

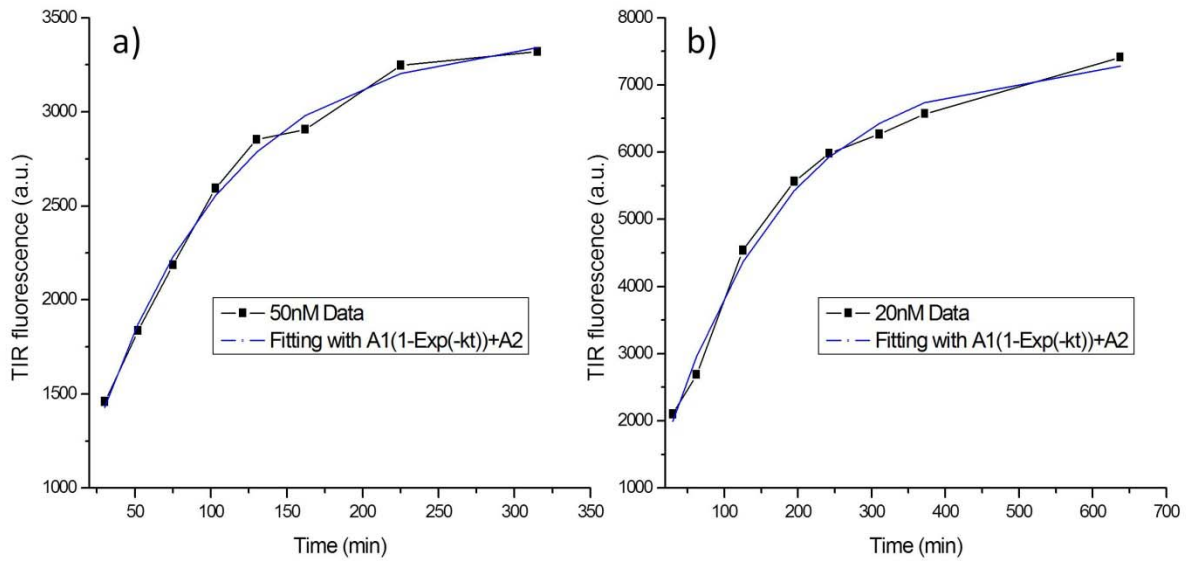
# ***β*-Amyloid (1–40) Peptide Interactions with Supported Phospholipid Membranes: A Single-Molecule Study**

Hao Ding,<sup>†</sup> Joseph A. Schauerte,<sup>†</sup> Duncan G. Steel,<sup>†§</sup> and Ari Gafni<sup>†‡</sup>

<sup>†</sup>Department of Biophysics, <sup>‡</sup>Department of Biological Chemistry, and <sup>§</sup>Department of Physics, University of Michigan, Ann Arbor, Michigan

