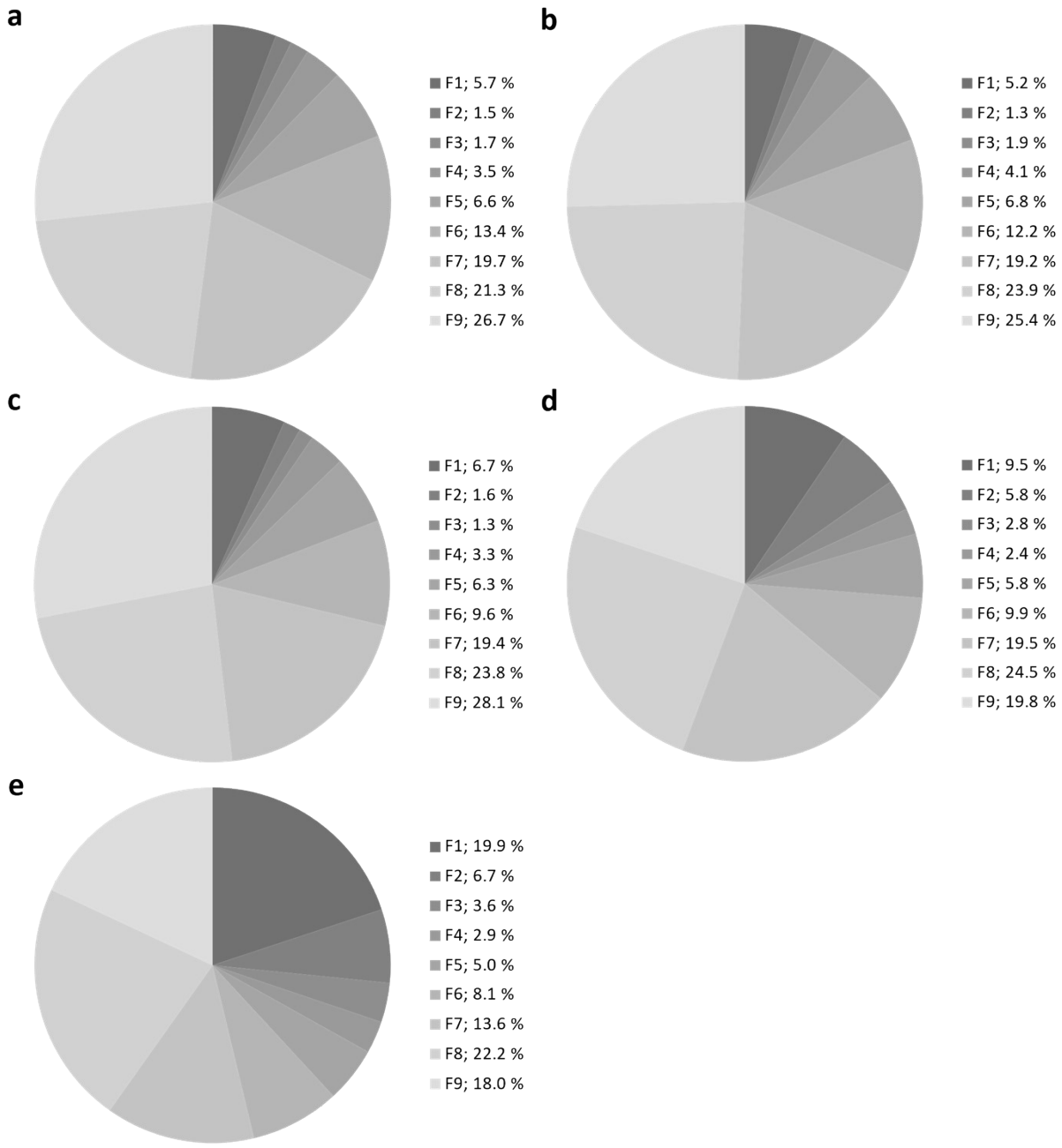

Figure S1: Count rate percentages of all fractions after separation using a sucrose gradient in dependence on the cholesterol content x_{Chol}. Representation of the count rate percentages at (a) 5 mol%, (b) 10 mol%, (c) 20 mol%, (d) 30 mol% and (e) 40 mol%.

Table S1: Summary of the particle size (Z-Average), particle distribution index (PdI), derived count rate (DCR) and the count rate percentage of fractions after separation using a sucrose gradient for the variation of the cholesterol percentage. The values are given as mean ± standard deviation (SD), n = 3.

