Supporting information for:

Evaluation of lateral diffusion of lipids in continuous membrane between freestanding and supported areas by fluorescence recovery after photobleaching

Azusa Oshima,‡, Koji Sumitomo†*

**NTT Basic Research Laboratories, NTT Corporation, 3-1 Morinosato Wakamiya,*

Atsugi, Kanagawa 243-0198, Japan

† University of Hyogo, 2167 Shosha, Himeji, Hyogo 671-2280, Japan

‡ Corresponding author.

Spreading of bleaching profile and its effect on the recovery curve

Figure S1 shows the effect of the divergence of the laser used for bleaching with various σ values. To clarify the effect, the lateral diffusion during bleaching was ignored by setting *D=0* in Eq. (5). We changed the σ value from 0.0 to 1.0. When σ = 0.0, the bleaching profile has an ideal step shape, and is spread as the σ value increases. When the bleaching is sufficiently deep, the bleached circle expands. As a result of the spreading of the bleached circle, the recovery time calculated with σ = 0.8 becomes longer than that calculated with the ideal profile (σ = 0.0), as shown in Fig. S2.

Similarly, Fig. S3 shows the effect of the lateral diffusion during bleaching, when the beam divergence was set at σ = 0.0. The recovery curve considering the lateral diffusion during bleaching was calculated by setting *D=2.6* in Eq. (5) and compared with that calculated without it (*D=0*).

