Occurrence of 80 Per and polyfluorinated alkyl substances (PFAS) in the Muscle and Liver tissues of Marine Mammals of the St. Lawrence Estuary and Gulf, Quebec, Canada

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TABLE S9 Mean ratio of concentrations of predominant PFOS in liver/muscle samples of marine mammals (calculated wet weight/wet weight)

Table S1 List of 80 PFAS quantitatively targeted in the present study, including acronym, name, supplier, and ionization mode.

Acronym	Name	Supplier	Ion mode
PFBA	Perfluorobutanoic acid	Wellington Labs	ESI(-)
PFPeA	Perfluoropentanoic acid	Wellington Labs	ESI(-)
PFHxA	Perfluorohexanoic acid	Wellington Labs	ESI(-)
PFHpA	Perfluoroheptanoic acid	Wellington Labs	ESI(-)
PFOA	Perfluorooctanoic acid	Wellington Labs	ESI(-)
PFNA	Perfluorononanoic acid	Wellington Labs	ESI(-)
PFDA	Perfluorodecanoic acid	Wellington Labs	ESI(-)
PFUnA	Perfluoroundecanoic acid	Wellington Labs	ESI(-)
PFDoA	Perfluorododecanoic acid	Wellington Labs	ESI(-)
PFTrDA	Perfluorotridecanoic acid	Wellington Labs	ESI(-)
PFTeDA	Perfluorotetradecanoic acid	Wellington Labs	ESI(-)
PFHxDA	Perfluorohexadecanoic acid	Wellington Labs	ESI(-)
PFOcDA	Perfluorooctadecanoic acid	Wellington Labs	ESI(-)
PFEtS	Perfluoroethane sulfonate	Apollo Scientific	ESI(-)
PFPrS	Perfluoropropane sulfonate	Wellington Labs	ESI(-)
PFBS	Perfluorobutane sulfonate	Wellington Labs	ESI(-)
PFPeS	Perfluorohexane sulfonate	Wellington Labs	ESI(-)
PFHxS	Perfluorohexane sulfonate	Wellington Labs	ESI(-)
PFHpS	Perfluoroheptane sulfonate	Wellington Labs	ESI(-)
PFOS	Perfluorooctane sulfonate	Wellington Labs	ESI(-)
PFNS	Perfluorononane sulfonate	Wellington Labs	ESI(-)
PFDS	Perfluorodecane sulfonate	Wellington Labs	ESI(-)
PFUdS	Perfluoroundecane sulfonate	Wellington Labs	ESI(-)
PFDoS	Perfluorododecane sulfonate	Wellington Labs	ESI(-)
PFTrDS	Perfluorotridecane sulfonate	Wellington Labs	ESI(-)
Cl-PFOS	Chloroperfluorooctane sulfonate	Wellington Labs	ESI(-)
PFECHS	Perfluoro-4-ethylcyclohexane sulfonate	Wellington Labs	ESI(-)
FBSA	Perfluorobutane sulfonamide	Wellington Labs	ESI(-)