	Z-Average [nm]		PdI		DCR [kcps]	
Cholesterol percentage [mol%]	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
5	153.8	30.3	0.362	0.056	5281.4	93.7
10	133.1	9.6	0.358	0.016	3451.6	147.5
20	158.5	19.4	0.320	0.010	4222.6	195.8
30	173.8	23.1	0.374	0.044	3653.9	140.9
40	258.6	21.3	0.470	0.069	3616.5	331.0

	Count rate percentage [%]									
	5		**10**		**20**		**30**		**40**	
Fraction	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
F1	5.7	1.8	5.2	0.2	6.7	0.7	9.5	2.4	19.9	2.5
F2	1.5	0.6	1.3	0.1	1.6	0.1	5.8	2.6	6.7	1.2
F3	1.7	0.2	1.9	0.3	1.3	0.0	2.8	1.3	3.6	1.1
F4	3.4	0.2	4.1	0.2	3.3	0.2	2.4	0.1	2.9	0.4
F5	6.6	0.4	6.8	0.2	6.3	0.1	5.8	0.6	5.0	0.1
F6	13.4	2.3	12.2	2.7	9.6	0.7	9.9	0.5	8.1	0.1
F7	19.7	0.6	19.2	1.8	19.4	1.0	19.5	0.9	13.6	2.7
F8	21.3	0.3	23.9	1.0	23.8	0.4	24.5	2.0	22.2	1.3
F9	26.7	4.4	25.4	2.9	28.1	1.6	19.8	7.6	18.0	5.3

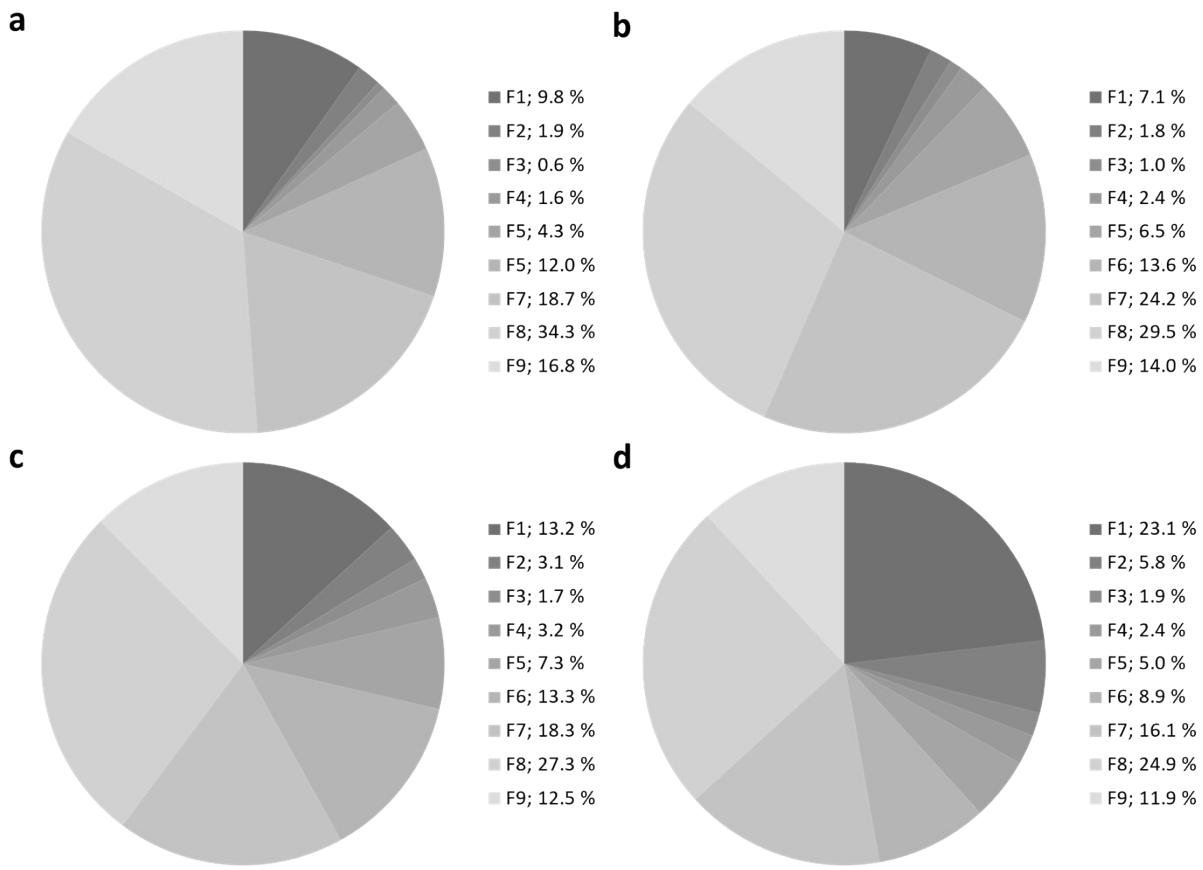

Figure S2: Count rate percentages of all fractions after separation using a sucrose gradient in dependence on the lipid concentration c_L**.** Representation of the count rate percentages at (a) 2.5 mM, (b) 5 mM, (c) 10 mM and (d) 15 mM.

