

## **Supplementary materials to “Perilipin 3 interaction with model lipid monolayers”**

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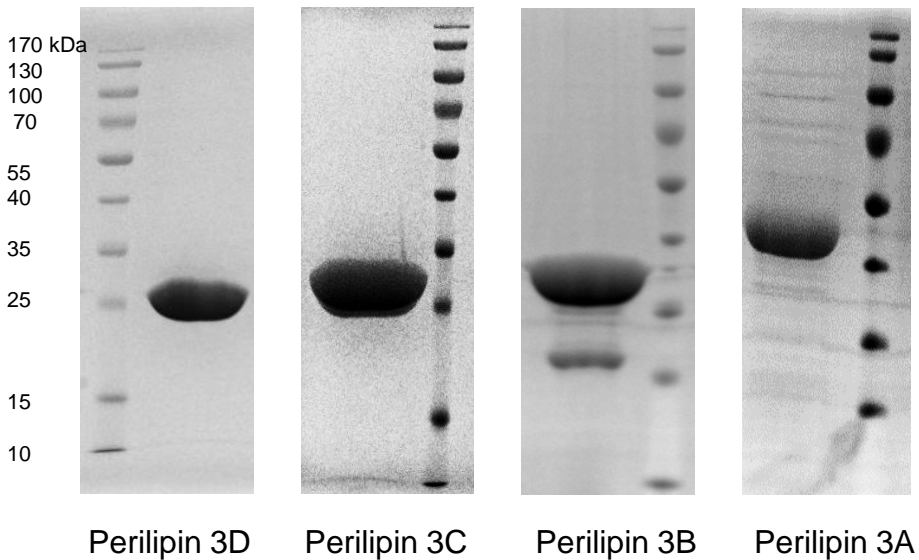
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**Key words: amphipathic alpha-helices; lipid droplets; protein-lipid interaction;**

**\*Contributed equally to this work.**

## Supplementary Figure S1

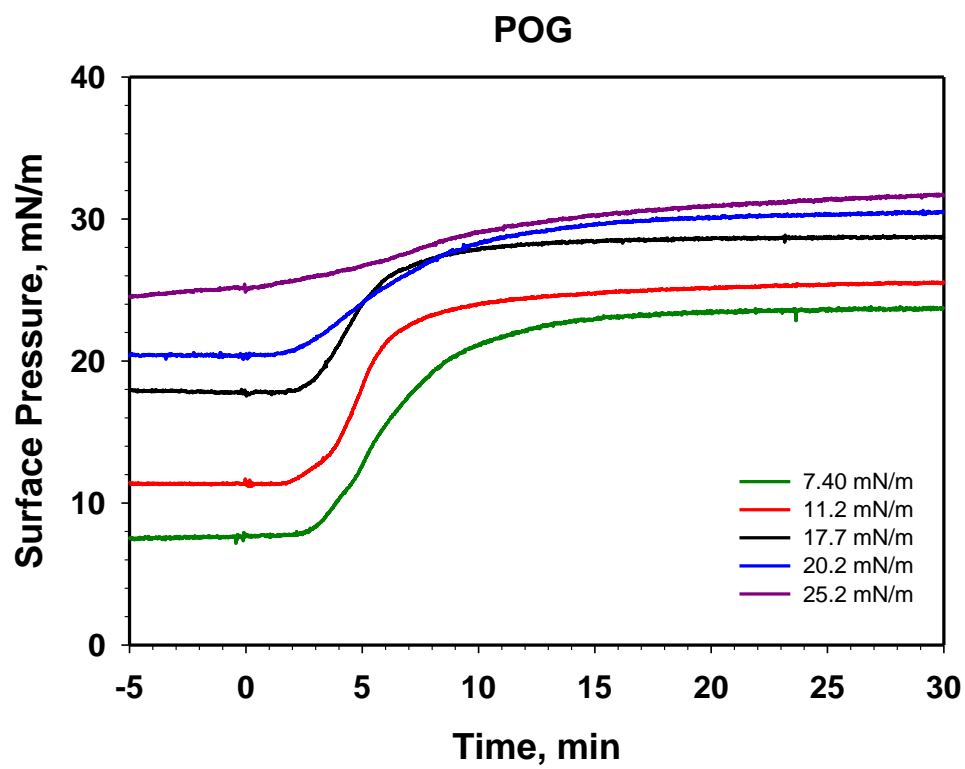


Our monolayer experiments require large quantities of highly pure protein. Figure S1 shows representative results for the expression and purification of the 4 constructs of perlipin 3 used in this work. The amphipathic  $\alpha$ -helix bundle of perlipin 3 (perilipin 3D), and truncation mutant perlipin 3C could be purified to at least 99% purity. Perilipin 3A (full length protein) was at least 95% pure, but perlipin 3B was more difficult to purify and had a final purity of ~85%. Purity estimation is based on gel staining.

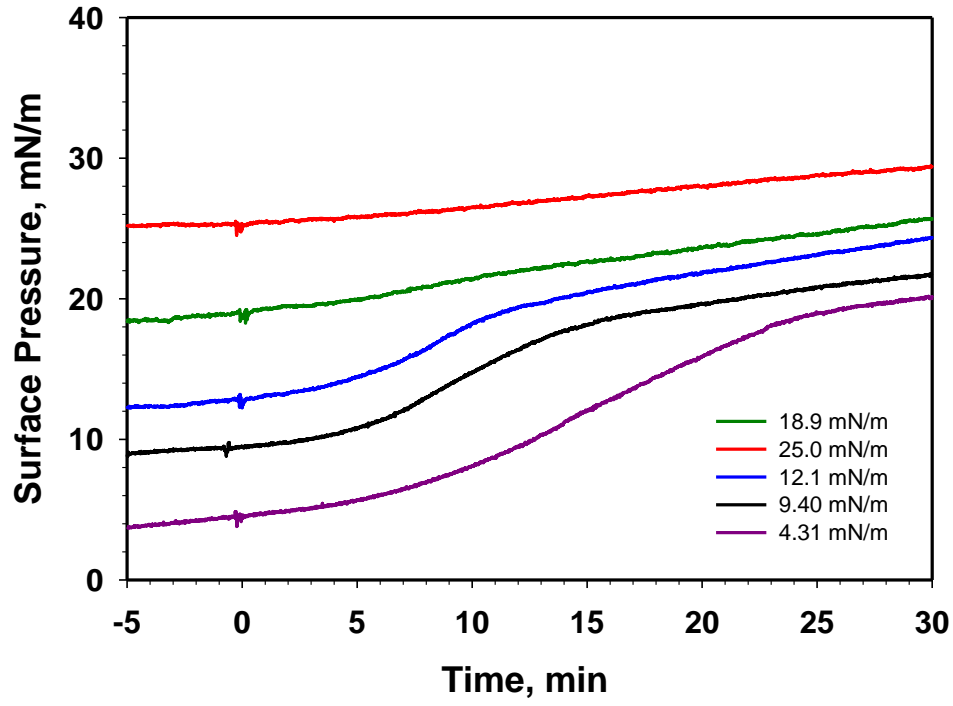
Insertion Kinetics curves for each of the protein constructs are shown separately (Figures S2-S6).

