

# Mucin thin layers: a model for mucus covered tissues

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**Table S1.** Fit parameters of the mucin layer deposited on the silicon surface. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ .

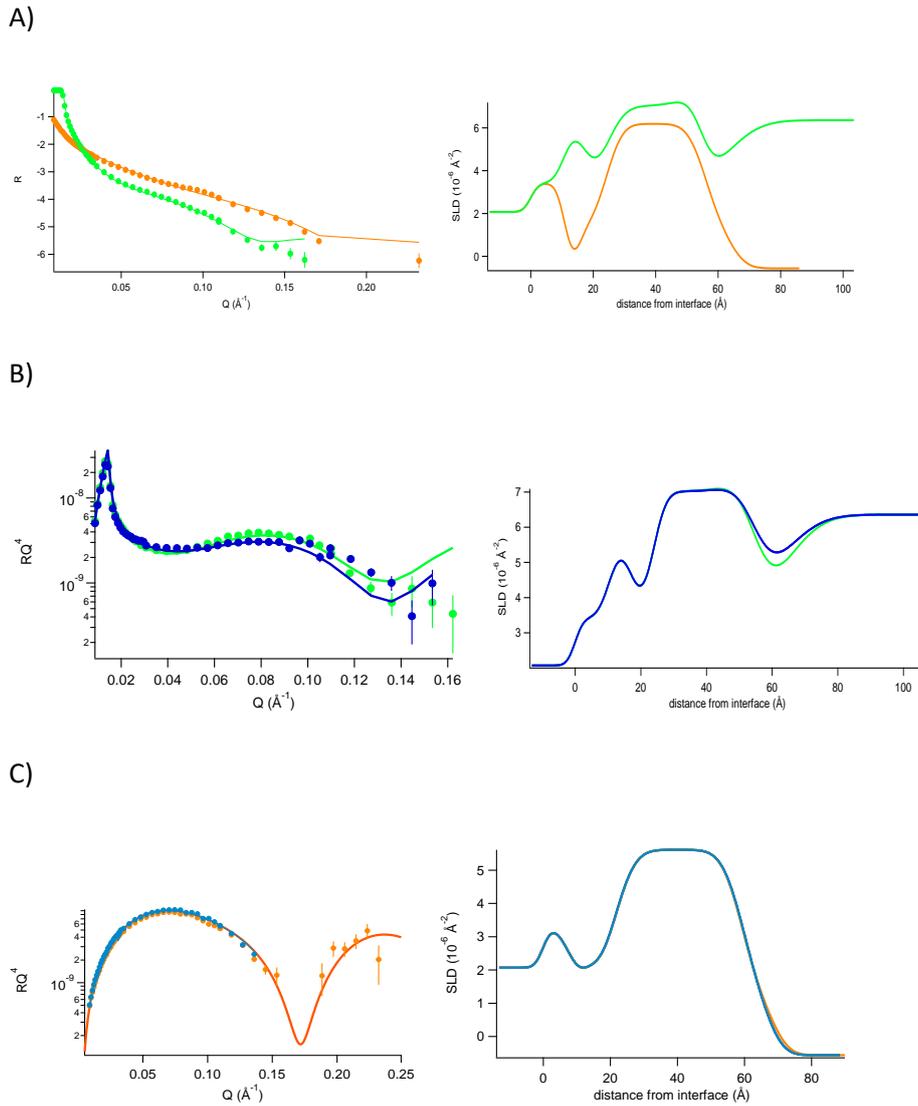
	<b>Thickness</b> ( $\pm 1$ Å)	<b>SLD</b> ( $\pm 0.05 \cdot 10^{-6} \text{Å}^{-2}$ )	<b>Solv p</b> ( $\pm 5\% \text{vol}$ )	<b>Roughness</b> ( $\pm 2 \text{Å}$ )
Mucin	21	2.5 (H <sub>2</sub> O) 5.6 (D <sub>2</sub> O)	40	3

**Table S2.** Fit parameters of the mucin layer deposited on the silicon surface, after the interaction with ARGO7-LD. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ .

	<b>Thickness</b> ( $\pm 1$ Å)	<b>SLD</b> ( $\pm 0.05 \cdot 10^{-6} \text{Å}^{-2}$ )	<b>Solv p</b> ( $\pm 5\% \text{vol}$ )	<b>Roughness</b> ( $\pm 2 \text{Å}$ )
Mucin	21	2.5 (H <sub>2</sub> O) 5.6 (D <sub>2</sub> O)	45	2
ARGO7-LD	70	2	90	5

**Table S3.** Fit parameters of the mucin layer deposited on the silicon surface, after flushing ARGO7-LD. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ .

	<b>Thickness</b> ( $\pm 1$ Å)	<b>SLD</b> ( $\pm 0.05 \cdot 10^{-6} \text{Å}^{-2}$ )	<b>Solv p</b> ( $\pm 5\% \text{vol}$ )	<b>Roughness</b> ( $\pm 2 \text{Å}$ )
Mucin	20	2.5 (H <sub>2</sub> O) 5.6 (D <sub>2</sub> O)	50	2



**Figure S1.** Reflectivity curves (left panel, symbols), relative best fits (left panel, lines) and obtained SLD profiles (right panel) of A) the DPPC membrane investigated in H<sub>2</sub>O NaCl (orange), in D<sub>2</sub>O NaCl (green); B) the DPPC membrane D<sub>2</sub>O NaCl investigated before (green) and after (blue) the interaction with mucin; C) the DPPC membrane H<sub>2</sub>O NaCl investigated before (orange) and after (sky blue) the interaction with mucin.