FHxSA	Perfluorohexane sulfonamide	Wellington Labs	ESI(-)
FHpSA	Perfluoroheptane sulfonamide	Wellington Labs	ESI(-)
FOSA	Perfluorooctane sulfonamide	Wellington Labs	ESI(-)
FDSA	Perfluorodecane sulfonamide	Wellington Labs	ESI(-)
MeFBSA	N-methyl-perfluorobutane sulfonamide	Wellington Labs	ESI(-)
MeFOSA	N-methyl-perfluorooctane sulfonamide	Wellington Labs	ESI(-)
EtFOSA	N-ethyl-perfluorooctane sulfonamide	Wellington Labs	ESI(-)
FOSAA	Perfluorooctane sulfonamidoacetic acid	Wellington Labs	ESI(-)
MeFOSAA	N-methyl-perfluorooctane sulfonamidoacetic acid	Wellington Labs	ESI(-)
EtFOSAA	N-ethyl-perfluorooctane sulfonamidoacetic acid	Wellington Labs	ESI(-)
3:3 acid	3:3 fluorotelomer carboxylic acid	Synquest	ESI(-)
4:3 acid	4:3 fluorotelomer carboxylic acid	Synquest	ESI(-)
5:3 acid	5:3 fluorotelomer carboxylic acid	DuPont USA	ESI(-)
7:3 acid	7:3 fluorotelomer carboxylic acid	DuPont USA	ESI(-)
6:2 FTCA	6:2 fluorotelomer carboxylic acid	Wellington Labs	ESI(-)
8:2 FTCA	8:2 fluorotelomer carboxylic acid	Wellington Labs	ESI(-)
10:2 FTCA	10:2 fluorotelomer carboxylic acid	Wellington Labs	ESI(-)
6:2 FTUCA	6:2 fluorotelomer unsaturated carboxylic acid	Wellington Labs	ESI(-)
8:2 FTUCA	8:2 fluorotelomer unsaturated carboxylic acid	Wellington Labs	ESI(-)
10:2 FTUCA	10:2 fluorotelomer unsaturated carboxylic acid	Wellington Labs	ESI(-)
4:2 FTSA	4:2 fluorotelomer sulfonate	Wellington Labs	ESI(-)
6:2 FTSA	6:2 fluorotelomer sulfonate	Wellington Labs	ESI(-)
8:2 FTSA	8:2 fluorotelomer sulfonate	Wellington Labs	ESI(-)
10:2 FTSA	8:2 fluorotelomer sulfonate	Wellington Labs	ESI(-)
6:6 PFPi	Bis(perfluorohexyl)phosphinate	Wellington Labs	ESI(-)
6:8 PFPi	Perfluorohexylperfluorooctylphosphinate	Wellington Labs	ESI(-)
8:8 PFPi	Bis(perfluorooctyl)phosphinate	Wellington Labs	ESI(-)
PFHxPA	Perfluorohexylphosphonic acid	Wellington Labs	ESI(-)
PFOPA	Perfluorooctylphosphonic acid	Wellington Labs	ESI(-)
6:2 Cl-PFESA	6:2 chlorinated perfluoroalkylether sulfonate	Wellington Labs	ESI(-)

8:2 Cl-PFESA	8:2 chlorinated perfluoroalkylether sulfonate	Wellington Labs	ESI(-)
Gen-X (HFPO-DA)	Hexafluoropropylene oxide dimer acid	Wellington Labs	ESI(-)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoate	Wellington Labs	ESI(-)
PFMPA	Perfluoro-4-oxapentanoic acid	Wellington Labs	ESI(-)
PFMBA	Perfluoro-5-oxahexanoic acid	Wellington Labs	ESI(-)
3,6-OPFHpA	Perfluoro-3,6-dioxaheptanoic acid	Wellington Labs	ESI(-)
PFEESA	Perfluoro(2-ethoxyethane)sulfonate	Wellington Labs	ESI(-)
AmPr-FHxSA (PFHxSAm)	Perfluorohexane sulfonamidopropyl amine	Wellington Labs	ESI(+)
AmPr-FOSA (PFOSAm)	Perfluorooctane sulfonamidoalkyl amine	Fluobon	ESI(+)
T-AmPr-FHxSA (PFHxSAmS)	Perfluorohexane sulfonamidopropyl ammonium	Wellington Labs	ESI(+)
T-AmPr-FOSA (PFOSAmS)	Perfluorooctane sulfonamidopropyl ammonium	Fluobon	ESI(+)
CMeAmPr-FOAd (PFOAB)	Perfluorooctane amidopropyl betaine	Fluobon	ESI(+)
CMeAmPr-FOSA (PFOSB)	Perfluorooctane sulfonamidopropyl betaine	Fluobon	ESI(+)
OAmPr-FOAd (PFOANO)	Perfluorooctane amidopropyl amine oxide	Fluobon	ESI(+)
OAmPr-FOSA (PFOSNO)	Perfluorooctane sulfonamidopropyl amine oxide	Fluobon	ESI(+)
5:3 FTB	5:3 fluorotelomer betaine	Wellington Labs	ESI(+)
5:1:2 FTB	5:1:2 fluorotelomer betaine	Wellington Labs	ESI(+)
6:2 FTSA-PrB (6:2 FTAB)	6:2 fluorotelomer sulfonamidopropyl betaine	Wellington Labs	ESI(+)
6:2 diPAP	Bis-(1H,1H,2H,2H-perfluorooctyl)phosphate	Wellington Labs	ESI(-)
6:2/8:2 diPAP	6:2/8:2 Fluorotelomer phosphate diester	Wellington Labs	ESI(-)
8:2 diPAP	8:2 Fluorotelomer phosphate diester	Wellington Labs	ESI(-)

Table S2 Surrogate and injection internal standards used in this study, including acronyms, names, *m/z*, supplier company, and ion mode.