### Supplementary Figure S2

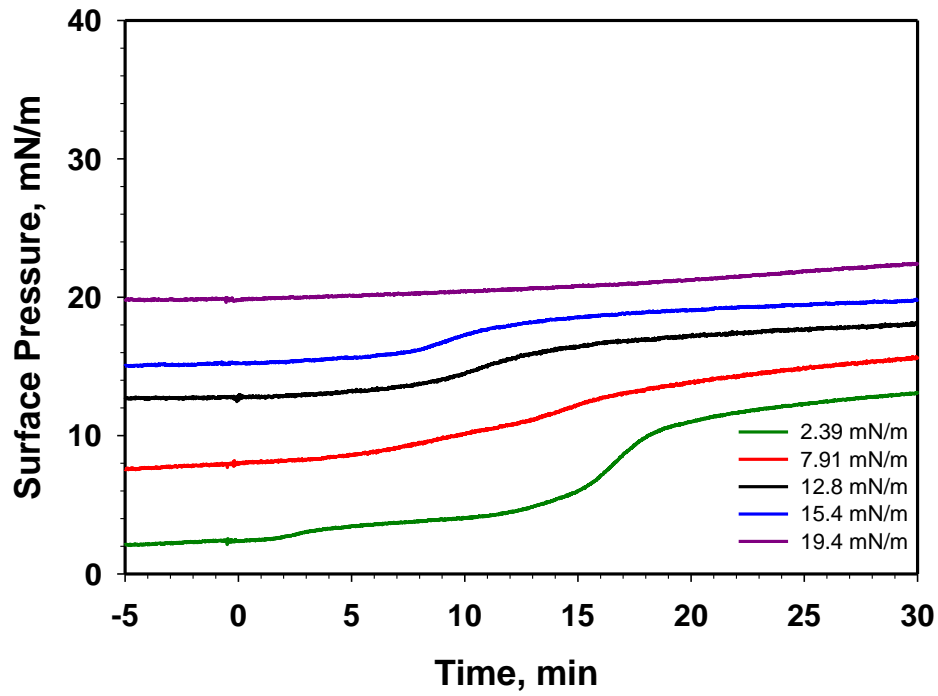
Representative insertion kinetics for perilipin 3D

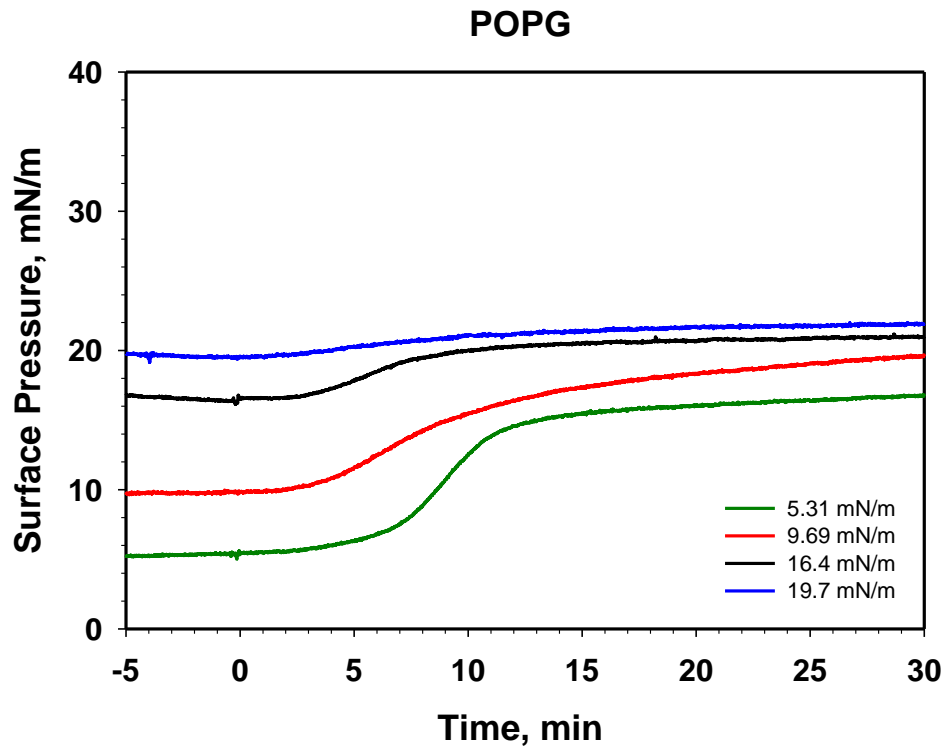
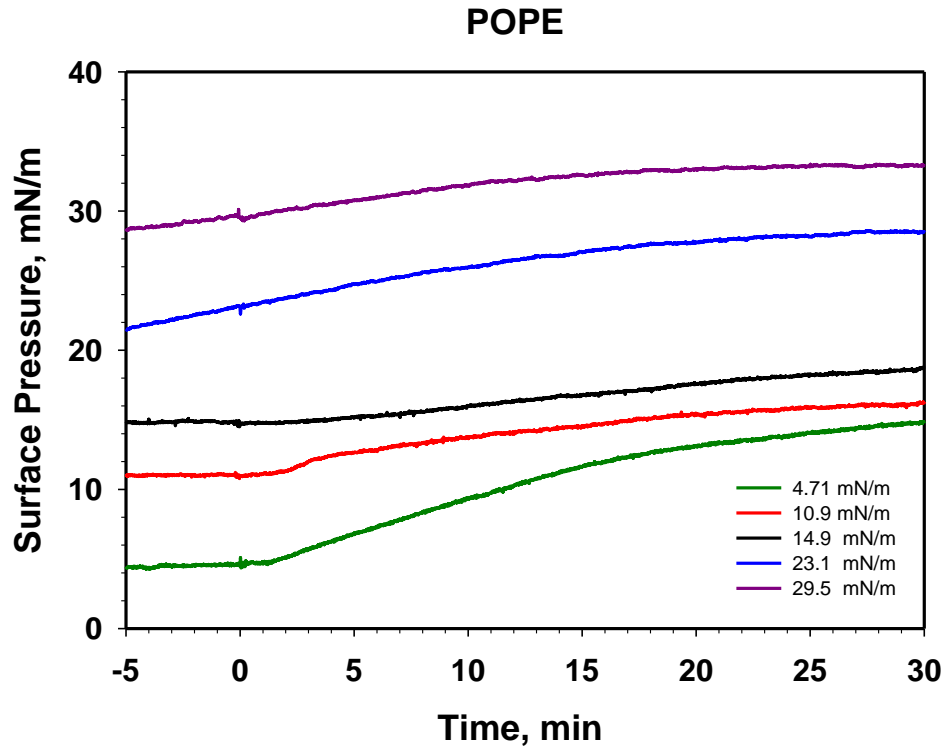