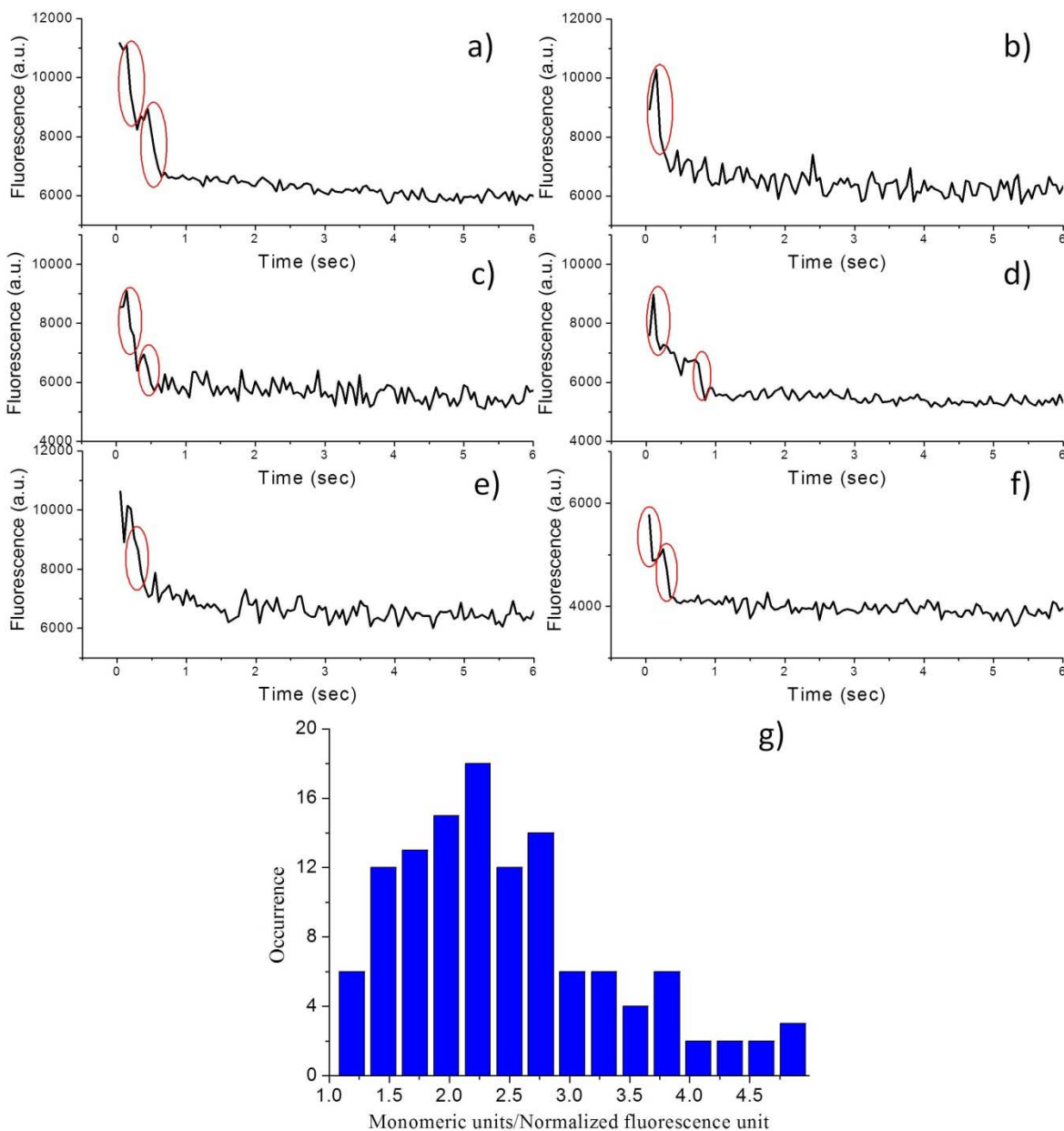
**Supporting Material**

1 **Figure S1.** The kinetics of  $\beta$ -amyloid(1-40) peptide binding to lipid membranes at different  
2 concentrations: a) at 50 nM; b) at 20 nM. The data were fit to single exponential curves  $A_1(1-$   
3  $\text{Exp}(-k_{on}[\text{Added } A\beta] \times t)) + A_2$  ( $A_1$  represents the fluorescence intensity when the membrane bound  
4  $\beta$ -amyloid peptide saturates, and  $A_2$  is the fluorescence baseline; i.e., autofluorescence from the  
5 membrane).  $k_{on} = (3.8 \pm 0.4) \times 10^3 \text{ s}^{-1} \text{ M}^{-1}$  and  $k_{on} = (5.1 \pm 0.6) \times 10^3 \text{ s}^{-1} \text{ M}^{-1}$  were derived from the curve  
6 fitting at 50 nM and 20 nM  $\beta$ -amyloid(1-40) peptide concentrations, respectively.