**Table S4.** Fit parameters of the d<sub>62</sub>DPPC membrane at room temperature. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ . For each parameter, the maximum error found was kept.

	Thickness ( $\pm 1 \text{ \AA}$ )	SLD ( $\pm 0.05 \cdot 10^{-6} \text{ \AA}^{-2}$ )	Solv p ( $\pm 5\% \text{ vol}$ )	Roughness ( $\pm 2 \text{ \AA}$ )
solvent	1			3
Heads in	9	1.75	32	4
Chains in	18	7.66	25	4
Chains out	20	7.66	25	4
Heads out	10	1.75	32	5

**Table S5.** Fit parameters of the  $d_{62}$ DPPC membrane after the interaction with mucin. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ . For each parameter, the maximum error found was kept.

	<b>Thickness (<math>\pm 1</math> Å)</b>	<b>SLD (<math>\pm 0.05 \cdot 10^{-6} \text{Å}^{-2}</math>)</b>	<b>Solv p (<math>\pm 5\% \text{vol}</math>)</b>	<b>Roughness (<math>\pm 2</math> Å)</b>
solvent	1			3
Heads in	9	1.75	32	4
Chains in	18	7.66	25	4
Chains out	20	7.66	25	4
Heads out	8	1.95 (H <sub>2</sub> O) 3 (D <sub>2</sub> O)	32	4

**Table S6.** Fit parameters of the  $d_{62}$ DPPC-GM1 membrane at room temperature. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ . For each parameter, the maximum error found was kept.

	<b>Thickness (<math>\pm 1</math> Å)</b>	<b>SLD (<math>\pm 0.05 \cdot 10^{-6} \text{Å}^{-2}</math>)</b>	<b>Solv p (<math>\pm 5\% \text{vol}</math>)</b>	<b>Roughness (<math>\pm 2</math> Å)</b>
solvent	5			3
Heads in	7	1.75	20	5
Chains in	16	7.11	8	5
Chains out	17	6.54	8	5
Heads out	6	1.78	20	5

**Table S7.** Fit parameters of the  $d_{62}$ DPPC-GM1 membrane after the deposition of mucin on top. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ . For each parameter, the maximum error found was kept.

	<b>Thickness (<math>\pm 1</math> Å)</b>	<b>SLD (<math>\pm 0.05 \cdot 10^{-6} \text{Å}^{-2}</math>)</b>	<b>Solv p (<math>\pm 5\% \text{vol}</math>)</b>	<b>Roughness (<math>\pm 2</math> Å)</b>
solvent	0			3
Heads in	9	1.75	55	4
Chains in	18	7.11	45	5
Chains out	18	6.54	45	5
Heads out	10	1.78	55	5
Mucin	22	2.5 (H <sub>2</sub> O) 5.6 (D <sub>2</sub> O)	63	7

**Table S8.** Fit parameters of the d<sub>62</sub>DPPC-GM1 + mucin model system after interaction with ARGO7-LD. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ . For each parameter, the maximum bar found was kept.

	<b>Thickness</b> ( $\pm 1 \text{ \AA}$ )	<b>SLD</b> ( $\pm 0.05 \cdot 10^{-6} \text{ \AA}^{-2}$ )	<b>Solv p</b> ( $\pm 5\% \text{ vol}$ )	<b>Roughness</b> ( $\pm 2 \text{ \AA}$ )
solvent	0			3
Heads in	9	1.75	55	4
Chains in	18	7.11	45	5
Chains out	18	6.54	45	5
Heads out	10	1.78	55	5
Mucin	40	2.5 (H <sub>2</sub> O) 5.6 (D <sub>2</sub> O)	70	8
ARGO7-LD	50	2	90	8

**Table S9.** Fit parameters of the d<sub>62</sub>DPPC-GM1 + mucin model system after flushing ARGO7-LD. Parameters correspond to a contemporary fit performed on H<sub>2</sub>O and D<sub>2</sub>O solutions with 150mM NaCl. Errors have been estimated by changing the parameters up to a variation of two in the  $\chi^2$ . For each parameter, the maximum bar found was kept.

	<b>Thickness</b> ( $\pm 1 \text{ \AA}$ )	<b>SLD</b> ( $\pm 0.05 \cdot 10^{-6} \text{ \AA}^{-2}$ )	<b>Solv p</b> ( $\pm 5\% \text{ vol}$ )	<b>Roughness</b> ( $\pm 2 \text{ \AA}$ )
solvent	0			3
Heads in	9	1.75	55	4
Chains in	18	7.11	45	5
Chains out	18	6.54	45	5
Heads out	10	1.78	55	5
Mucin	25	2.5 (H <sub>2</sub> O) 5.6 (D <sub>2</sub> O)	80	8