### POPA



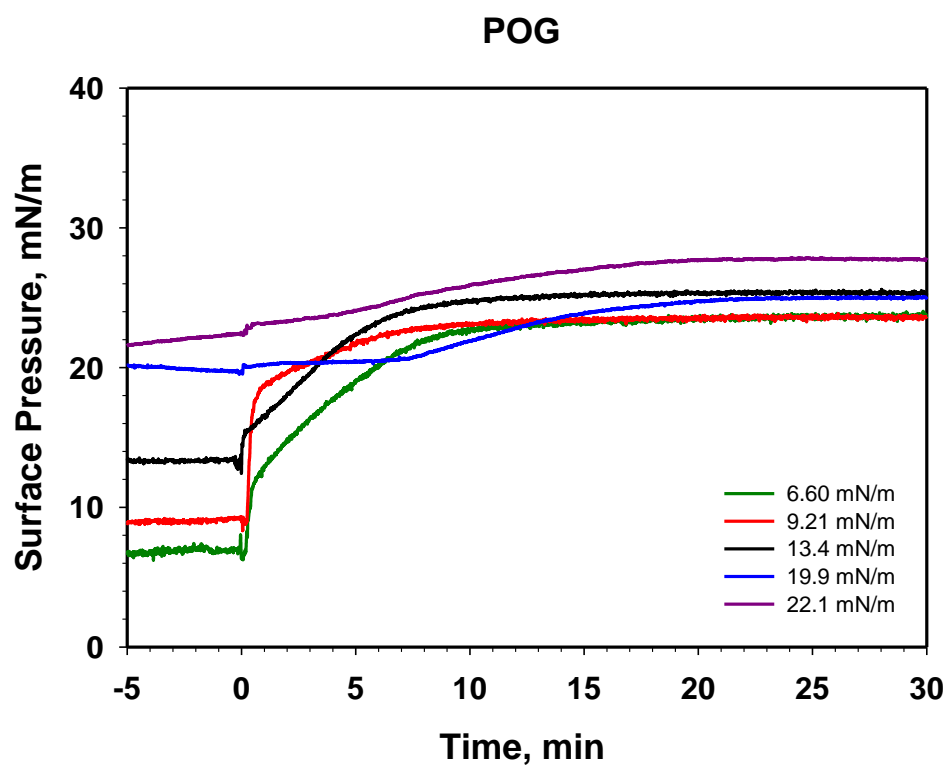
### POPC



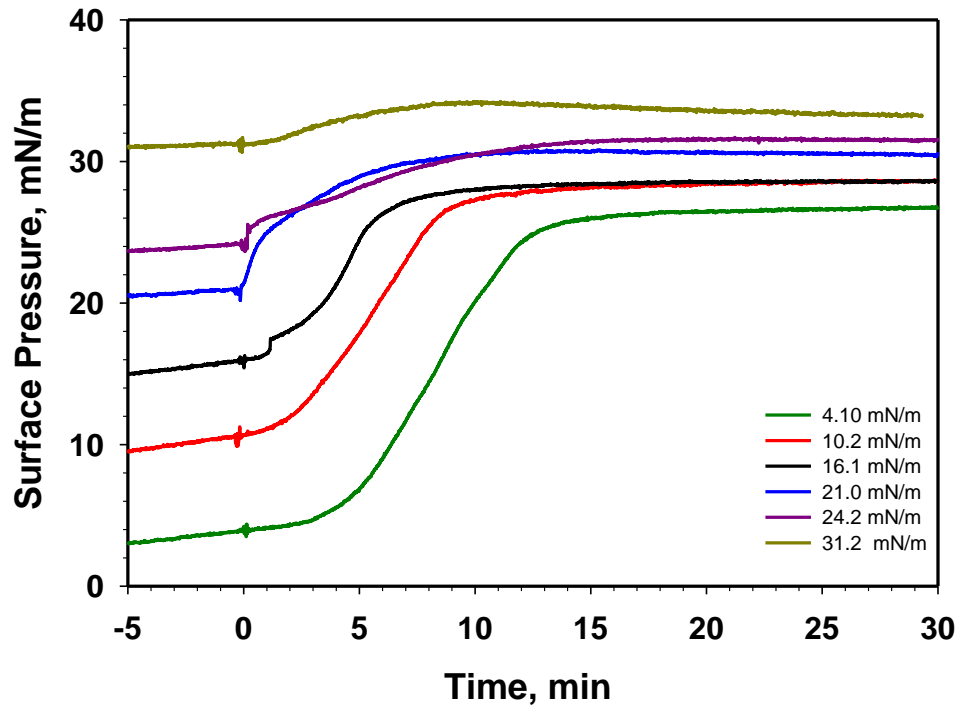


### Supplementary Figure S3

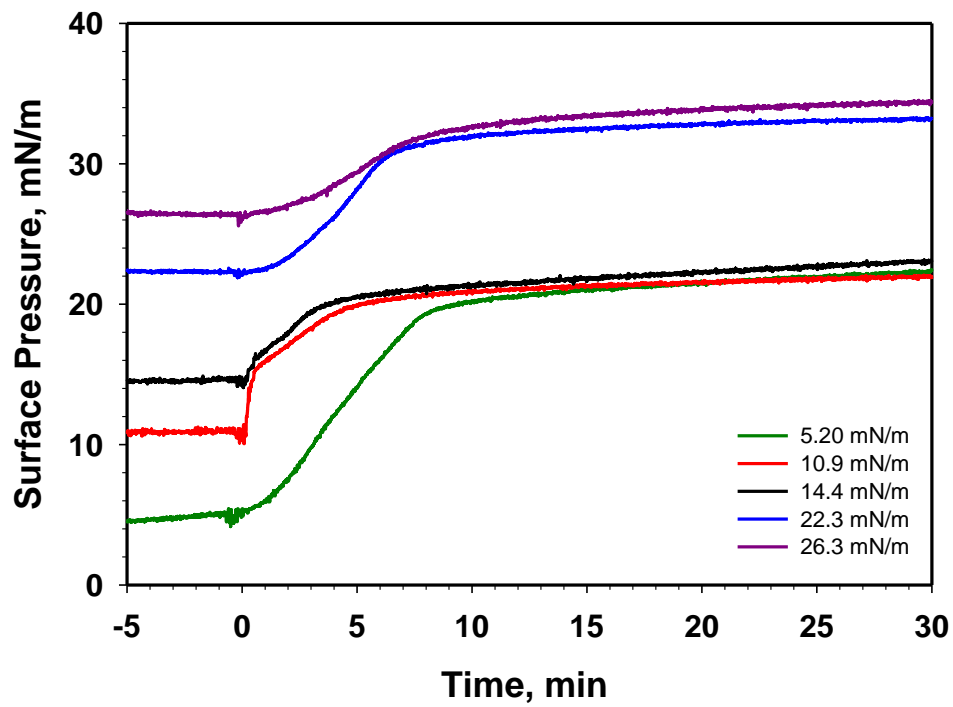
Representative insertion kinetics for perilipin 3C