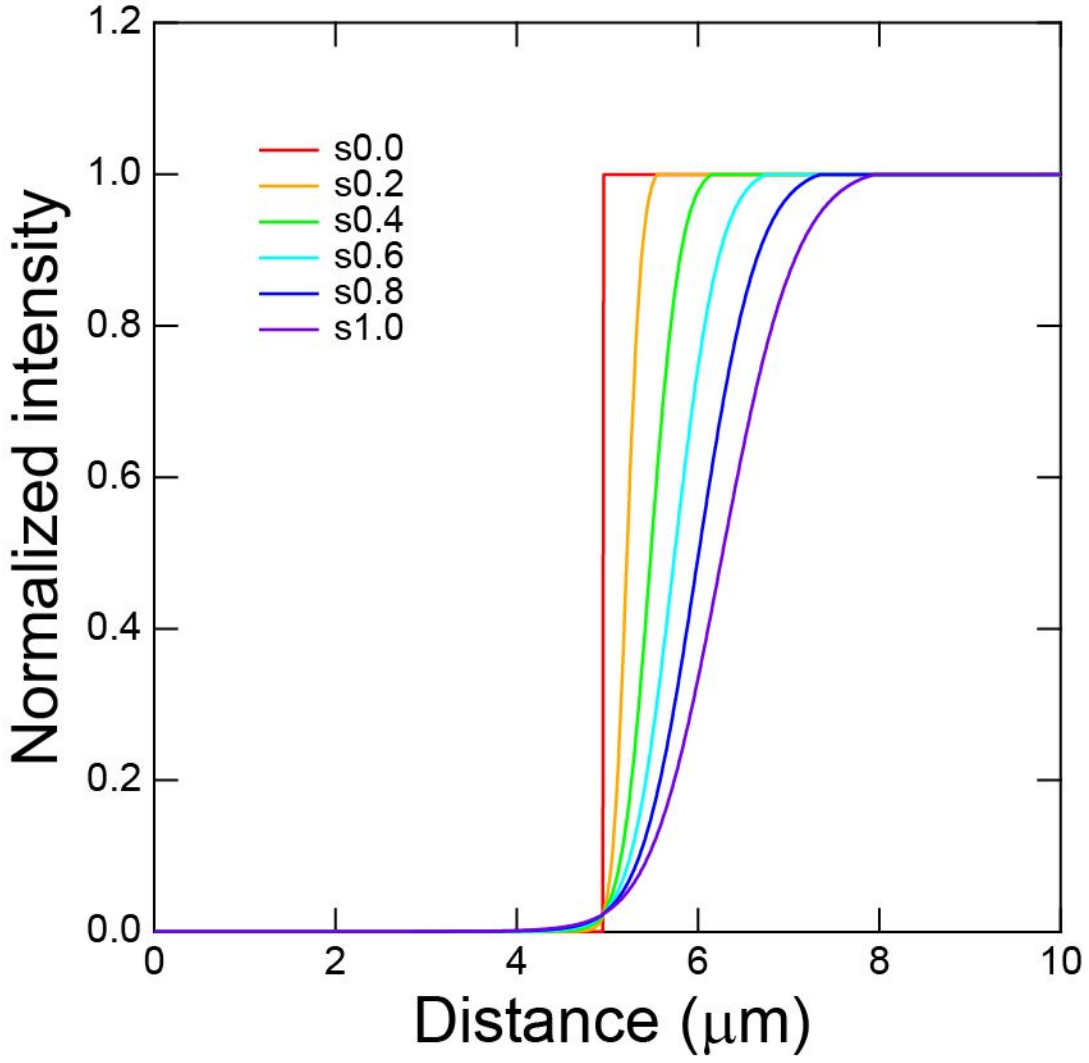

Figure S1

Calculated cross-sectional profile of fluorescence intensity just after bleaching calculated with the divergence of the laser used for bleaching. The σ value was changed from 0 to 1.

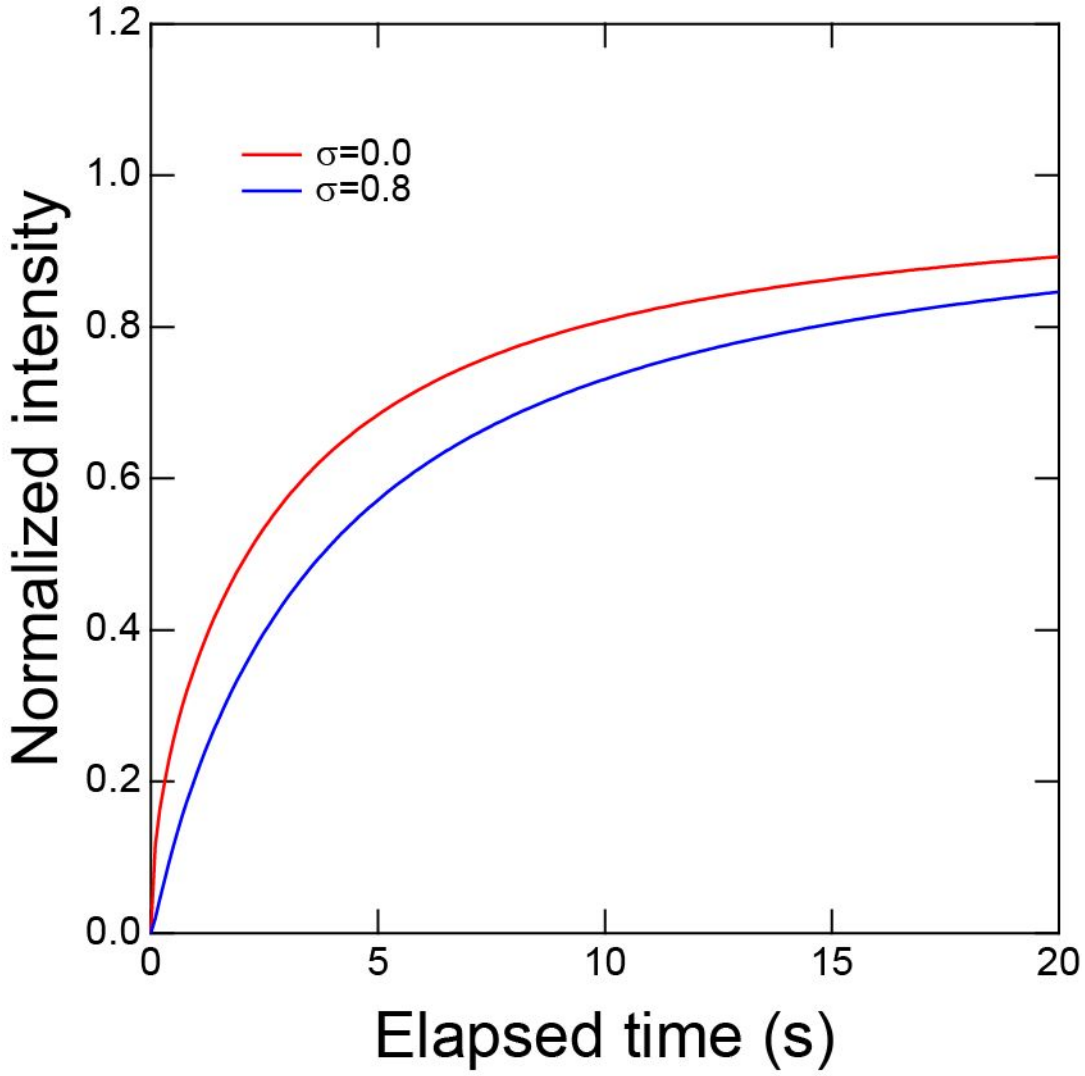

Figure S2

The calculated recovery curve considering the divergence of the laser used for bleaching for σ=0.8 (blue line) is compared with that for the ideal case of σ=0 (red line).

