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Supplemental Material

Exposure to Perfluoroalkyl Substances and Metabolic Outcomes in Pregnant Women: Evidence from the Spanish INMA Birth Cohorts

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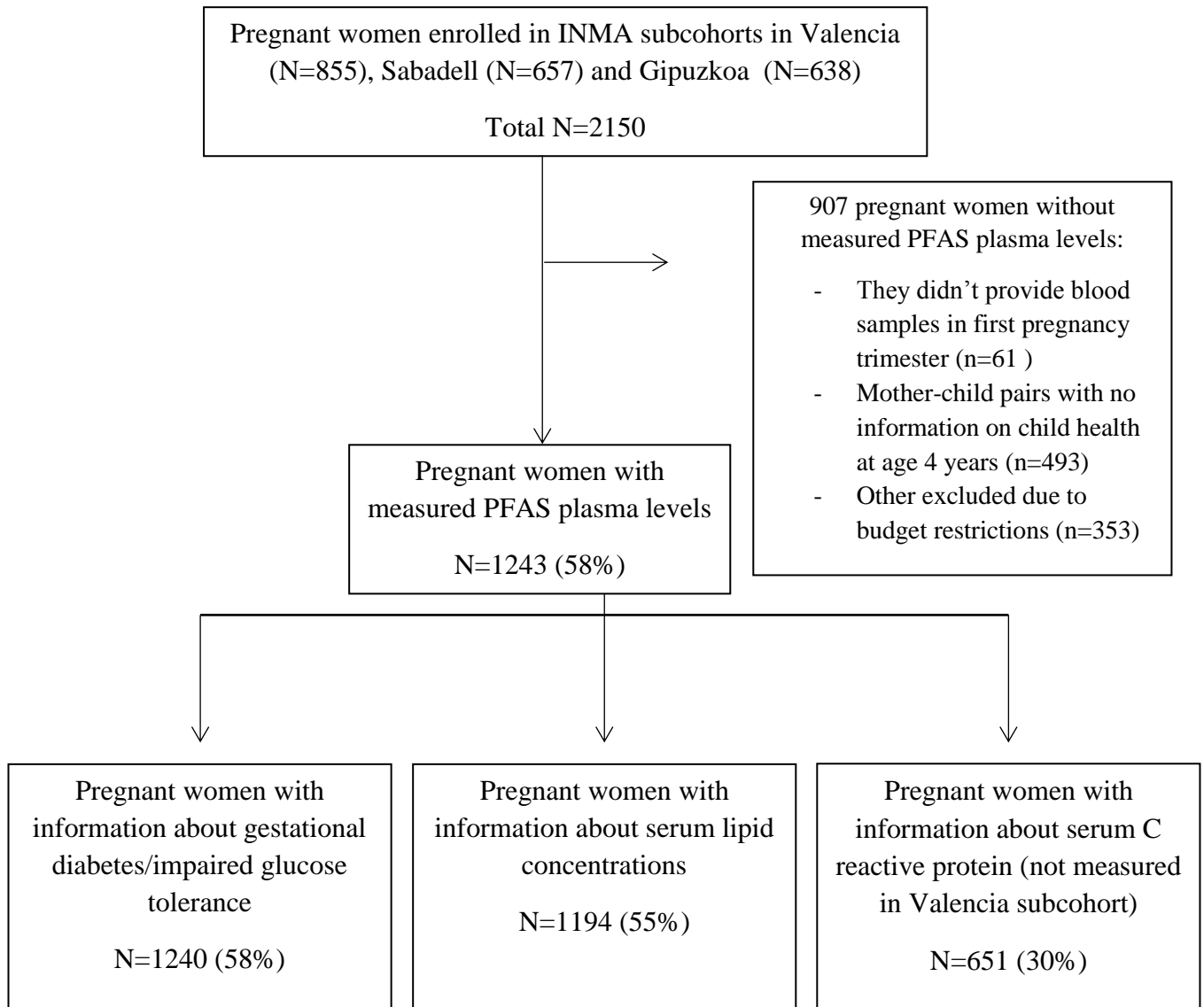**Figure S1.** Flow chart of the included women for the study.

Table S1. P-gain values from the generalized additive models (GAMs) for the linearity of the relationships between continuous $\log_{10}$-transformed PFAS and metabolic outcomes in pregnant women.

	PFOA $\log_{10}$-transfomed	PFOS $\log_{10}$-transfomed	PFHxS $\log_{10}$-transfomed	PFNA $\log_{10}$-transfomed
Impaired Glucose Tolerance	0.08	0.12	0.11	0.04
Gestational Diabetes Mellitus	0.13	0.39	0.21	0.04
Triglycerides (mg/dL)	0.15	0.22	0.09	0.02
Cholesterol (mg/dL)	0.17	0.14	0.27	0.24
C-Reactive Protein (mg/dL)	0.10	0.08	0.06	0.04

Abbreviations: PFOA (perfluorooctanoate), PFOS (perfluorooctane sulfonate), PFHxS (perfluorohexane sulfonate), PFNA (perfluorononanoate).

Table S2. Multipollutant-adjusted associations between PFAS plasma concentrations and odds for GDM and IGT in pregnant women.