Table S2: Summary of the particle size (Z-Average), polydispersity index (PdI), derived count rate (DCR) and the count rate percentage of fractions after separation using a sucrose gradient for the variation of lipid concentration. The values are given as mean ± SD, n = 3.

	Z-Average [nm]		PdI		DCR [kcps]	
Lipid concentration [mM]	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
2.5	142.1	2.5	0.277	0.028	1726.9	72.2
5	124.1	4.5	0.247	0.008	3783.4	108.7
7.5	138.9	4.5	0.280	0.026	6492.7	229.1
15	142.4	1.3	0.271	0.003	7106.9	528.3

	Count rate percentage [%]							
	2.5		**5**		**7.5**		**15**	
Fraction	**Mean**	**Sd**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
F1	9.8	2.3	7.1	0.7	13.2	0.8	23.1	1.3
F2	1.9	0.2	1.8	0.2	3.1	0.8	5.8	1.2
F3	0.6	0.1	1.0	0.1	1.7	0.3	1.9	0.2
F4	1.6	0.2	2.4	0.2	3.2	0.7	2.4	0.2
F5	4.3	0.0	6.5	0.5	7.3	2.3	5.0	0.2
F6	12.0	0.4	13.6	3.2	13.3	0.7	8.9	1.8
F7	18.7	1.2	24.2	1.6	18.3	0.2	16.1	1.0
F8	34.4	5.7	29.5	1.8	27.3	3.6	24.9	1.4
F9	16.8	2.8	14.0	6.4	12.5	0.7	11.9	5.4

