

Supplementary Materials: Lipid membrane state change by catalytic protonation and the implications for synaptic transmission

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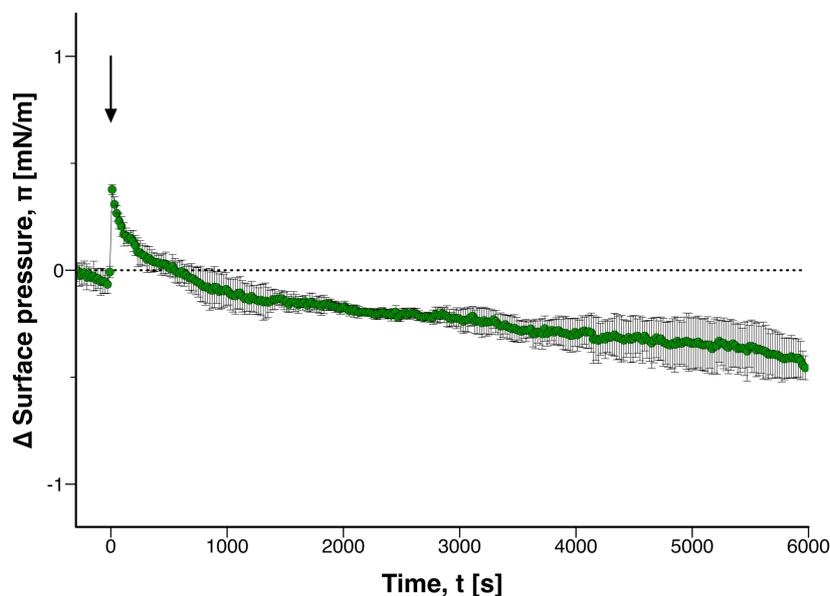


Figure S1. Surface pressure change upon injection of $V = 160 \mu\text{L}$ of subphase onto DMPS monolayer. The initial surface pressure after equilibration for 60 min at 23°C was $\pi \approx 20 \text{ mN/m}$. The data series consists of mean values StDev of $n = 3$ measurements.

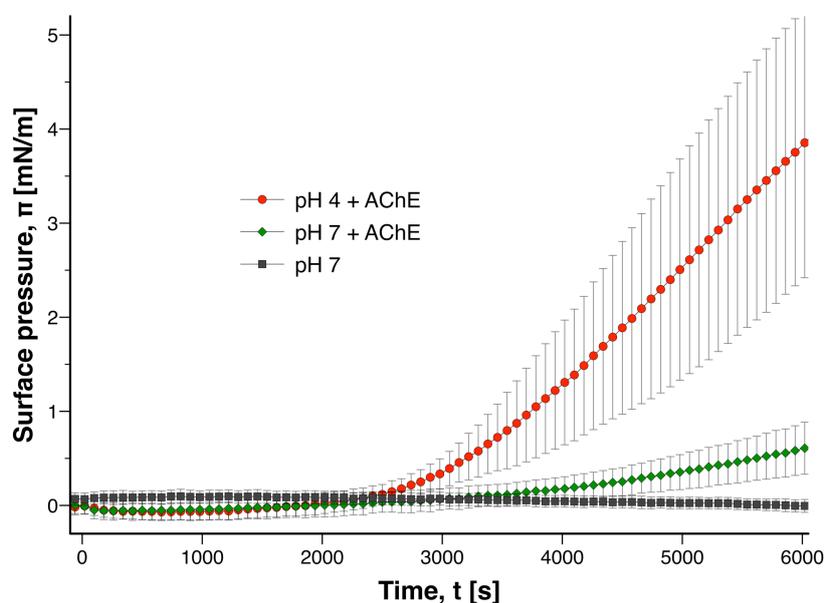


Figure S2. pH-dependent surface activity of acetylcholinesterase (AChE) from *E. electricus*. Change of surface pressure of the gas-solution interface when AChE was added to standard subphase at pH 4 (red circles) or pH 7 (green diamonds). Control experiments: change of π without AChE at pH 7 (black squares). Each data series consists of mean values StDev of $n = 2 - 3$ measurements.