Use	Acronym	Name	*m/z*	Supplier	Ion mode
Surrogate	**$^{13}C_4$-PFBA**	Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid	216.99177	Wellington Labs	ESI–
Surrogate	**$^{13}C_5$-PFPeA**	Perfluoro-n-[$^{13}C_5$]pentanoic acid	267.99345	Wellington Labs	ESI–
Surrogate	**$^{13}C_5$-PFHxA**	Perfluoro-n-[1,2,3,4,6-$^{13}C_5$]hexanoic acid	317.99046	Wellington Labs	ESI–
Surrogate	**$^{13}C_4$-PFHpA**	Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid	366.98249	Wellington Labs	ESI–
Surrogate	**$^{13}C_8$-PFOA**	Perfluoro-n-[$^{13}C_8$]octanoic acid	420.99272	Wellington Labs	ESI–
Surrogate	**$^{13}C_9$-PFNA**	Perfluoro-n-[$^{13}C_9$]nonanoic acid	471.99288	Wellington Labs	ESI–
Surrogate	**$^{13}C_6$-PFDA**	Perfluoro-n-[1,2,3,4,5,6-$^{13}C_6$]decanoic acid	518.97962	Wellington Labs	ESI–
Surrogate	**$^{13}C_7$-PFUnA**	Perfluoro-n-[1,2,3,4,5,6,7-$^{13}C_7$]undecanoic acid	569.97978	Wellington Labs	ESI–
Surrogate	**$^{13}C_2$-PFDoA**	Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid	614.95981	Wellington Labs	ESI–
Surrogate	**$^{13}C_2$-PFTeDA**	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid	714.95342	Wellington Labs	ESI–
Surrogate	**$^{13}C_3$-PFBS**	Sodium perfluoro-1-[2,3,4-$^{13}C_3$]butanesulfonate	301.95251	Wellington Labs	ESI–
Surrogate	**$^{13}C_3$-PFHxS**	Sodium perfluoro-1-[1,2,3-$^{13}C_3$]hexanesulfonate	401.94612	Wellington Labs	ESI–
Surrogate	**$^{13}C_8$-PFOS**	Sodium perfluoro-1-[$^{13}C_8$]octanesulfonate	506.95641	Wellington Labs	ESI–
Surrogate	**$^{13}C_8$-FOSA**	Perfluoro-1-[$^{13}C_8$]octanesulfonamide	505.97249	Wellington Labs	ESI–
Surrogate	**d_3-N-MeFOSA**	N-methyl-d_3-perfluoro-1-octanesulfonamide	514.98013	Wellington Labs	ESI–
Surrogate	**d_5-N-EtFOSA**	N-ethyl-d_5-perfluoro-1-octanesulfonamide	531.00830	Wellington Labs	ESI–
Surrogate	**d_3-N-MeFOSAA**	N-methyl-d_3-perfluoro-1-octanesulfonamidoacetic acid	572.98561	Wellington Labs	ESI–
Surrogate	**d_5-N-EtFOSAA**	N-ethyl-d_5-perfluoro-1-octanesulfonamidoacetic acid	589.01382	Wellington Labs	ESI–
Surrogate	**$^{13}C_2$-6:2 FTSA**	1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-octane sulfonate	428.97537	Wellington Labs	ESI–
Surrogate	**$^{13}C_2$-8:2 FTSA**	1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-decane sulfonate	528.96898	Wellington Labs	ESI–
Surrogate	**$^{13}C_4$-6:2 diPAP**	$^{13}C_4$-Bis-(1H,1H,2H,2H-perfluorooctyl)phosphate	792.98792	Wellington Labs	ESI–
Surrogate	**$^{13}C_3$-HFPO-DA**	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-$^{13}C_3$-propanoic acid	286.98406	Wellington Labs	ESI–
Surrogate	**TAmPr-FOAd (PFOAAmS)**	Perfluorooctane amidoalkyl ammonium	513.10176	Fluobon	ESI+
Injection	**$^{13}C_3$-PFBA**	Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid	215.98871	Wellington Labs	ESI–
Injection	**$^{13}C_2$-PFHxA**	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid	314.98039	Wellington Labs	ESI–
Injection	**$^{13}C_2$-PFOA**	Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid	414.97258	Wellington Labs	ESI–
Injection	**$^{13}C_5$-PFNA**	Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid	467.97969	Wellington Labs	ESI–
Injection	**$^{13}C_2$-PFDA**	Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid	514.96640	Wellington Labs	ESI–
Injection	**$^{13}C_2$-PFUnA**	Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid	564.96326	Wellington Labs	ESI–
Injection	**$^{18}O_2$-PFHxS**	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate	402.94505	Wellington Labs	ESI–
Injection	**$^{13}C_4$-PFOS**	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate	502.94308	Wellington Labs	ESI–

Table S3. UHPLC-HRMS acquisition method.