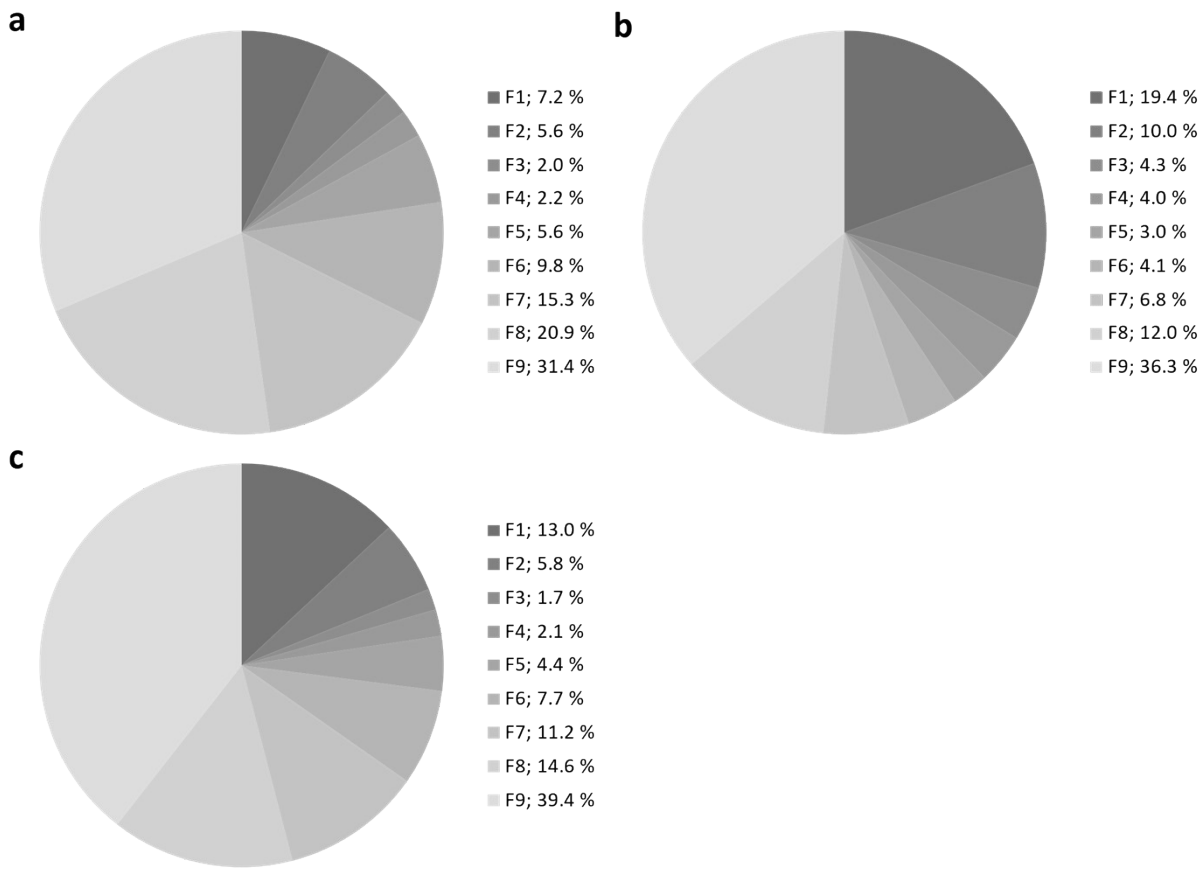

Figure S3: Count rate percentages of all fractions after separation using a sucrose gradient dependent on the phospholipid chain length**.** Representation of the count rate percentages of (a) DMPC, (b) DPPC and (c) DSPC.

Table S3: Summary of the particle size (Z-Average), polydispersity index (PdI), derived count rate (DCR) and the count rate percentage of fractions after separation using a sucrose gradient for the variation of the phospholipid fatty acid chain length. The values are given as mean ± SD, n = 3.

	Z-Average [nm]		PdI		DCR [kcps]	
PL chain length	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
DMPC	367.1	42.4	0.745	0.163	2261.9	589.6
DPPC	282.6	34.2	0.660	0.188	3083.4	162.9
DSPC	508.1	57.6	0.405	0.253	1749.2	211.5

	DCR [%]					
	DMPC		**DPPC**		**DSPC**	
Fraction	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
F1	7.2	1.6	19.4	2.9	13.0	3.4
F2	5.6	1.2	10.0	2.6	5.8	1.3
F3	2.0	0.2	4.3	3.5	1.7	0.6
F4	2.2	0.3	4.0	3.7	2.1	0.3
F5	5.6	1.1	3.0	1.3	4.4	1.4
F6	9.8	2.0	4.1	1.1	7.7	0.4
F7	15.3	3.8	6.8	2.2	11.2	1.4
F8	20.9	2.3	12.0	4.0	14.6	2.3
F9	31.4	3.4	36.3	18.1	39.4	8.4