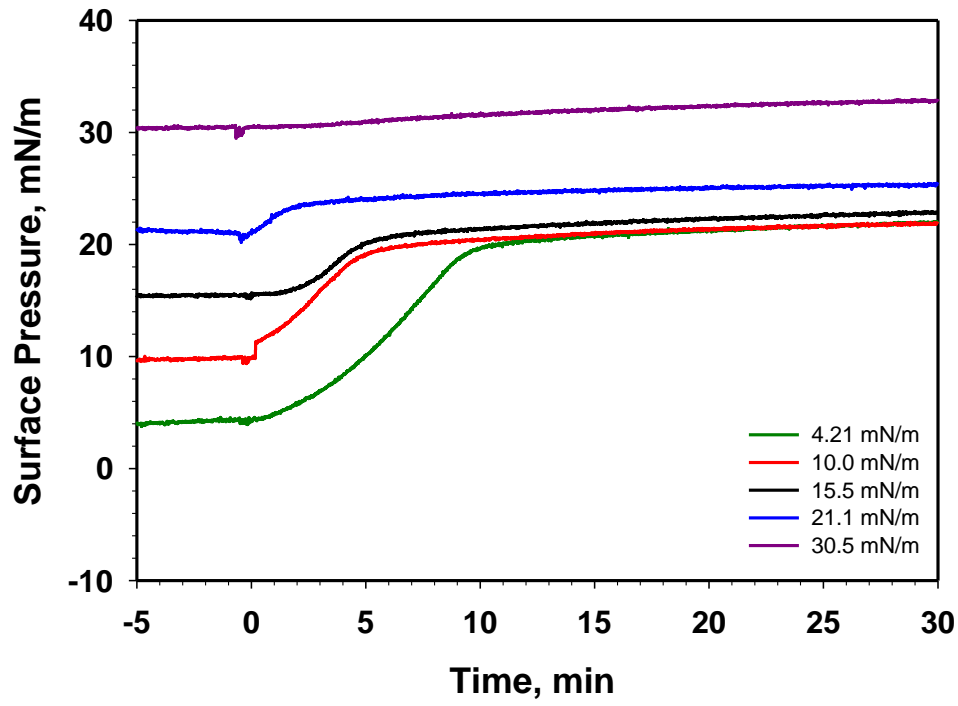
### POPA



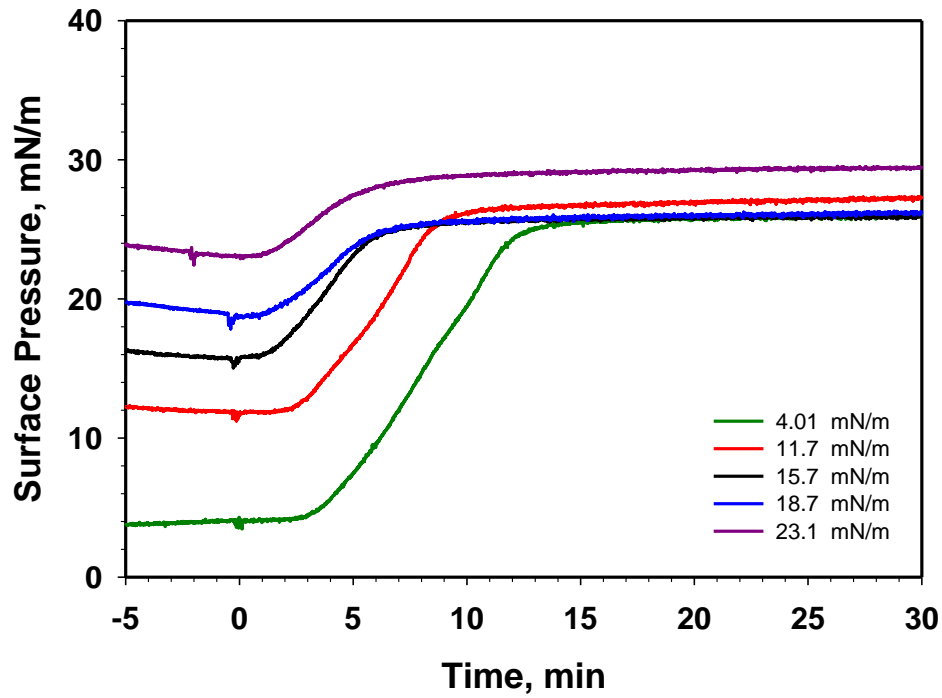
### POPC



### POPE



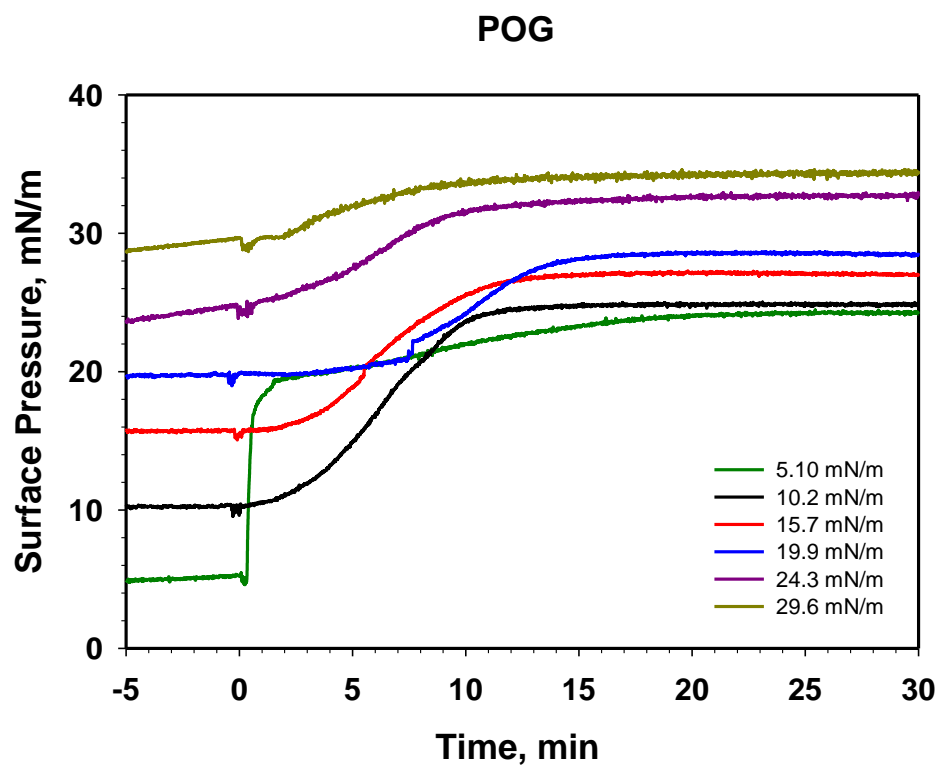
### POPG



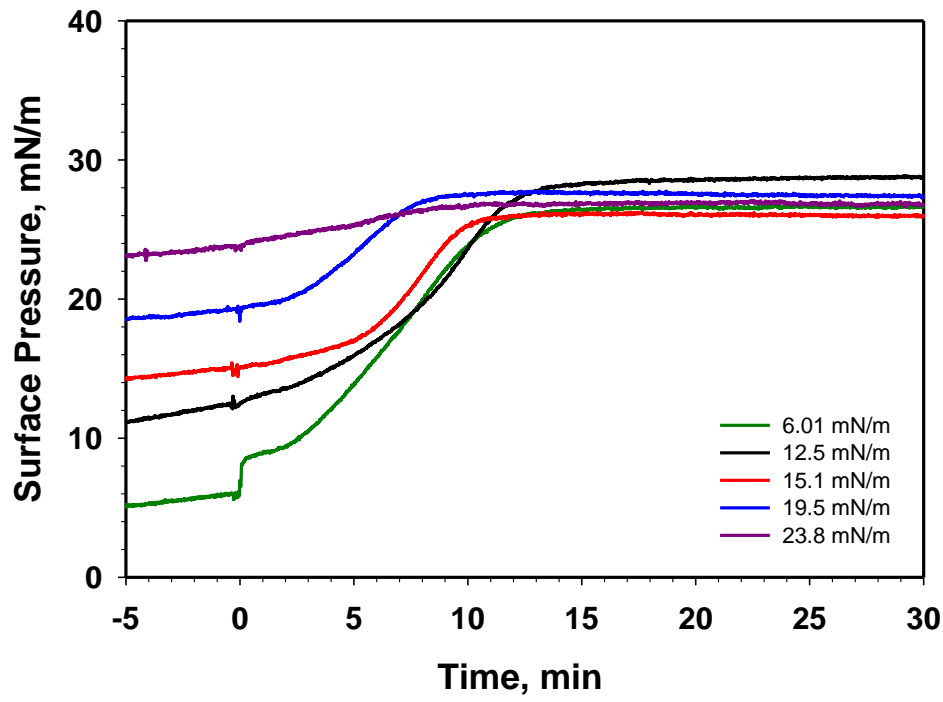