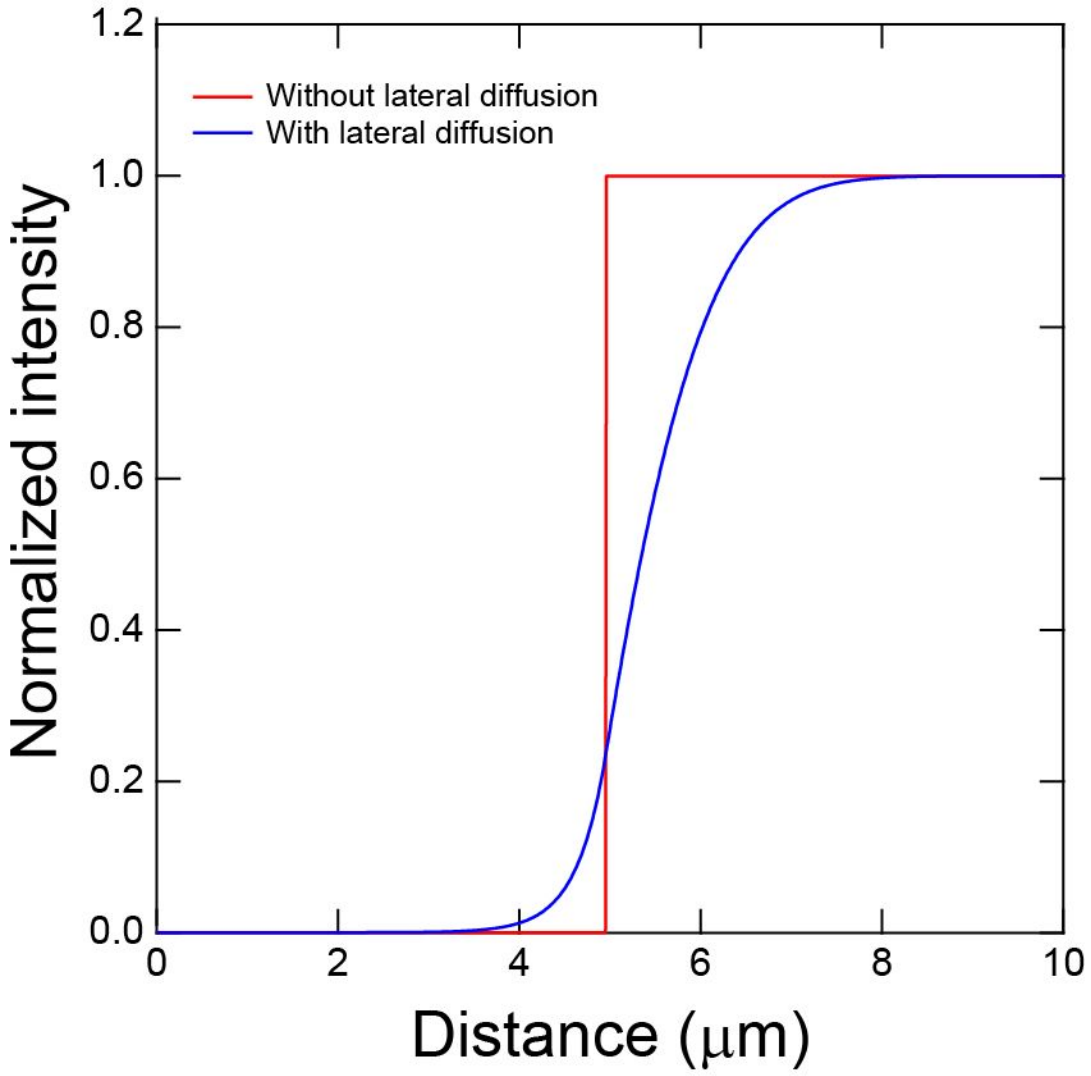

Figure S3

Cross-sectional profile of fluorescence intensity just after bleaching calculated without any divergence of the laser used for bleaching. The solid line (blue) shows the case of diffusing with D = 2.6 μm^2/s during bleaching and compared with the ideal case without any lateral diffusion during bleaching (solid red line).