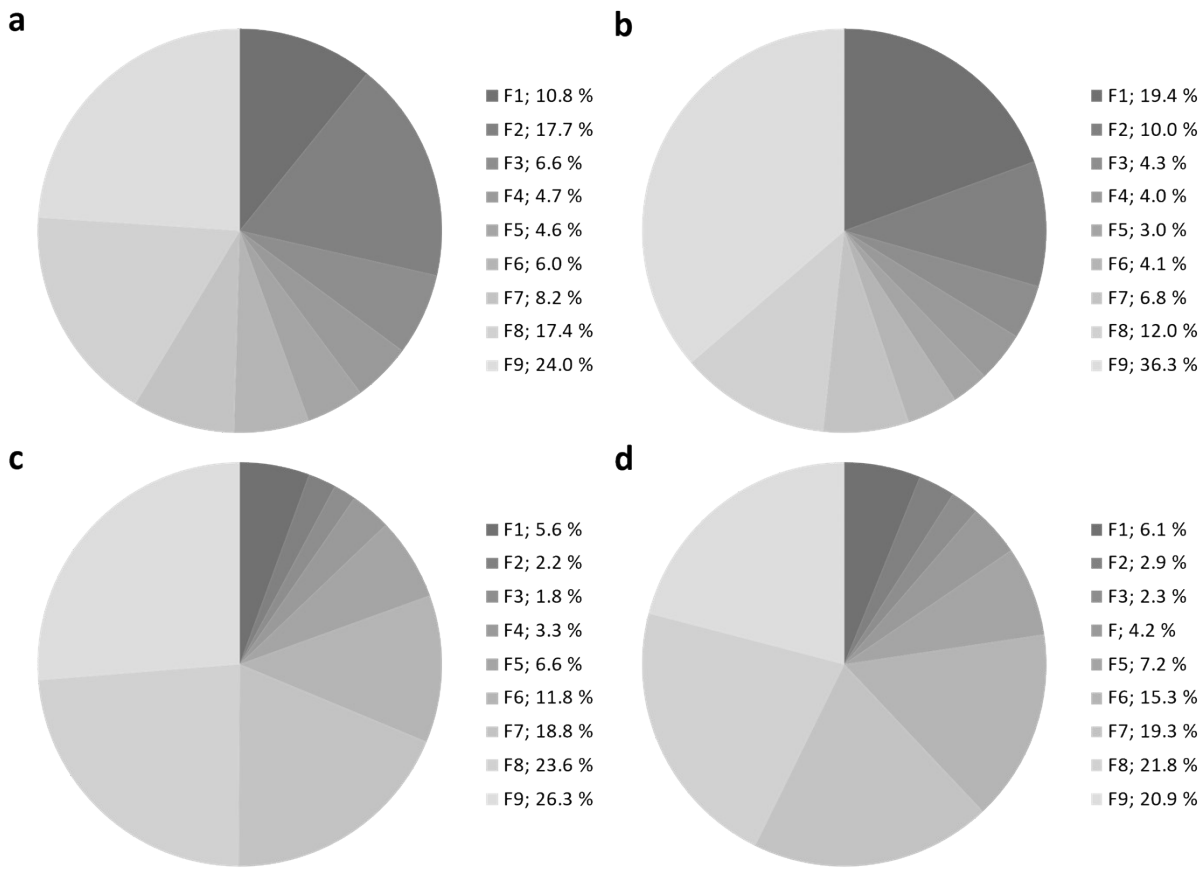

Figure S4: Count rate percentages of all fractions after separation using a sucrose gradient dependent on the phospholipid head group**.** Representation of the count rate percentages of (a) DPPE, (b) DPPC, (c) DPPG and (d) DPPA.

Table S4: Summary of the particle size (Z-Average), polydispersity index (PdI), derived count rate (DCR) and the count rate percentage of fractions after separation using a sucrose gradient for the variation of the phospholipid head group. The values are given as mean ± SD, n = 3.

	Z-Average [nm]		PdI		DCR [kcps]	
PL head group	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
DPPE	717.8	78.5	0.918	0.062	1622.9	162.3
DPPC	282.6	34.2	0.791	0.034	3083.4	162.9
DPPG	165.4	15.2	0.255	0.016	4048.3	846.1
DPPA	125.2	2.4	0.247	0.014	5944.8	201.1

	Count rate percentage [%]							
	DPPE		**DPPC**		**DPPG**		**DPPA**	
Fraction	**Mean**	**Sd**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
F1	10.8	4.9	19.4	2.9	5.6	2.0	6.1	0.8
F2	17.7	2.3	10.0	2.6	2.2	0.8	2.9	0.7
F3	6.6	0.6	4.3	3.5	1.8	0.2	2.3	0.1
F4	4.7	1.0	4.0	3.7	3.3	0.5	4.2	0.2
F5	4.6	0.8	3.0	1.3	6.6	0.6	7.2	0.3
F6	6.0	0.1	4.1	1.1	11.8	3.1	15.3	1.0
F7	8.2	0.7	6.8	2.2	18.8	1.5	19.3	1.2
F8	17.4	2.7	12.0	4.0	23.6	1.3	21.8	1.2
F9	24.0	0.8	36.3	18.1	26.3	2.4	20.9	2.1