Instrument	Thermo Q-Exactive Orbitrap mass spectrometer Dionex Ultimate 3000 UHPLC chain
Ionization	Heated electrospray ionization source, negative and positive ion modes
Acquisition mode	Full Scan MS
Analytical column	Thermo Hypersil Gold C18 column (100 mm × 2.1 mm; 1.9 μm particle size)
Delay column	Thermo Hypercarb column (20 mm × 2.1 mm; 7 μm particle size)
Column Temperature	40°C
Mobile Phases	A: 0.1% formic acid in HPLC-water B: 0.1% formic acid in acetonitrile Flow rate (mL/min) 0.55
Gradient Profile	Time (min) % B 0.0 10 7.0 72.5 8.5 100 12.5 100 12.6 10 14.6 10
Injection Volume	15 μL
Source/gas	Sheath gas flow rate 40 a.u. (arbitrary units) Aux gas flow rate 15 a.u. Sweep gas flow rate 0 a.u. Spray voltage (|kV|) 3 Capillary temperature (°C) 320 Vaporizer temperature (°C) 350 S-lens RF level 55
Orbitrap parameters	Resolution 70,000 at *m/z* 200 AGC target 3e6 Maximum Inject Time (ms) 50 Scan range (*m/z*) 150–1000

Instrument analysis of diPAP

Samples were analyzed by UP-HPLC-MS/MS, using a mobile phase where A is water with 0.1 mM NH4F, and B is methanol with 0.1 mM NH4F. chromatographic separation was achieved with a Thermo Hypersil Gold C18 column (100 mm × 2.1 mm; 1.9 μm particle size) thermostated at

550C. Electro spray ionization (ESI) was used. The TSQ quantive triple quadrupole mass spectrometer (Thermo scientific, Waltham, MA, USA) was operated in selection reaction monitoring mode.

Table S4 List of 77 Target PFAS with retention time, and monitored m/z

Acronym	Retention time	Monitored m/z
PFBA	2.37	212.9787
PFPeA	3.47	262.9755
PFHxA	4.31	312.9723
PFHpA	5.02	362.9691
PFOA	5.68	412.9659
PFNA	6.30	462.9627
PFDA	6.91	512.9595
PFUnA	7.55	562.9563
PFDoA	8.24	612.9531
PFTrDA	9.31	662.9499
PFTeDA	10.41	712.9467
PFHxDA	11.41	812.9403
PFOcDA	12.17	912.9365
PFEtS	2.01	198.9488
PFPrS	3.34	248.9456
PFBS	4.33	298.9424
PFPeS	5.12	348.9392
PFHxS	5.84	398.9360
PFHpS	6.49	448.9328
PFOS	7.13	498.9296
PFNS	7.78	548.9264
PFDS	8.49	598.9232
PFUdS	9.64	648.9200
PFDoS	10.39	698.9168
PFTrDS	10.72	748.9137
Cl-PFOS	7.26	514.9001
PFECHS	6.42	460.9329
FBSA	5.26	297.9584
FHxSA	6.53	397.9520
FHpSA	7.05	447.9488
FOSA	7.53	497.9456
FDSA	8.32	597.9392
MeFBSA	6.07	311.9741
MeFOSA	8.12	511.9613
EtFOSA	8.38	525.9770
FOSAA	7.47	555.9511
MeFOSAA	7.97	569.9668
EtFOSAA	8.18	583.9824
3:3 acid	4.89	241.0100
4:3 acid	5.64	291.0067