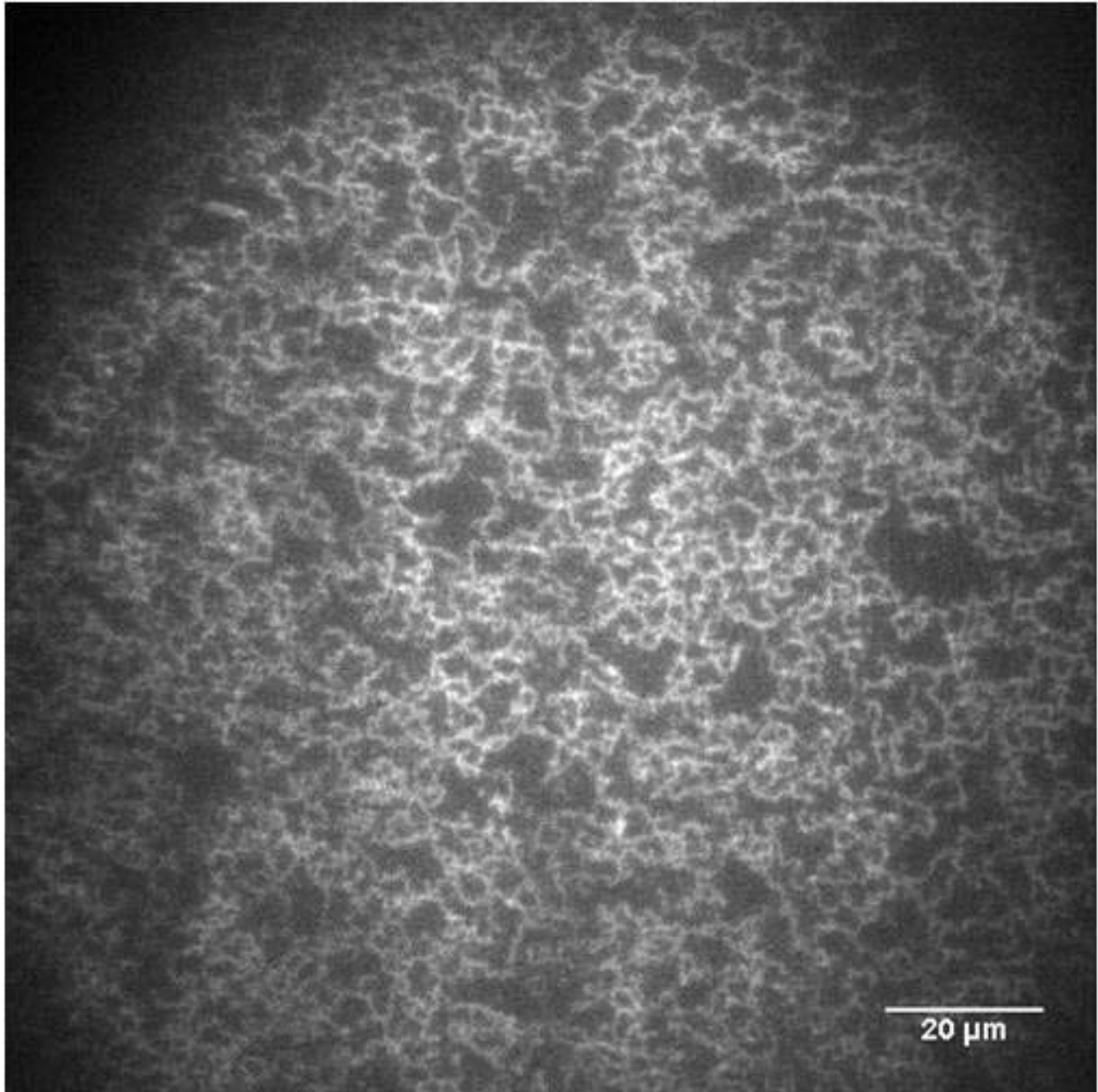
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1 **Figure S2.** a) – f) A selection of single-step photobleaching events (highlighted by circles)  
2 for the calibration of the normalized fluorescence intensity. The photobleaching steps were  
3 identified based on a combination of visual inspection and photon counting histogram (please see  
4 supporting reference 1 for more details). g) The distribution of “monomeric units/normalized  
5 fluorescence unit” from the selected 121 photobleaching events



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1 **Figure S3.** Mesh-like  $\beta$ -amyloid deposits were observed after 20 hours incubation of 100 nM  $\beta$ -  
2 amyloid(1-40) peptide with POPC:POPG lipid membrane.



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### 6 **SUPPORTING REFERENCE**

- 7 1. Ding, H., P. T. Wong, E. L. Lee, A. Gafni, and D. G. Steel. 2009. Determination of the  
8 Oligomer Size of Amyloidogenic protein  $\beta$ -Amyloid(1-40) by Single-Molecule Spectroscopy.  
9 *Biophys. J.* 97:912-921.