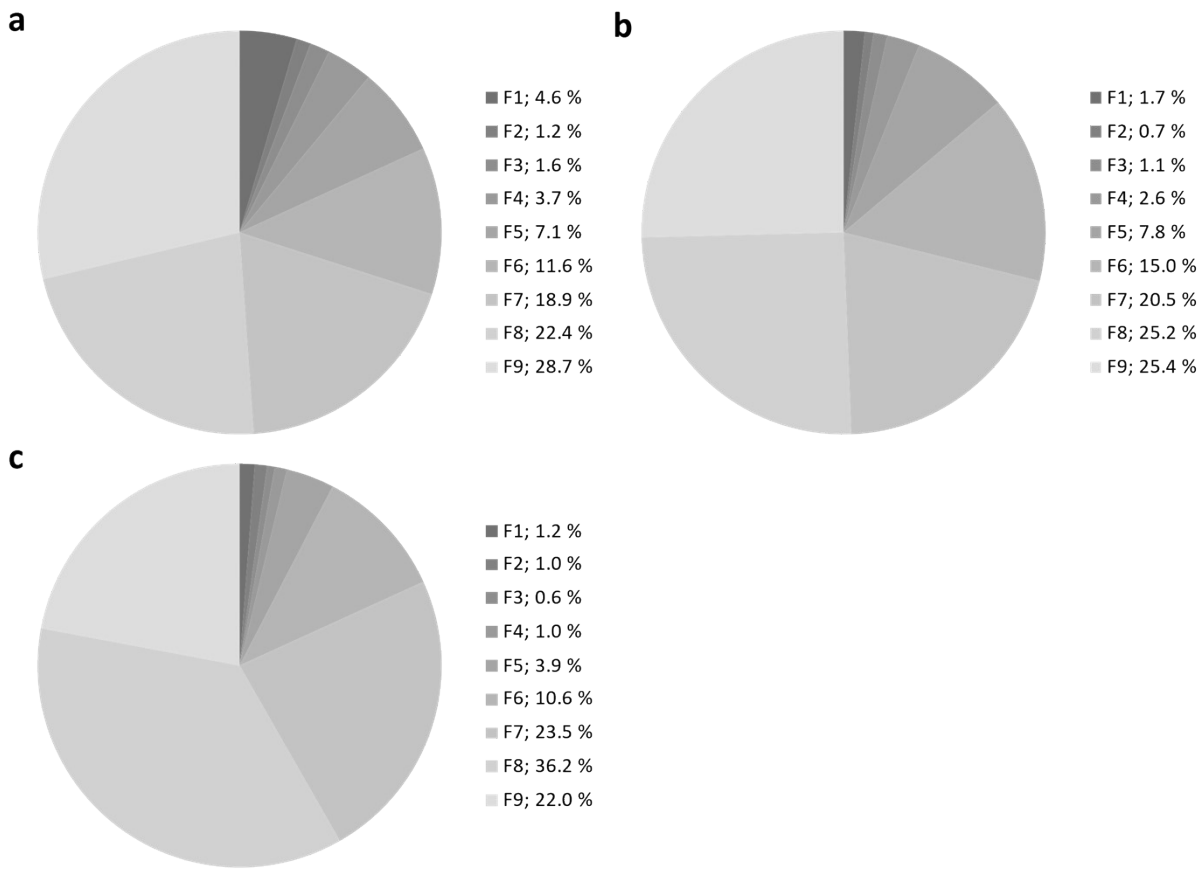

Figure S5: Count rate percentages of all fractions after separation using a sucrose gradient dependent on the volume of the dispersed phase V_D**.** Representation of the count rate percentages of (a) 2.5 % (v/v), (b) 5 % (v/v) and (c) 10% (v/v).

Table S5: Summary of the particle size (Z-Average), polydispersity index (PdI), derived count rate (DCR) and the count rate percentage of fractions after separation using a sucrose gradient for the variation of dispersed phase volume. The values are given as mean ± SD, n = 3.

c	Z-Average [nm]		PdI		DCR [kcps]	
PFC [% (v/v)	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
2.5	122.0	1.9	0.305	0.018	3415.4	397.8
5	145.0	17.9	0.292	0.017	3633.3	576.1
10	207.2	5.0	0.283	0.024	3282.4	388.5

	Count rate percentage [%]					
	2.5		**5**		**10**	
Fraction	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
F1	4.6	0.9	1.7	0.4	1.2	0.4
F2	1.2	0.2	0.7	0.2	1.0	0.3
F3	1.6	0.1	1.1	0.3	0.6	0.1
F4	3.7	0.5	2.6	0.4	1.0	0.1
F5	7.1	0.7	7.8	2.1	3.9	0.3
F6	11.8	1.6	15.0	1.4	10.6	1.5
F7	18.9	0.8	20.5	1.2	23.5	3.0
F8	22.4	1.7	25.2	1.7	36.2	4.9
F9	28.7	3.4	25.4	1.4	22.0	8.2

