and temporarily placed in a refrigerator at 4 °C. They were shipped from the collecting hospital overnight to MoBa's biobank at the Norwegian Institute of Public Health (NIPH). The samples most often arrived at the biobank within 1–2 days of blood donation, where EDTA plasma were aliquoted onto polypropylene microtiter plates (96-well format, 300 µL per well), sealed with the use of heat-sealing foil sheets, and placed in long-term storage at –80 °C.

For more information on biological sampling, processing and storage, please refer to the original reference articles for NIPH's biobank by [Rønningen et al. 2006](#) and [Paltiel et al. 2014](#).

## Analytical methodology

The environmental chemicals included in this study were measured from plasma using **column switching liquid chromatography (LC) coupled to a triple quadrupole mass spectrometer (MS)**. For more information, refer to the original methodology reference article by [Haug et al. 2009](#).

### Measurement units:

Concentration in **ng/mL** for all included variables.

### Limit of quantification (LOQ):

PFHpA, PFOA, PFNA, PFDA, PFUnDA, PFDoDA, PFTTrDA, PFTeDA, PFHxS, PFHpS, PFOS, PFOSA: **0.05 ng/mL**  
PFBA: **0.1 ng/mL**

## Published articles using Mab003

*This section also includes articles related to study design, sampling, and data collection.*

- ❖ Fábelová L, Beneito A, Casas M, et al. PFAS levels and exposure determinants in sensitive population groups. *Chemosphere*. 2023 Feb;313:137530.
- ❖ Impinen A, Longnecker MP, Nygaard UC, et al. Maternal levels of perfluoroalkyl substances (PFASs) during pregnancy and childhood allergy and asthma related outcomes and infections in the Norwegian Mother and Child (MoBa) cohort. *Environ Int*. 2019 Mar;124:462-472.
- ❖ Rosen EM, Brantsæter AL, Carroll R, et al. Maternal Plasma Concentrations of Per- and polyfluoroalkyl Substances and Breastfeeding Duration in the Norwegian Mother and Child Cohort. *Environ Epidemiol*. 2018 Sep;2(3):e027.
- ❖ Singer AB, Whitworth KW, Haug LS, et al. Menstrual cycle characteristics as determinants of plasma concentrations of perfluoroalkyl substances (PFASs) in the Norwegian Mother and Child Cohort (MoBa study). *Environ Res*. 2018 Oct;166:78-85.

- ❖ Rush EL, Singer AB, Longnecker MP, et al. Oral contraceptive use as a determinant of plasma concentrations of perfluoroalkyl substances among women in the Norwegian Mother and Child Cohort (MoBa) study. *Environ Int.* 2018 Mar;112:156-164.
- ❖ Whitworth KW, Haug LS, Sabaredzovic A, Eggesbo M, Longnecker MP. Brief Report: Plasma Concentrations of Perfluorooctane Sulfonamide and Time-to-pregnancy Among Primiparous Women. *Epidemiology.* 2016 Sep;27(5):712-5.
- ❖ Ding J, Zhou H, Liu Y, Cai J, Longnecker MP. Estimating effect of environmental contaminants on women's subfecundity for the MoBa study data with an outcome-dependent sampling scheme. *Biostatistics.* 2014 Oct;15(4):636-50.
- ❖ Starling AP, Engel SM, Whitworth KW, et al. Perfluoroalkyl substances and lipid concentrations in plasma during pregnancy among women in the Norwegian Mother and Child Cohort Study. *Environ Int.* 2014 Jan;62:104-12.
- ❖ Wang Y, Starling AP, Haug LS, Eggesbo M, Becher G, Thomsen C, Travlos G, King D, Hoppin JA, Rogan WJ, Longnecker MP. Association between perfluoroalkyl substances and thyroid stimulating hormone among pregnant women: a cross-sectional study. *Environ Health.* 2013 Sep 8;12(1):76.
- ❖ Brantsæter AL, Whitworth KW, Ydersbond TA, et al. Determinants of plasma concentrations of perfluoroalkyl substances in pregnant Norwegian women. *Environ Int.* 2013 Apr;54:74-84.
- ❖ Whitworth KW, Haug LS, Baird DD, et al. Perfluorinated compounds in relation to birth weight in the Norwegian Mother and Child Cohort Study. *Am J Epidemiol.* 2012 Jun 15;175(12):1209-16.
- ❖ Whitworth KW, Haug LS, Baird DD, et al. Perfluorinated compounds and subfecundity in pregnant women. *Epidemiology.* 2012 Mar;23(2):257-63.

## Restrictions for use

None currently known.

## Acknowledgements recommended for use

We recommend that any use of these data in analyses that are presented in peer-review publications acknowledges the original article describing sampling and data collection:

Whitworth KW, Haug LS, Baird DD, et al. Perfluorinated compounds and subfecundity in pregnant women. *Epidemiology.* 2012 Mar;23(2):257-63.

## Disclaimer

The data in Mab003 that are available for use are provided by MoBa on an *as is* basis as they were received from the generating laboratory and have not been curated or quality controlled prior to release. FHI does not provide any guarantees related to data quality and assurance of the original dataset. We reserve the right to periodically remove samples from the dataset belonging to participants who have retracted their consent to participate in this cohort study, and may alter the contents of the associated documentation accordingly.