### Supplementary Figure S4

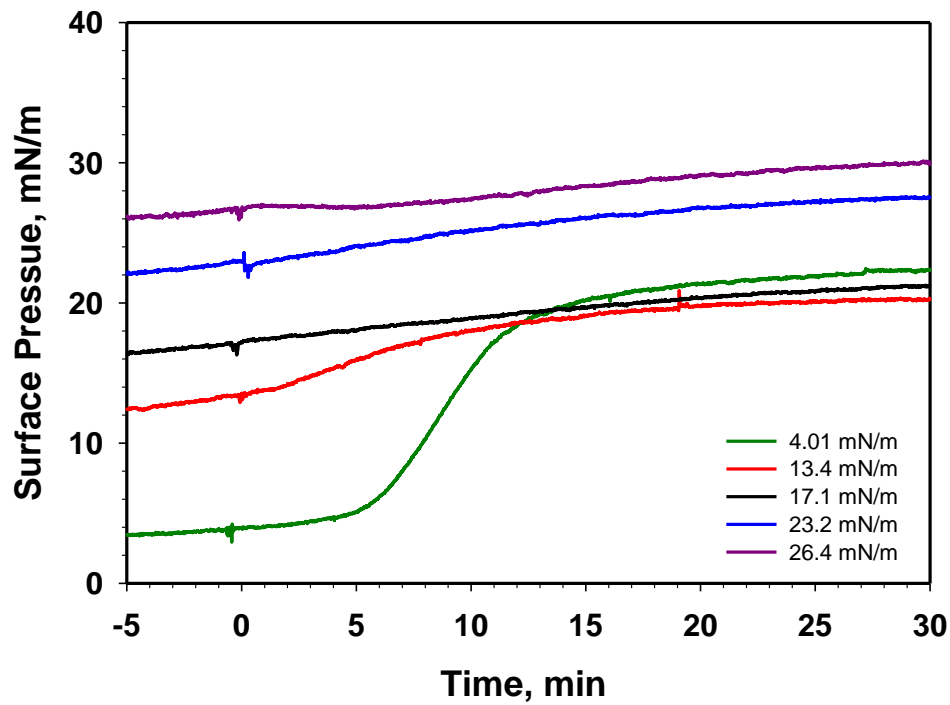
Representative insertion kinetics for perilipin 3B

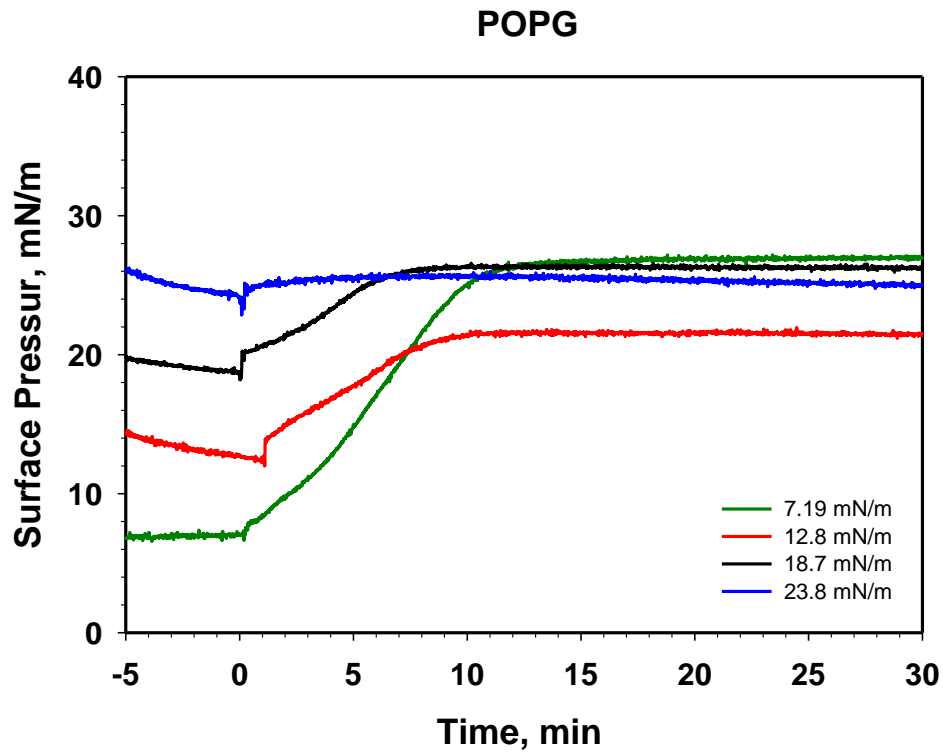
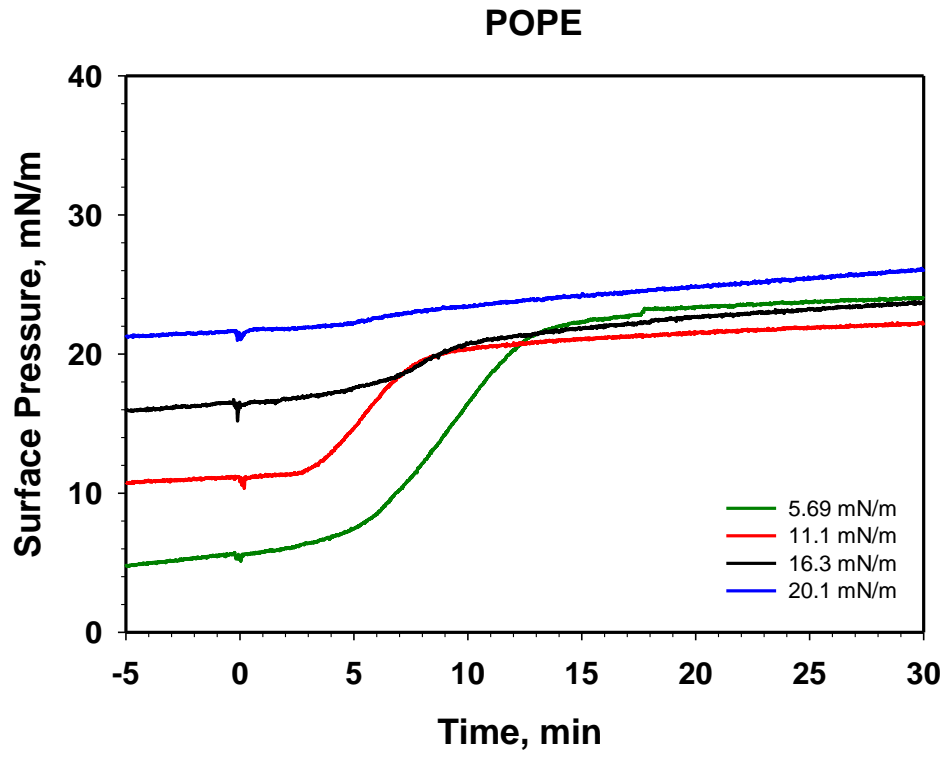