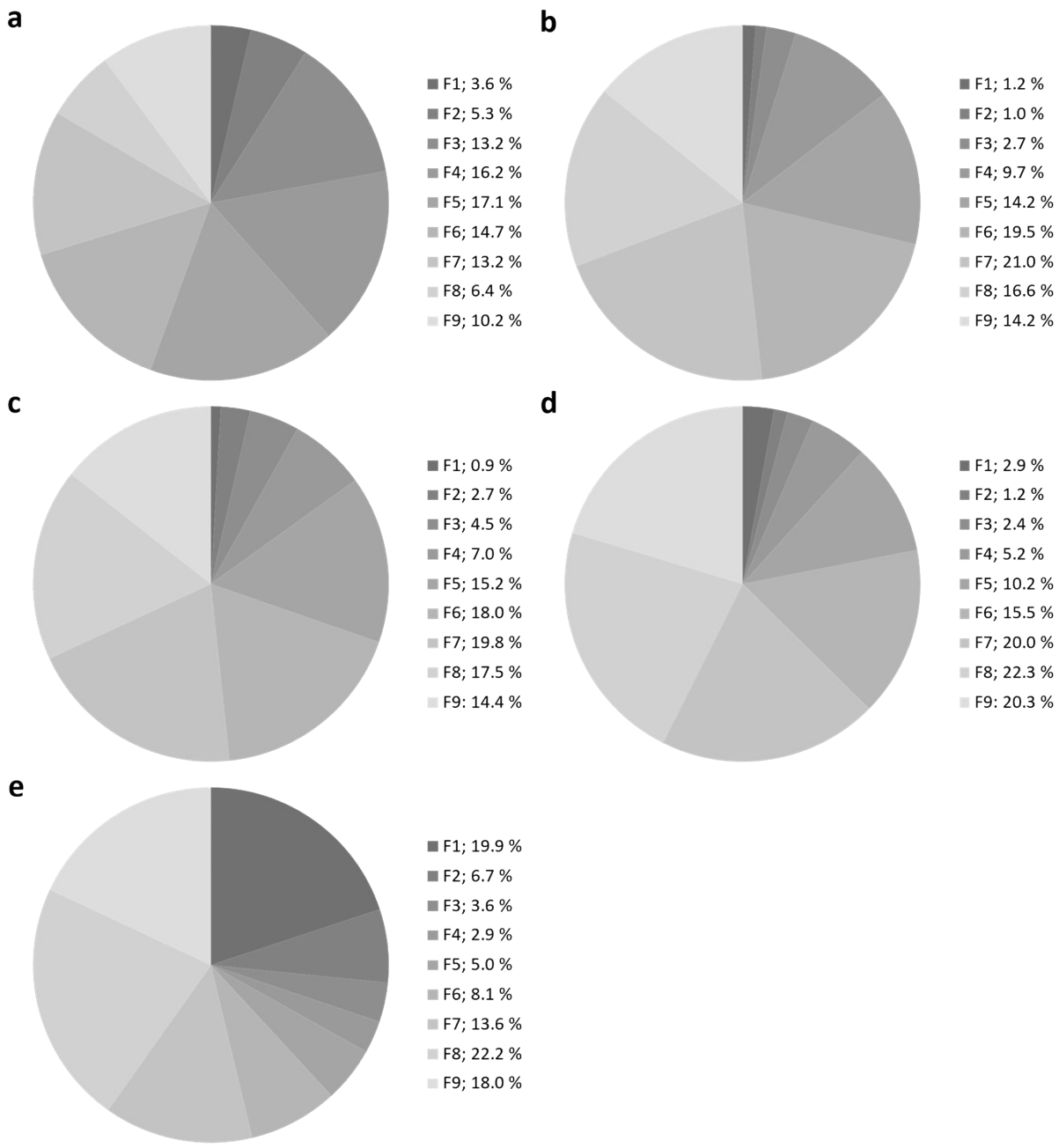

Figure S6: Count rate percentages of all fractions after separation using a sucrose gradient idependent on the viscosity of the dispersed phase by variation of the PFC. Representation of the count rate percentages of (a) Perfluoroheptan (0.9 mPa·s), (b) Perfluoro-1,3-dimethylcyclohexane (1.9 mPa·s), (c) Perfluorooctoylbromid (2.3 mPa·s), (d) Perfluorodecalin (5.1 mPa·s) and (e) Perfluoroperhydro-phenanthrene (28.4 mPa·s).

Table S6: Summary of the particle size (Z-Average), polydispersity index (PdI), derived count rate (DCR) and the count rate percentage of fractions after separation using a sucrose gradient for the variation of the perfluorocarbon (PFC) species. The values are given as mean ± SD, n = 3.

	Z-Average [nm]		**PdI**		**DCR [kcps]**	
PFC species	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Perfluoroheptan	146.0	4.8	0.189	0.012	16882.9	1798.3
Perfluoro-1,3-dimethylcyclohexan	179.4	11.9	0.146	0.016	16898.7	121.1
Perfluorooctoylbromid	154.1	0.2	0.180	0.007	5675.1	1066.0
Perfluorodecalin	178.8	8.9	0.233	0.006	10402.2	1419.1
Perfluoroperhydrophenanthrene	258.6	21.3	0.470	0.069	3616.5	331.0