5:3 acid	6.28	341.0036
7:3 acid	7.36	440.9972
6:2 FTCA	67.53	376.9847
8:2 FTCA	7.57	476.9783
10:2 FTCA	8.38	576.9719
6:2 FTUCA	6.42	356.9784
8:2 FTUCA	7.53	456.9721
10:2 FTUCA	8.38	556.9657
4:2 FTSA	4.02	326.9737
6:2 FTSA	6.53	426.9687
8:2 FTSA	6.59	526.9610
10:2 FTSA	7.84	626.9546
6:6 PFPi	9.04	700.9220
6:8 PFPi	10.56	800.9156
8:8 PFPi	10.99	900.9092
PFHxPA	4.21	398.9456
PFOPA	5.44	498.9392
6:2 Cl-PFESA	7.55	530.8950
8:2 Cl-PFESA	9.23	630.8886
Gen-X (HFPO-DA)	4.58	284.9774
ADONA	5.29	376.9683
PFMPA	3.76	228.9735
PFMBA	3.76	278.97
3,6-OPFHpA	4.23	200.9786
PFEESA	4.71	314.9373
AmPr-FHxSA (PFHxSAm)	5.32	485.0568
AmPr-FOSA (PFOSAm)	6.23	585.0504
T-AmPr-FHxSA (PFHxSAmS)	5.34	499.0719
T-AmPr-FOSA (PFOSAmS)	6.25	599.0655
CMeAmPr-FOAd (PFOAB)	5.38	557.0916
CMeAmPr-FOSA (PFOSB)	6.33	643.0554
OAmPr-FOAd (PFOANO)	5.40	515.0810
OAmPr-FOSA (PFOSNO)	6.27	601.0448
5:3 FTB	4.49	414.0927
5:1:2 FTB	4.59	432.0833
6:2 FTSA-PrB (6:2 FTAB)	5.36	571.0936

Table S5 Recovery (%) and standard deviation of the PFAS for the muscle sample

	Recovery (%)	STDEV (n=3)
PFBA	101	3.0
PFPeA	101	1.4
PFHxA	100	4.1
PFHpA	99	2.1
PFOA	101	3.7
PFNA	101	3.2
PFDA	100	2.4
PFUnDA	101	5.8
PFDoDA	100	2.9
PFTrDA	97	1.6
PFTeDA	100	1.3
PFHxDA	100	1.4
PFPrS	98	3.2
PFBS	100	3.9
PFPeS	98	4.2
PFHxS	100	3.3
PFHpS	100	3.3
PFOS	101	4.4
PFNS	103	4.9
PFDS	104	7.6
PFDoS	109	2.4
FBSA	100	6.0
FHxSA	102	1.9
FOSA	102	4.9
MeFBSA	99	7.4
MeFOSA	78	5.5
EtFOSA	68	4.9
FOSAA	108	3.5
MeFOSAA	99	3.8
EtFOSAA	92	7.8
3:3 Acid	99	3.3
5:3 Acid	95	5.3
7:3 Acid	105	5.1
6:2 FTCA	100	6.2
8:2 FTCA	96	3.6
10:2 FTCA	87	3.5
4:2 FtS	101	3.4
6:2 FtS	100	3.5
8:2 FtS	100	3.2
10:2 FtS	109	10.3
6:2 Cl-PFESA	102	5.6
8:2 Cl-PFESA	103	4.8
Gen-X	100	5.8
ADONA	98	0.4
Cl-PFOS	100	4.6
PFECHS	97	2.8
PFHxPA	98	1.4
PFOPA	101	5.7
FHxSA	104	7.2
FOSA	101	9.1
FHxSA	106	5.0
FOSA	106	7.1
5:3 FTB	94	0.3

5:1:2 FTB	98	2.1
6:2 FTAB	100	3.0

Table S6 List of specimens, with species weight, location, sex, and Σ77 PFAS (ng/g, ww)levels in muscle samples