	Gestational diabetes (GDM) (n=1214)		Impaired Glucose Tolerance (IGT) (n=1214)	
	N of GDM cases/ GDM-free women	OR[a] (95%CI)	N of IGT cases /IGT-free women	OR[a] (95%CI)
PFOA				
Q1	10/295	ref	21/284	ref
Q2	14/292	1.16 (0.46,2.93)	34/272	1.01 (0.52,1.96)
Q3	15/287	1.30 (0.48,3.51)	41/261	1.04 (0.51,2.15)
Q4	14/287	1.45 (0.46,4.62)	39/262	0.88 (0.39,2.02)
per log$_{10}$-unit increase	53/1161	1.30 (0.52,3.24)	135/1079	1.31 (0.68,2.54)
PFOS				
Q1	8/298	Ref	18/288	Ref
Q2	15/289	1.87 (0.73,4.83)	35/269	2.13 (1.10,4.12)
Q3	13/291	1.61 (0.59,4.39)	40/264	2.19 (1.11,4.32)
Q4	17/283	2.33 (0.83,6.58)	42/258	2.58 (1.25,5.32)
per log$_{10}$-unit increase	53/1161	3.15 (0.95,10.44)	135/1079	2.18 (0.96,4.95)
PFHxS				
Q1	9/293	ref	15/287	ref
Q2	13/292	1.06 (0.41,2.71)	24/281	1.27 (0.61,2.63)
Q3	19/283	1.40 (0.54,3.65)	42/260	1.59 (0.76,3.34)
Q4	12/293	0.81 (0.27,2.47)	54/251	1.32 (0.59,2.93)
per log$_{10}$-unit increase	53/1161	1.14 (0.45,2.88)	135/1079	1.37 (0.75,2.51)
PFNA				
Q1	14/289	ref	20/283	ref
Q2	13/295	0.76 (0.32,1.78)	29/279	0.85 (0.43,1.68)
Q3	17/285	0.86 (0.35,2.08)	46/256	0.81 (0.40,1.65)
Q4	9/292	0.40 (0.13,1.25)	40/261	0.59 (0.26,1.33)
per log$_{10}$-unit increase	53/1161	0.41 (0.14,1.21)	135/1079	0.48 (0.22,1.05)

Abbreviations: PFOA (perfluorooctanoate), PFOS (perfluorooctane sulfonate), PFHxS (perfluorohexane sulfonate), PFNA (perfluorononanoate).

[a]All models adjusted for all PFAS shown in this table, subcohort, country of birth, pre-pregnancy BMI, previous breastfeeding, parity, gestational week at blood extraction, physical activity, rMED (relative Mediterranean Diet Score).

Table S3. Multipollutant-adjusted associations between PFAS plasma concentrations and metabolic serum biomarkers in pregnant women.

	Log- Triglycerides (mg/dL) (n=1168) % change (95%CI)[a]	Total Cholesterol (mg/dL) (n=1168) % change (95%CI)[a]	Log- C-Reactive Protein (mg/dL) (n=640) % change (95%CI)[a]
PFOA			
Q1	ref	ref	ref
Q2	1.51 (-5.82, 9.42)	2.49 (0.03, 5.01)	-9.52 (-25.92, 10.52)
Q3	3.05 (-5.82, 11.63)	2.43 (-0.29, 5.28)	2.02 (-22.89, 17.35)
Q4	4.08 (-5.82, 15.03)	3.25 (0.04, 6.60)	10.52 (-17.30, 46.23)
per log_{10}-unit increase	-1.42 (-4.14, 8.07)	2.04 (0.20, 3.93)	4.32 (-10.67, 22.70)
PFOS			
Q1	ref	Ref	Ref
Q2	-5.82 (-12.19, 2.02)	-0.67 (-2.96, 1.67)	7.25 (-11.31, 31.00)
Q3	-6.76 (-13.93, 1.01)	-1.09 (-3.52, 1.34)	-4.88 (-22.89, 17.35)
Q4	-6.76 (-14.79, 1.01)	0.18 (-2.45, 2.88)	-3.92 (-23.66, 20.92)
per log_{10}-unit increase	-4.30 (-9.91, 1.10)	1.17 (-0.68, 3.05)	-9.91 (-23.17, 5.07)
PFHxS			
Q1	ref	ref	Ref
Q2	-2.96 (-9.52, 5.13)	0.71 (-1.63, 3.11)	3.05 (-16.47, 27.12)
Q3	-1.00 (-1.00, 7.25)	-0.23 (-2.76, 2.37)	-5.82 (-25.17, 18.53)
Q4	-1.98 (-10.42, 8.33)	-0.31 (-3.19, 2.63)	-1.00 (-23.66, 28.40)
per log_{10}-unit increase	-0.72 (-6.26. 71.32)	-1.28 (-3.07, 0.55)	-6.93 (-12.75, 31.36)
PFNA			
Q1	ref	ref	ref
Q2	-4.88 (-11.31, 2.02)	0.19 (-2.15, 2.59)	2.02 (-18.94, 28.40)
Q3	-4.88 (-13.06, 3.05)	0.05 (-2.56, 2.73)	-7.69 (-28.82, 19.72)
Q4	-3.92 (-13.06, 5.13)	0.07 (-2.96, 3.18)	-4.88 (-29.53, 28.40)
per log_{10}-unit increase	-3.58 (-8.72, 1.84)	-1.08 (-2.88, 0.72)	5.62 (-10.91, 25.99)

Abbreviations: PFOA (perfluorooctanoate), PFOS (perfluorooctane sulfonate), PFHxS (perfluorohexane sulfonate), PFNA (perfluorononanoate).

[a] Effect estimates from the linear regression models expressed as % change in medians per quartile group or log_{10} –unit increase in exposure. All models adjusted for all PFAS shown in this table, subcohort, country of birth, pre-pregnancy BMI, previous breastfeeding, parity, gestational week at blood extraction, physical activity, rMED (relative Mediterranean Diet Score.