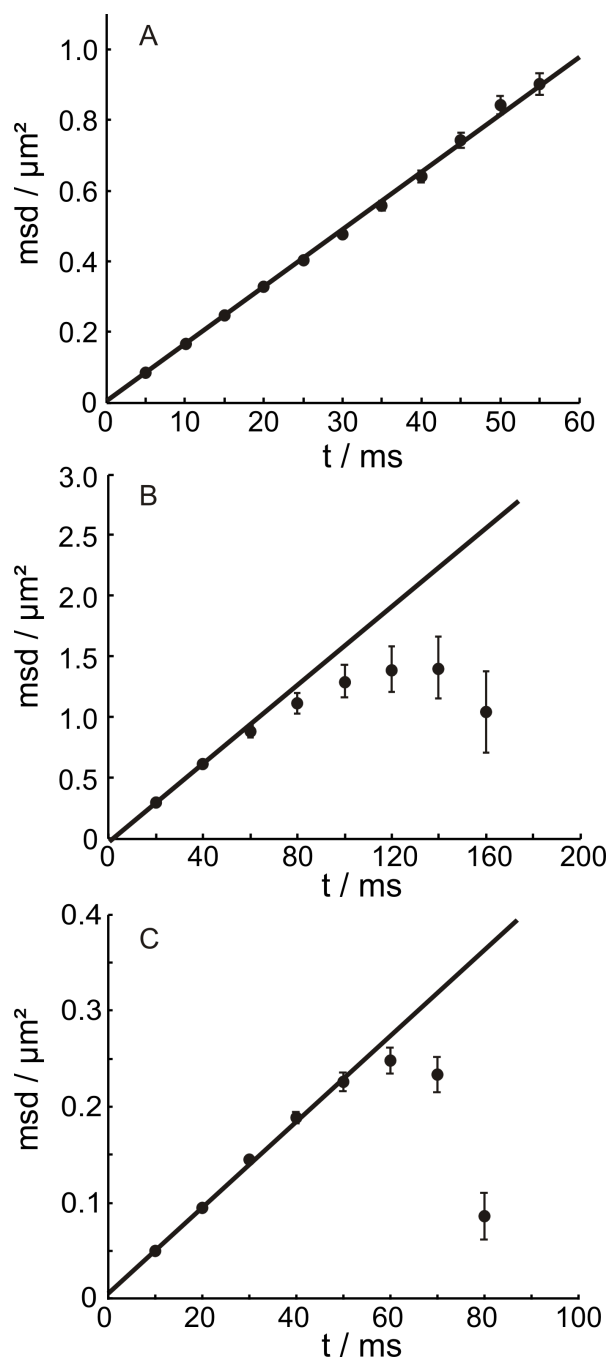


Supplementary Information



Supplementary Figure S1. (A) Mobility of Bodipy-GM1 in a POPC bilayer at dilute surface densities ($\rho < 0.01/\mu\text{m}^2$). msd-analysis reveals a diffusion constant of $D_{\text{Bodipy-GM1}} = 4.1 \pm 0.15 \mu\text{m}^2/\text{s}$ and a localization error $\sigma_{\text{Bodipy-GM1}} = 28\text{nm}$. (B) Bodipy-GM1 molecules observed in two-color TOCCSL experiments feature the same diffusion constant ($D_{\text{Bodipy-GM1}} = 4.04 \pm 0.6 \mu\text{m}^2/\text{s}$). (C) Mobility of CTX-B-Alexa647 molecules bound to a POPC-bilayer containing Bodipy-GM1. Diffusion constants were determined in a TOCCSL experiment, yielding $D_{\text{CTX-B-Alexa647}} = 1.2 \pm 0.1 \mu\text{m}^2/\text{s}$ and $\sigma_{\text{CTX-B-Alexa647}} = 38\text{nm}$.

Supplementary Figure S2

Surface densities in the pre-bleach image were estimated to $\sim 50/\mu\text{m}^2$ and $\sim 100/\mu\text{m}^2$ for red and green detection channels respectively. After performing a bleaching step ($t_{\text{bl}}=450\text{ms}$) single molecules could clearly be resolved ($t_{\text{rec}}=1.5\text{s}$). The delay between consecutive images was set to $t_{\text{delay}}=10\text{ms}$. Colocalization events are indicated by yellow circles. The grey lines show the analysis region corresponding to $\text{FP}_{\text{max}}=0.05$. Scale bar $5\mu\text{m}$.