Species	Weight (kg)	Location	Sex	Σ77 PFAS
Harbor seal	11.94	Rimouski	Male	29.8
Harbor porpoise	9.7	Trois-Pistoles	ND	49.5
Harbor seal	7.2	Métis-sur-Mer	Female	20.8
Gray seal	128.0	Sainte-Anne-des-Monts	Male	13.6
Harbor porpoise	40.0	Cloridorme	Male	17.8
White-beaked dolphin	ND	Blanc-Sablon	Female	29.9
Harbor porpoise	11.0	Pointe-à-la-Croix	Male	58.2
Harbor porpoise	16.0	Pointe-aux-Outardes	Female	6.9
Harbor porpoise	37.0	Sainte-Anne-des-Monts	Male	14.5
Gray seal	110.0	Cloridorme	Male	23.2
Hooded seal	19.0	Beaumont	Male	24.1
Harbor porpoise	9.0	Colombier	Male	54.5
Harbor porpoise	11.0	Rimouski	Male	21.5
Harbor porpoise	48.0	Baie-des-Sables	Female	5.7
Harbor porpoise	6.3	Saint-Maxime-du-Mont-Louis	Male	111.0
White-sided dolphin	22.9	Rivière-du-Loup	Female	34.3
Harbor porpoise	34.0	Matane	Male	13.1
White-sided dolphin	20.2	Les Bergeronnes	Male	39.6
True's beaked whale	690.0	Sept-Îles	Male	16.6
Harbor seal	23.0	Rimouski	Male	13.7
Harbor porpoise	8.9	Sainte-Anne-des-Monts	Male	40.3
White-sided dolphin	17.6	Saint-Ulric	Female	41.4
Harbor porpoise	18.0	Rivière-Ouelle	Male	23.5
Harbor porpoise	10.0	Les Escoumins	Male	35.1
Harbor seal	8.1	Sept-Îles	ND	36.7
White-sided dolphin	20.8	Matane	Male	43.3
Harbor porpoise	10.6	Rimouski	Female	32.5
Harbor porpoise	82.6	Sainte-Anne-des-Monts	Female	58.1
Harbor porpoise	11.5	Les Escoumins	Male	56.1
Harbor porpoise	10.9	Rimouski	Male	30.4
White-sided dolphin	13.1	Rimouski	Male	34.4
Harbor porpoise	47.7	Percé	Male	26.5
Harbor porpoise	13.3	Rivière-du-Loup	Female	77.7
White-sided dolphin	12.6	Port-Cartier	Female	34.2
Harbor porpoise	27.0	Sept-Îles	Male	47.7
Harp seal	38.0	Havre-Saint-Pierre	Female	8.7
Harbor seal	37.0	Matane	Male	7.1
Harbor porpoise	46.0	Sainte-Félicité	Male	11.1
Harbor seal	15.0	Rimouski	ND	28.1

Table S7 List of specimens with species, weight, location, sex, and Σ77 PFAS (ng/g, ww) levels in liver samples

Species	**Weight (kg)**	**Location**	**Sex**	Σ77 PFAS
Harbor seal	11.94	Rimouski	Male	278.6
Harbor porpoise	9.7	Trois-Pistoles	ND	256.5
Harbor seal	7.2	Métis-sur-Mer	Female	122.4
Gray seal	128.0	Sainte-Anne-des-Monts	Male	91.1
Harbor porpoise	40.0	Cloridorme	Male	216.2
White-beaked dolphin	ND	Blanc-Sablon	Female	330.3
Harbor porpoise	11.0	Pointe-à-la-Croix	Male	254.1
Harbor porpoise	16.0	Pointe-aux-Outardes	Female	121.3
Harbor porpoise	37.0	Sainte-Anne-des-Monts	Male	186.2
Gray seal	110.0	Cloridorme	Male	110.4
Hooded seal	19.0	Beaumont	Male	126.3
Harbor porpoise	9.0	Colombier	Male	330.3
Harbor porpoise	11.0	Rimouski	Male	460.0
Harbor porpoise	48.0	Baie-des-Sables	Female	81.2
Harbor porpoise	6.3	Saint-Maxime-du-Mont-Louis	Male	426.3
White-sided dolphin	22.9	Rivière-du-Loup	Female	271.8
Harbor porpoise	34.0	Matane	Male	171.0
White-sided dolphin	20.2	Les Bergeronnes	Male	384.4
True's beaked whale	690.0	Sept-Îles	Male	105.6
Harbor seal	23.0	Rimouski	Male	158.5
Harbor porpoise	8.9	Sainte-Anne-des-Monts	Male	395.0
White-sided dolphin	17.6	Saint-Ulric	Female	284.2
Harbor porpoise	18.0	Rivière-Ouelle	Male	337.2
Harbor porpoise	10.0	Les Escoumins	Male	199.8
Harbor seal	8.1	Sept-Îles	ND	140.0
White-sided dolphin	20.8	Matane	Male	377.6
Harbor porpoise	10.6	Rimouski	Female	358.8
Harbor porpoise	82.6	Sainte-Anne-des-Monts	Female	110.7
Harbor porpoise	11.5	Les Escoumins	Male	343.5
Harbor porpoise	10.9	Rimouski	Male	350.2
White-sided dolphin	47.7	Percé	Male	339.8
Harbor porpoise	13.3	Rivière-du-Loup	Female	669.5
Harbor porpoise	12.6	Port-Cartier	Female	234.8
White-sided dolphin	27.0	Sept-Îles	Male	343.4
Harbor porpoise	38.0	Havre-Saint-Pierre	Female	156.9
Harp seal	37.0	Matane	Male	44.3
Harbor seal	46.0	Sainte-Félicité	Male	128.1
Harbor porpoise	15.0	Rimouski	ND	435.5

