

## Supplemental Information

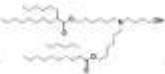


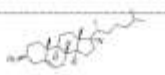


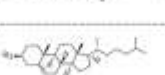
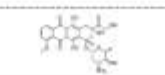
### **Insights into the structure of Comirnaty® Covid-19 vaccine: A theory on soft, partially bilayer-covered nanoparticles with hydrogen bond- stabilized mRNA-lipid complexes**

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**Table S1.** Composition and other characteristics of Comirnaty and Doxil

Nano-formulation	Component	Molecular formula	MW (gr/mol)	Structure	Packing parameter <sup>a</sup>	Concentration (mg/ml)	Concentration (mM)	Mole%	Total lipids (mg/ml)
Comirnaty® (Pfizer-BioNTech BNT162h2 mRNA-LNP vaccine)	Cationic lipid (ALC-0315)	$C_{29}H_{59}NO_5$	766.3		>1.0	1.4	1.87	46.1	2.6
	PEGylated lipid (ALC-0159)	$(C_2H_4O)_n C_{21}H_{43}NO_2$	2330		~0.5	0.2	0.07	1.8	
	DSPC	$C_{44}H_{89}NO_6P$	790.1		0.8	0.3	0.38	9.4	
	Cholesterol	$C_{27}H_{46}O$	386.6		1.2	0.7	1.73	42.8	
	mRNA (per nucleotide)		333		NR	0.1	0.30	-	
Doxil®	DSPE-PEG (2000)	$C_{43}H_{89}NO_{11}P$	2700		~0.5	3.2	1.19	5.4	16
	HSPC	$C_{43}H_{89}NO_6P$	788		0.8	9.6	12.18	56.3	
	Cholesterol	$C_{27}H_{46}O$	386		1.2	3.2	8.29	38.3	
	Doxorubicin	$C_{27}H_{29}NO_{11}$	580		NR	2.0	3.45	-	

<sup>a</sup>Estimation based on structure and Garbuzenko et al.<sup>1</sup>

1. Garbuzenko, O.; Zalipsky, S.; Qazen, M.; Barenholz, Y., Electrostatics of PEGylated micelles and liposomes containing charged and neutral lipopolymers. *Langmuir* 2005, 21, 2560-256