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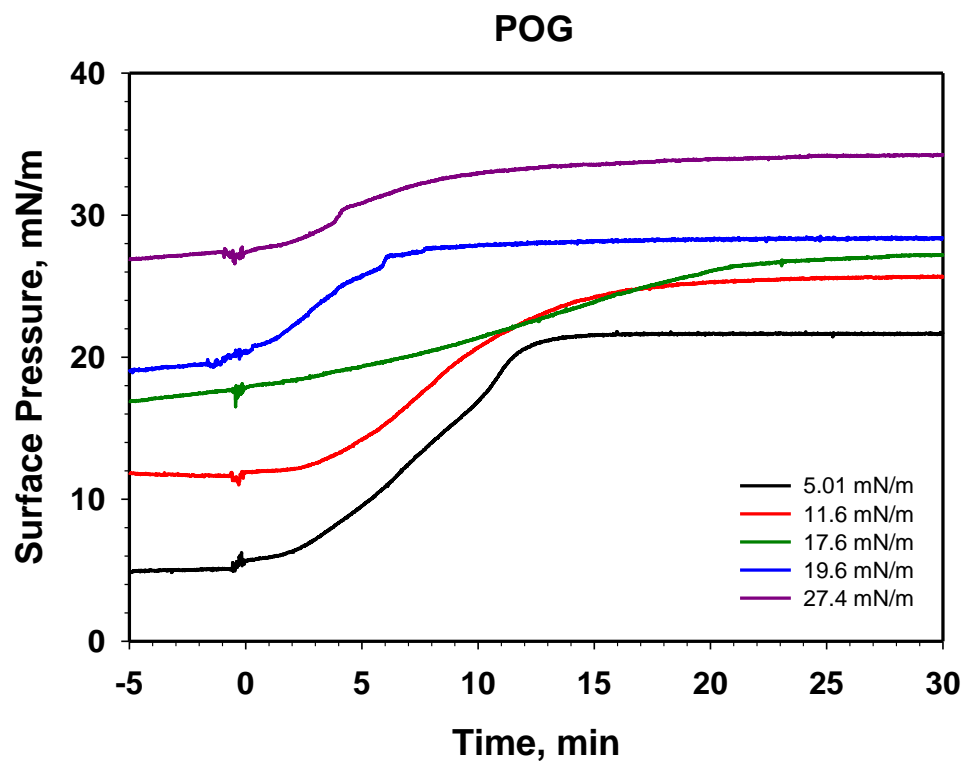
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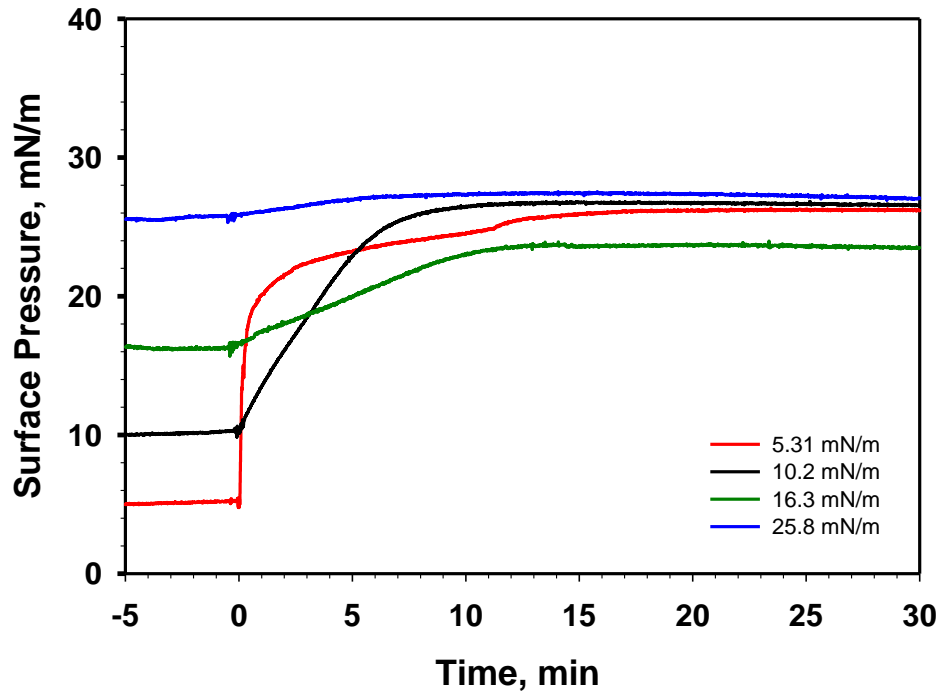


### Supplementary Figure S5

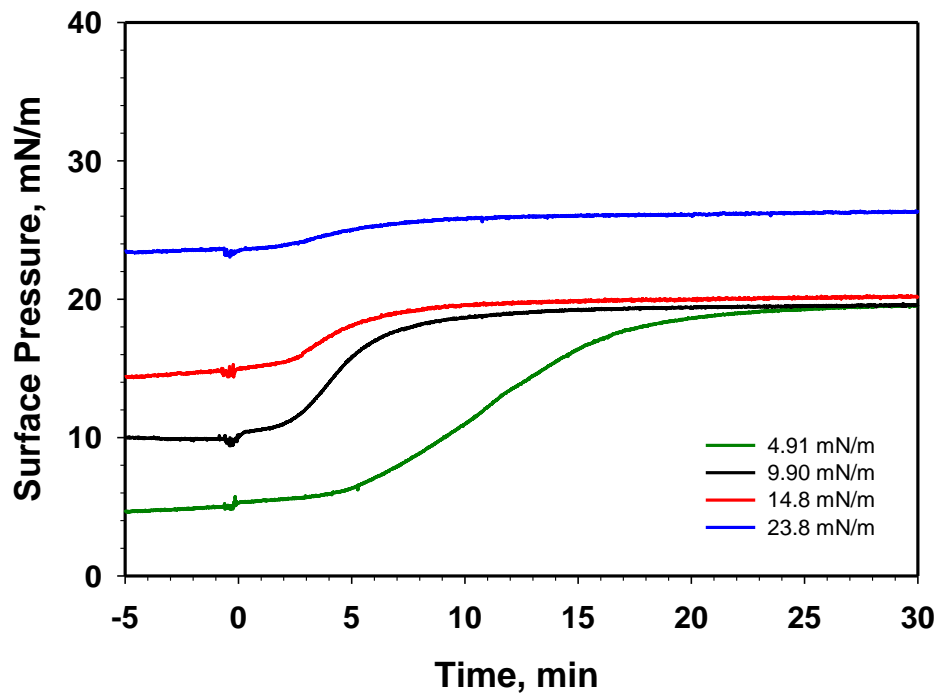
Representative insertion kinetics for perilipin 3A-Full length protein