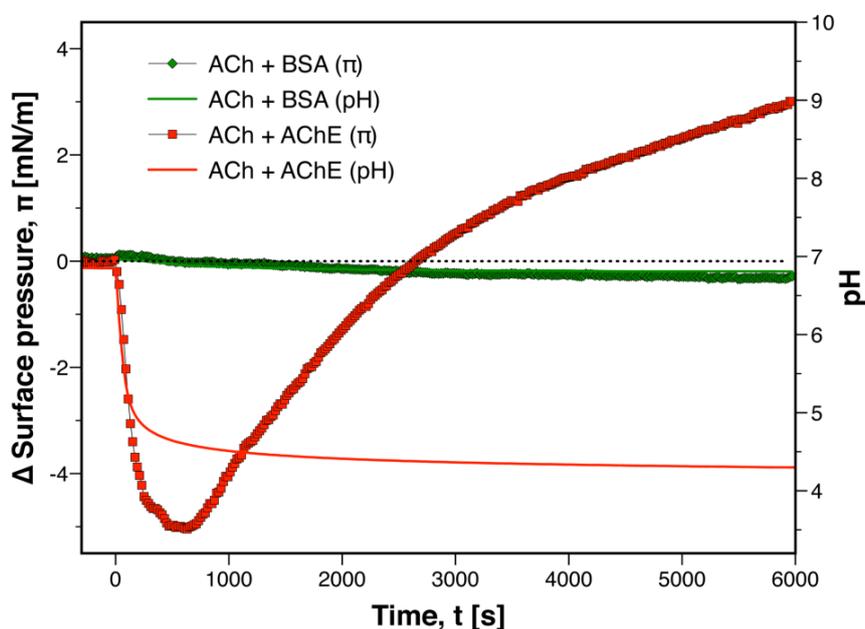


Figure S3. Injection of ACh onto a DMPS monolayer in presence of bovine serum albumin (BSA). Changes of surface pressure π (left axis, symbols) and subphase pH (right axis, solid lines) when ACh was injected at $t = 0$. The subphase contained either AChE (red) or BSA (green). The data for BSA are a representative example taken from a series of $n = 2$ measurements. The data for AChE were replotted from Fig. 2 in the main text for comparison.

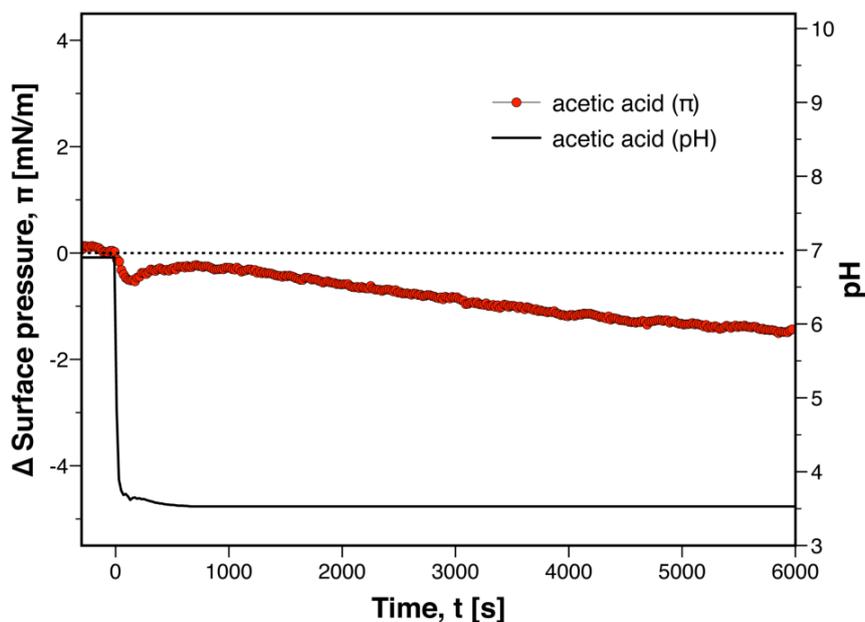


Figure S4. Response of a monolayer made from DPPC to injection of acetic acid. Changes of surface pressure π (left axis, symbols) and subphase pH (right axis, solid line) when acetic acid was injected at $t = 0$. The final concentration of acid was $c = 10mM$. Data series is a representative example taken from a series of $n = 2$ measurements.