	Count rate percentage [%]									
	Perfluoroheptan		Perfluoro-1,3-dimethylcyclohexan		Perfluoro-octoylbromid		Perfluorodecalin		Perfluoroperhydro-phenanthrene	
Fraction	**Mean**	**Mean**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
F1	3.6	1.2	1.2	0.0	0.9	0.0	2.9	0.2	19.9	2.5
F2	5.3	1.0	1.0	0.0	2.7	0.5	1.2	0.0	6.7	1.2
F3	13.2	2.7	2.7	0.2	4.5	0.2	2.4	0.1	3.6	1.1
F4	16.3	9.7	9.7	1.9	7.0	0.2	5.2	1.1	2.9	0.4
F5	17.1	14.2	14.2	0.3	15.2	0.1	10.2	0.2	5.0	0.1
F6	14.7	19.5	19.5	0.1	18.0	0.7	15.5	0.4	8.1	0.1
F7	13.2	21.0	21.0	0.3	19.8	0.5	20.0	1.0	13.6	2.7
F8	6.4	16.6	16.6	2.1	17.5	0.4	22.3	1.6	22.2	1.3
F9	10.2	14.2	14.2	0.0	14.4	0.3	20.3	0.9	18.0	5.3

Table S7: Calculation of the molecular surface area.

Step	Description	Equation
1	Volume of PFC in each fraction per mL [µL/mL]	$V_{PFC}\,[\mu L] = (1000 \cdot V_D[\%\,(v/v)]\,) \cdot (\frac{DCR\%\ F_X}{100})$
2	Conversion to [m³]	$V_{PFC}\,[m^3] = V_{PFC}\,[\mu L] * 10^{-9}$
3	Volume of a PFC droplet in each fraction [nm³]	$V_{droplet}\,[nm^3] = \frac{4}{3} \cdot \pi \cdot r_{F_X}^3$
4	Conversion to [m³]	$V_{droplet}\,[m^3] = V_{droplet}\,[nm^3] \cdot 10^{-27}$
5	Surface area of a PFC droplet in each fraction [nm²]	$A_{droplet}\,[nm^2] = 4 \cdot \pi \cdot r_{F_X}^2$
6	Conversion to [m²]	$A_{droplet}\,[m^2] = A_{droplet}\,[nm^2] \cdot 10^{-18}$
7	Number of droplets in each fraction per mL [1/mL]	$n_{PFC}[\frac{1}{mL}] = \frac{V_{PFC}\,[m^3]}{V_{droplet}[m^3]}$
8	Surface area per mL of each fraction [nm²/mL]	$A_{PFC}[\frac{nm^2}{mL}] = n_{PFC} \cdot A_{droplet}\,[nm^2]$
9	Conversion to [m²/mL]	$A_{PFC}[\frac{m^2}{mL}] = A_{PFC}\left[\frac{nm^2}{mL}\right] \cdot 10^{-18}$
10	Number of lipid molecules per mL [1/mL]	$n_{PL}[\frac{1}{mL}] = c_{Lipid}\left[\frac{mol}{mL}\right] \cdot N_A \cdot RR_{PL}$
11	Corrected number of lipid molecules per mL	$n_{PLcorr}\left[\frac{1}{mL}\right] = n_{PL}\left[\frac{1}{mL}\right] \cdot (100 - (\sum DCR\%_{F1+F2}) \cdot 2)$
12	Molecular area [m²/molecule]	$A_{molecule}\left[\frac{m^2}{molecule}\right] = \frac{\sum F3to\,F9\ of A_{PFC}[\frac{m^2}{mL}]}{n_{PLcorr}\left[\frac{1}{mL}\right]}$
13	Conversion to [Å²/molecule]	$A_{molecule}\left[\frac{m^2}{molecule}\right] = \frac{A_{molecule}\left[\frac{m^2}{molecule}\right]}{10^{-20}}$

RR = recovery rate of phospholipids

Table S8: Calculation of the effect of the dispersed volume V_D on the emulsion viscosity $\eta_{emul.}$ using different theoretical models:

V_D [% (v/v)]	$\eta_{emul.}/\eta_C$		
	Einstein	**Guyon**	**Krieger and Dougherty**
2.5	1.0625	1.0658	1.0659
5	1.125	1.138	1.1394
10	1.25	1.302	1.3145

Whereas:

Einstein (1905): $\eta_{emul.}/\eta_C = \left(1 + 2.5\, V_D\right)$

Guyon (1991): $\eta_{emul.}/\eta_C = \left(1 + 2.5\, V_D + 5.2 V_D^2\right)$

Krieger & Dougherty (1959) $\eta_{emul.}/\eta_C = \left(1 - 5V_D/3\right)^{-1.5}$