Table S8 Limits of detection. Method LOD (mLOD) and corresponding Instrumental limits of detection (iLOD)

Compounds	(mLOD) Muscle	(mLOD) Liver	(iLOD)
Cl-PFOS	0.003	0.0007	4.0
PFPrA	0.13	0.03	2.7
PFEtS	0.13	0.03	4.9
PFBA	0.01	0.005	37
PFPeA	0.01	0.005	6.0
PFMPA	0.13	0.03	6.1
PFPrS	0.08	0.02	2.8
PFMBA	0.08	0.02	6.6
4:2_FTS	0.08	0.02	5.2
PFHxPA	0.05	0.01	6.8
3,6-OPFHpA	0.13	0.03	5.2
PFBS	0.01	0.005	4.9
PFHxA	0.01	0.005	3.3
5_3-FtB	0.05	0.01	2.8
Gen-X	0.16	0.04	1.2
5_1_2-FtB	0.02	0.007	5.6
PFEESA	0.01	0.003	4.3
3:3 Acid	0.18	0.05	67
PFHpA	0.008	0.002	3.3
PFPeS	0.21	0.06	2.3
FBSA	0.01	0.005	1.2
ADONA	0.10	0.03	4.0
PFHxSAm	0.02	0.007	2.8
PFHxSAmS	0.02	0.007	4.1
6:2-FTS	0.02	0.007	9.7
6:2-FTAB	0.18	0.05	15
PFOAB	0.21	0.06	3.0
PFOANO	0.01	0.003	4.0
PFOPA	0.01	0.003	3.8
4_3-acid	0.08	0.02	5.6
PFOA	0.05	0.01	4.3
PFHxS	0.002	0.0007	4.0
MeFBSA	0.01	0.003	3.3
PFOSAm	0.01	0.003	6.8
PFOSNO	0.02	0.007799	6.1
PFOSAmS	0.01	0.003	9.0
PFNA	0.001	0.0003	3.0

5_3-Acid	0.05	0.01	8.3
PFECHS	0.01	0.003	3.2
PFOSB	0.05	0.01	2.8
PFHpS	0.005	0.001	4.0
6_2-FTUCA	0.02	0.007	6.2
8:2 -FTS	0.01	0.003	4.1
FHxSA	0.01	0.003	4.3
6_2-FTCA	0.08	0.0	7.3
PFDA	0.005	0.001	5.2
PFOS	0.001	0.0003	5.5
FHpSA	0.01	0.003	4.1
7:3-Acid	0.005	0.001	62
62-Cl-PFESA	0.01	0.003	5.7
FOSAA	0.005	0.001	3.0
PFUnA	0.001	0.001	2.9
8_2-FTUCA	0.01	0.003	5.2
FOSA	0.008	0.002	3.2
8_2-FTCA	0.05	0.01	3.3
PFNS	0.005	0.001	3.0
10:2 -FTS	0.05	0.01	5.7
PFDoA	0.005	0.001	4.1
MeFOSAA	0.001	0.0003	12
MeFOSA	0.05	0.01	6.2
PFDS	0.02	0.007	2.7
EtFOSAA	0.05	0.01	8.3
FDSA	0.02	0.006	4.0
EtFOSA	0.053	0.01	6.1
6_6-PFPi	0.02	0.007	1.2
10_2-FTCA	0.13	0.038	5.6
10_2-FTUCA	0.05	0.015	3.8
82-Cl-PFESA	0.02	0.007	2.4
PFTrDA	0.01	0.003	3.3
PFUdS	0.02	0.007	4.1
PFDoS	0.01	0.003	5.2
6_8-PFPi	0.01	0.003	3.8
PFTeDA	0.008	0.002	4.9
PFTrDS	0.02	0.007	2.7
8_8-PFPi	0.02	0.007	5.6
PFHxDA	0.013	0.003	6.6
PFOcDA	0.08	0.02	9.5