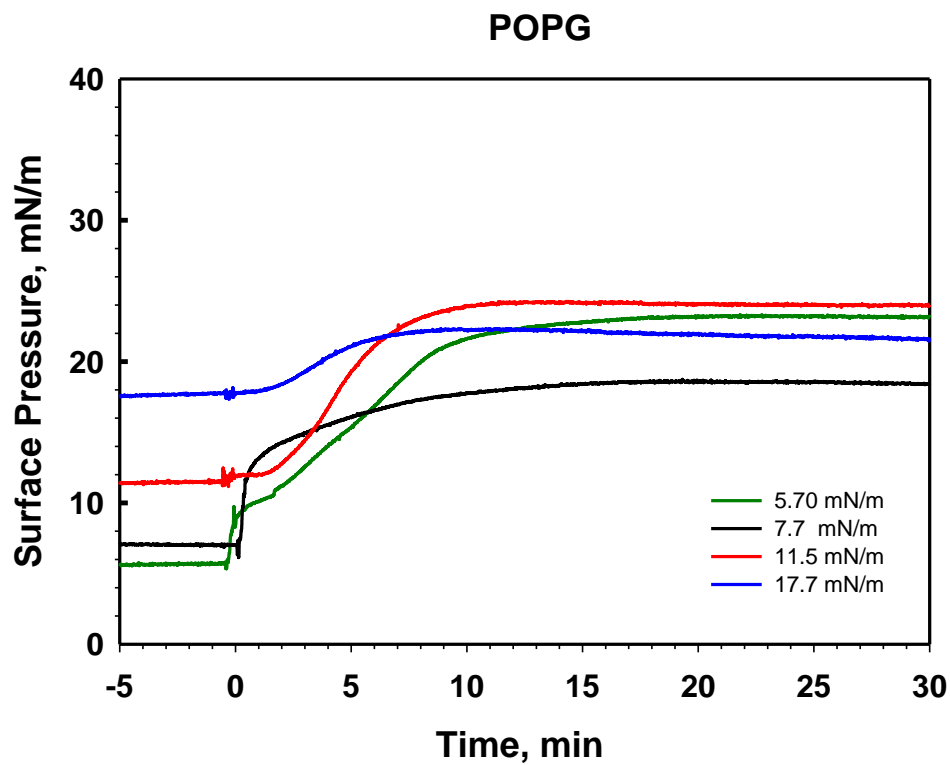
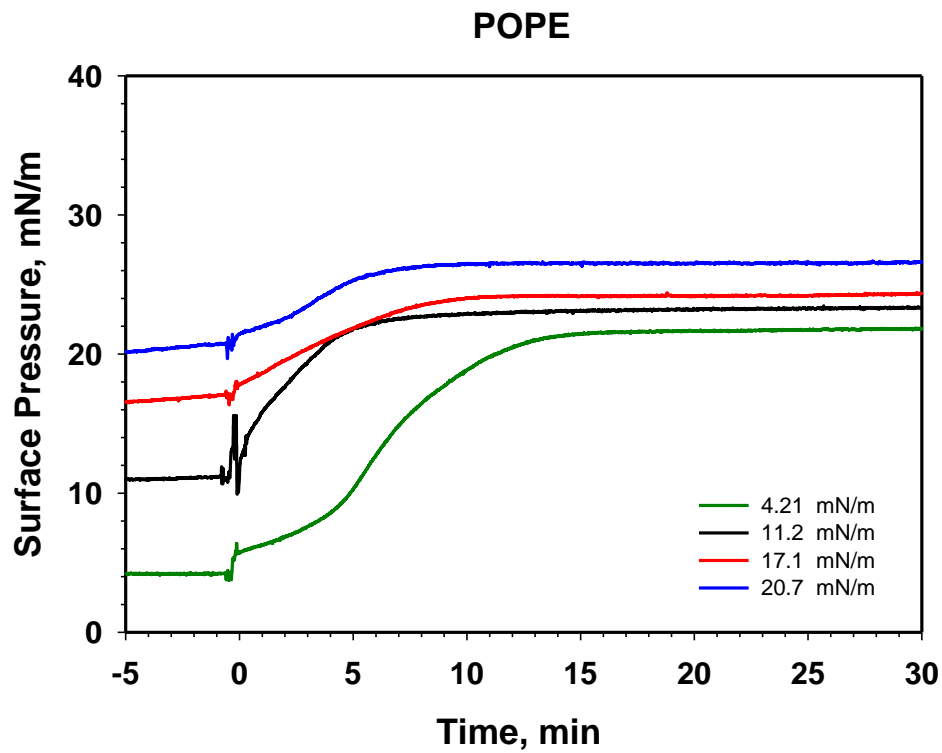


### POPA



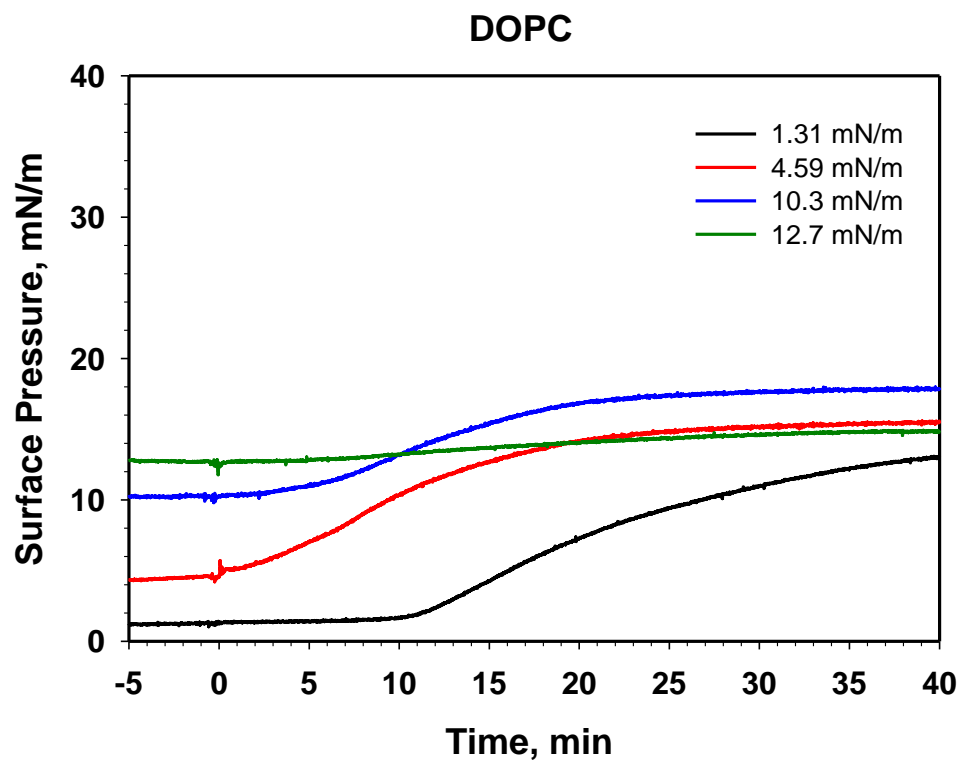
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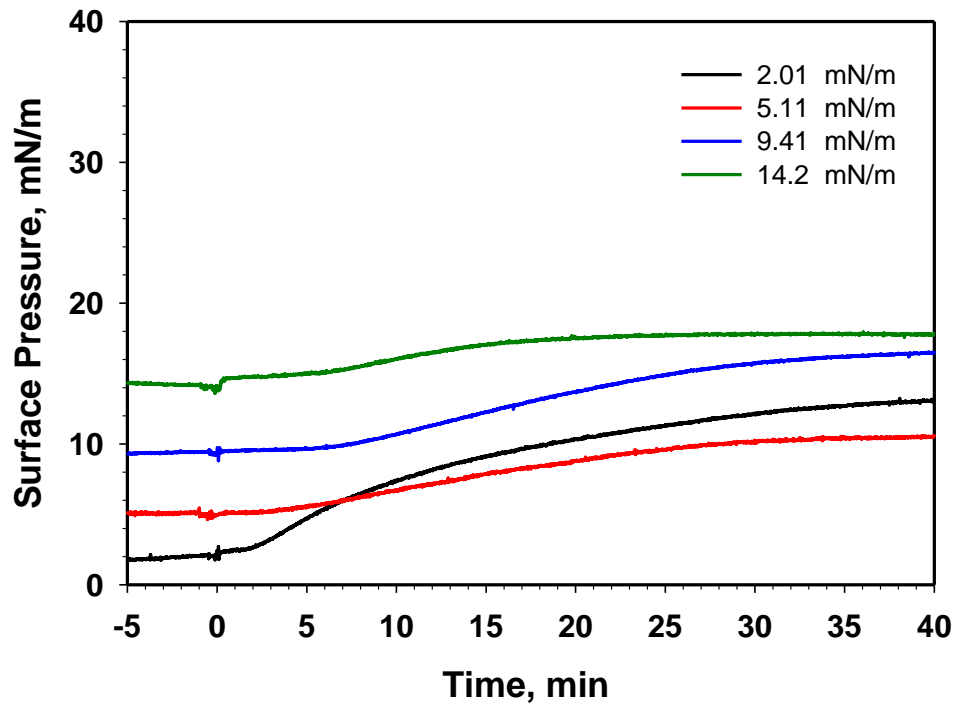