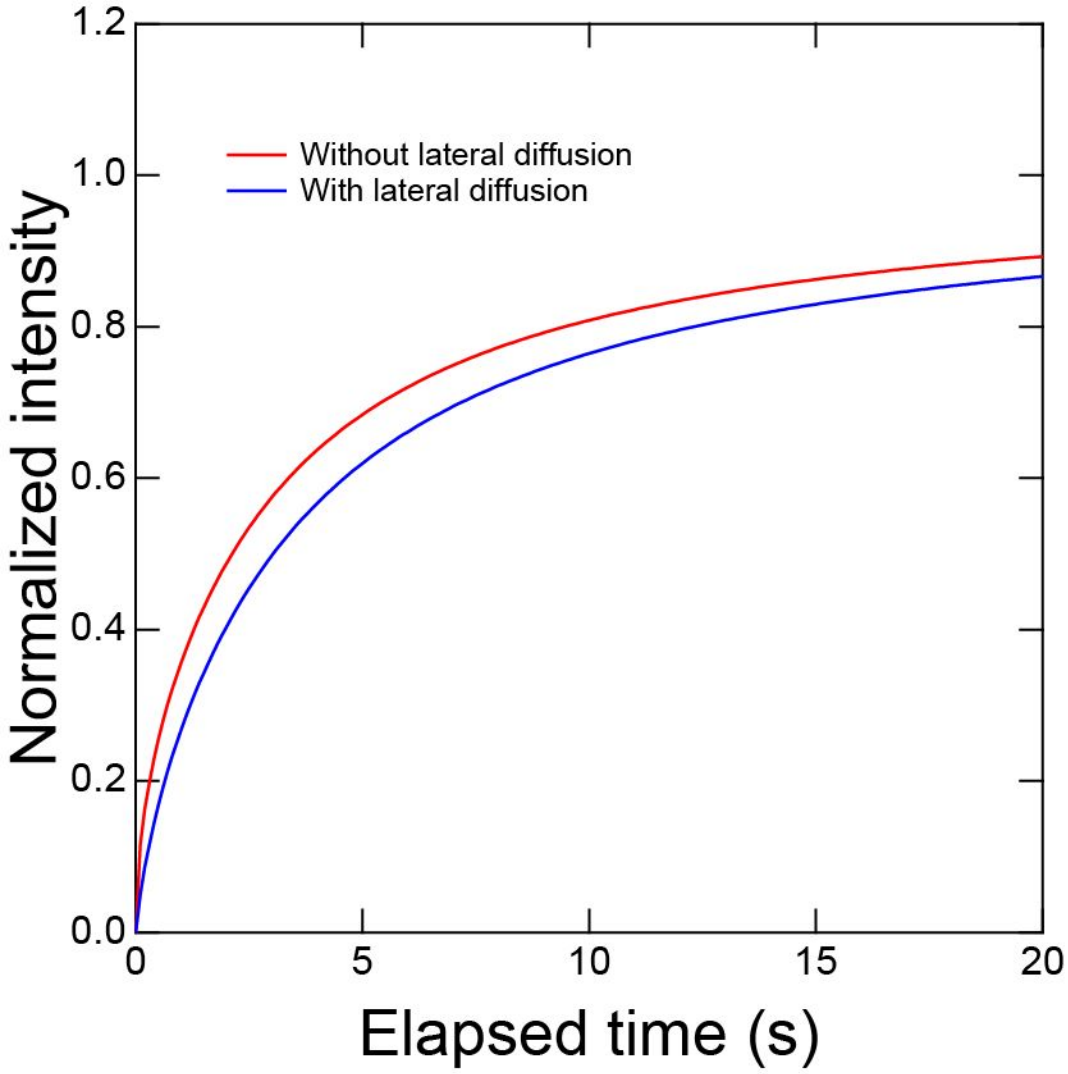

Figure S4. The recovery curves obtained with lateral diffusion during bleaching. Calculated recovery curves with laser spreading σ =0 and with (blue line) and without (red line) lateral diffusion.