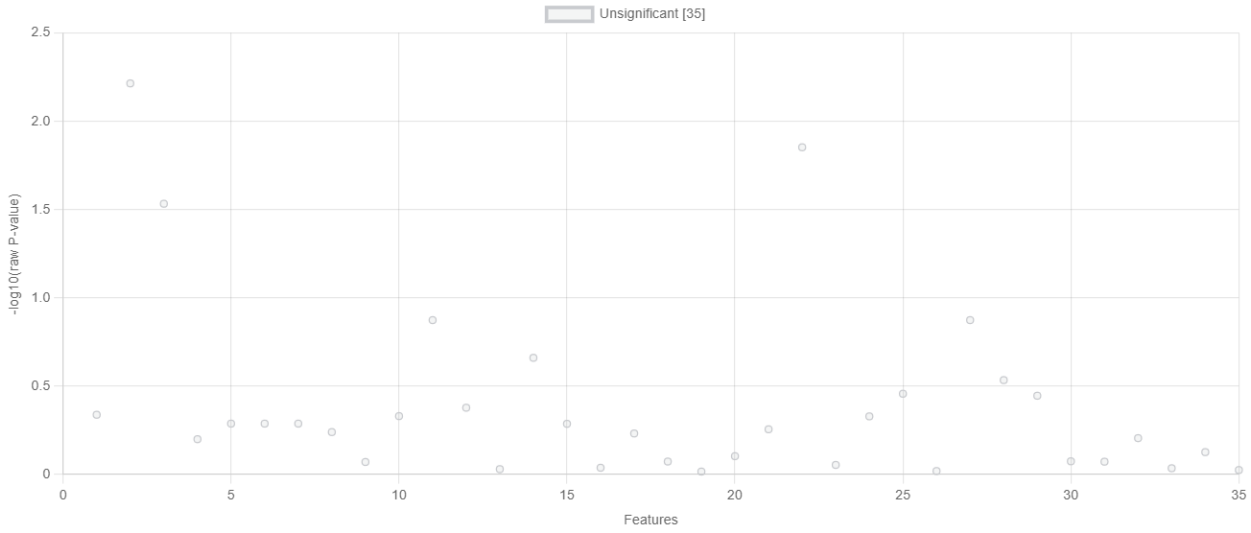

Fig.S1 t-test analysis of the correlation between sex and PFAS concentration

TABLE S9 Mean ratio of concentrations of predominant PFOS in liver/muscle samples of marine mammals (calculated wet weight/wet weight)

Compound	Gray seal	Harbor porpoise	Harbor seal	White-sided dolphin	White-beaked dolphin	Harp seal	Hooded seal
PFNA	6.27	7.08	7.36	7.11	10.90	16.3	7.31
PFDA	5.65	10.69	7.35	9.54	13.73	14.68	6.93
PFOS	5.17	10.09	6.67	9.40	13.05	20.07	6.62
7:3-Acid	15.61	4.88	7.82	15.06	22.14	14.68	15.75
PFUnA	4.51	9.34	5.69	8.57	12.42	9.22	5.35
PFDoA	4.23	7.14	5.23	7.40	10.85	-	3.90
PFTrDA	3.35	5.10	4.08	5.39	7.62	9.03	2.98
PFHxDA	2.15	2.73	3.07	2.33	3.9	1.55	2.03
PFHxS	1.21	3.04	3.55	5.58	7.33	4	2.26
PFHpS	2.4	4.44	4.09	7.75	17.8	-	6.5
PFTeDA	-	5.53	4.75	7.87	10.44	-	3.28
FOSA	-	4.26	-	5.08	4.63	-	-
PFOA	-	2.91	4.38	4.19	7.11	-	2.85
FHxSA	-	4.11	0.36	6.77	6.93	-	-
FBSA	-	3.67	-	7.42	5.62	-	-
PFECHS	-	4.25	3.76	1	-	-	-
6:2-FTS	0.53	1.36	11.52	1.03	-	-	0.016
5:3-Acid	-	4.56	-	8.80	-	-	-
PFHpA	-	1.7	-	5.20	7.71	-	-
FHpSA	-	-	-	1.28	-	-	-
PFPrA	-	0.79	-	-	-	-	-