### Supplementary Figure S6

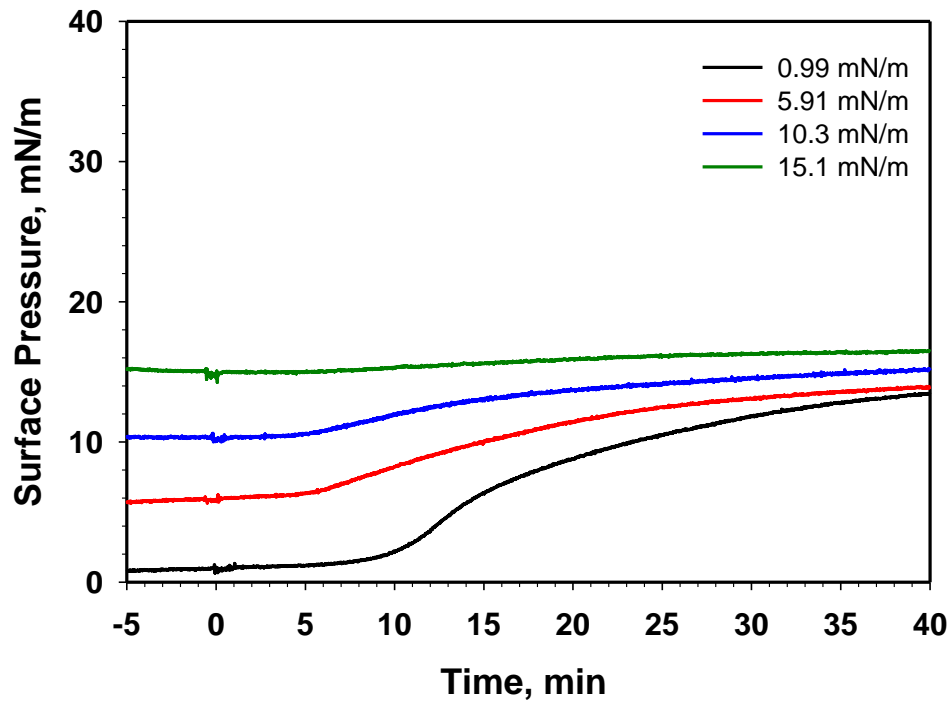
Representative insertion kinetics for perilipin 3D and three unsaturated lipids



### DOPA



### DOPE

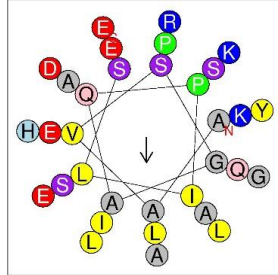
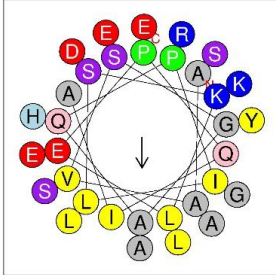




**Supplementary Figure S7**

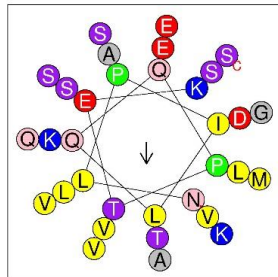
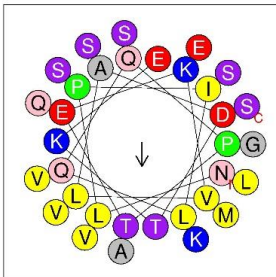
Helical wheel representation of the 11-mer like repeat region of perilipin 3

**73 AAVSGAQPILSKLEPQIASASEYHRGLDKLEE<sup>105</sup>**



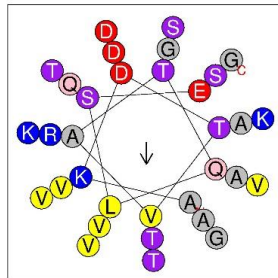
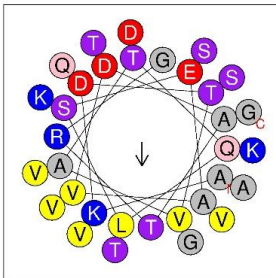
Type	Hydrophobicity	Hydrophobic moment	Net charge
α	0.275	0.356	-2
3/11	0.275	0.339	-2

**106 NLPILQQPTEKVLADTKELVSSKVSQAQEMVSS 138**



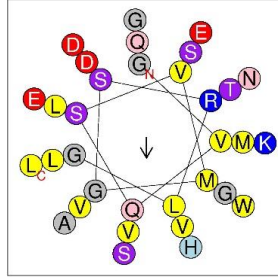
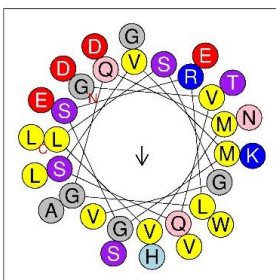
Type	Hydrophobicity	Hydrophobic moment	Net charge
α	0.308	0.279	-1
3/11	0.308	0.286	-1

**139 AKDTVATQLSEAVDATRGAVQSGVDKTKSVVT 171**



Type	Hydrophobicity	Hydrophobic moment	Net charge
0			
α	0.133	0.274	0
3/11	0.133	0.296	0

**172 GVQSVMGSR LGQMVL SGVDTVLGKSEEWADNHL 204**



Type	Hydrophobicity	Hydrophobic moment	Net charge
α	0.372	0.219	-2
3/11	0.372	0.276	-2