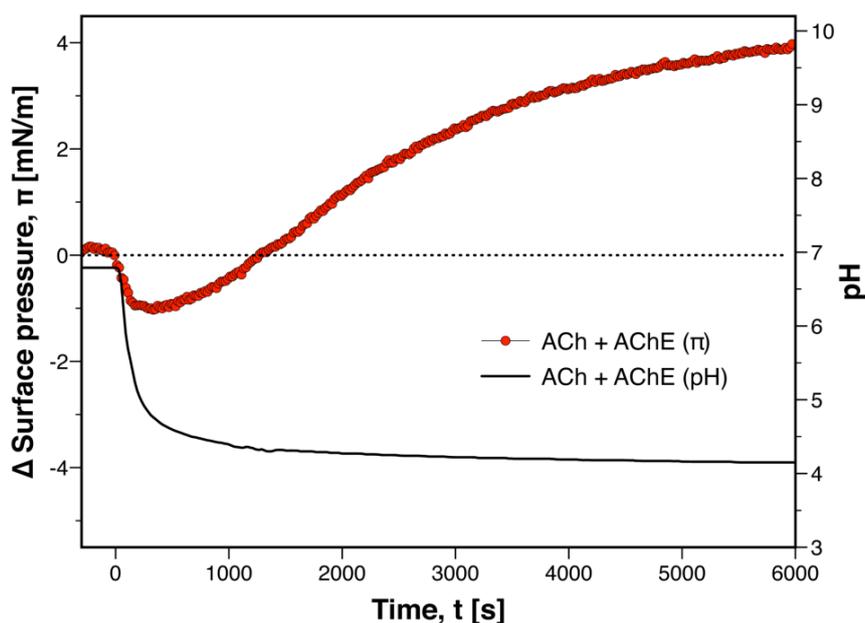


Figure S5. Response of a monolayer made from DPPC to injection of ACh in presence of AChE. Changes of surface pressure π (left axis, symbols) and subphase pH (right axis, solid line) when ACh was injected at $t = 0$. The final concentration of ACh was $c = 10\text{mM}$. Data series is a representative example taken from a series of $n = 2$ measurements.

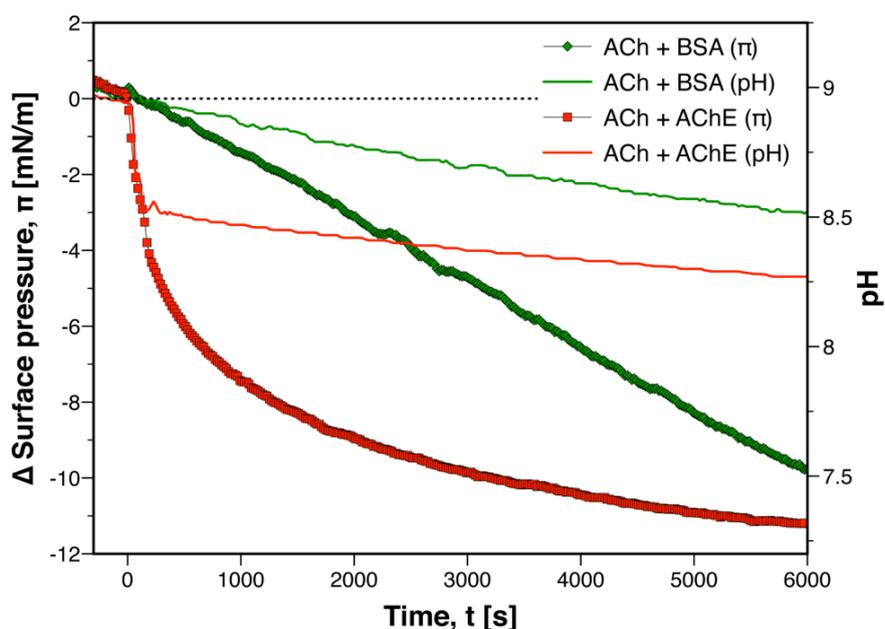


Figure S6. Injection of ACh onto a DMPA monolayer in presence of bovine serum albumin (BSA). Changes of surface pressure π (left axis, symbols) and subphase pH (right axis, solid lines) when ACh was injected at $t = 0$. The subphase contained either AChE (red) or BSA (green). The data for BSA are a representative example taken from a series of $n = 2$ measurements. The data for AChE were replotted from Fig. 4 in the main text for comparison.