Supporting Information

Protein A–Conjugated Luminescent Gold Nanodots as a Label-Free Assay for Immunoglobulin G in Plasma

Yen-Chun Shiang,[†] Che-An Lin,[†] Chih-Ching Huang[‡,§,] and Huan-Tsung Chang,[†,*]*

[†]Department of Chemistry, National Taiwan University, Taipei, Taiwan [‡]Institute of Bioscience and Biotechnology and [§]Center for Marine Bioenvironment and Biotechnology (CMBB), National Taiwan Ocean University, Keelung, Taiwan

E-mail: changht@ntu.edu.tw

Correspondence: Huan-Tsung Chang, Department of Chemistry, National Taiwan University, 1, Section 4, Roosevelt Road, Taipei, 10617, Taiwan; tel. and fax: 011-886-2-3366-1171; e-mail: changht@ntu.edu.tw; Chih-Ching Huang, Institute of Bioscience and Biotechnology and Center for Marine Bioenvironment and Biotechnology (CMBB), National Taiwan Ocean University, 2, Beining Road, Keelung, 20224, Taiwan; tel.: 011-886-2-2462-2192 ext 5517; fax: 011-886-2-2462-2320; e-mail: huanging@ntou.edu.tw.

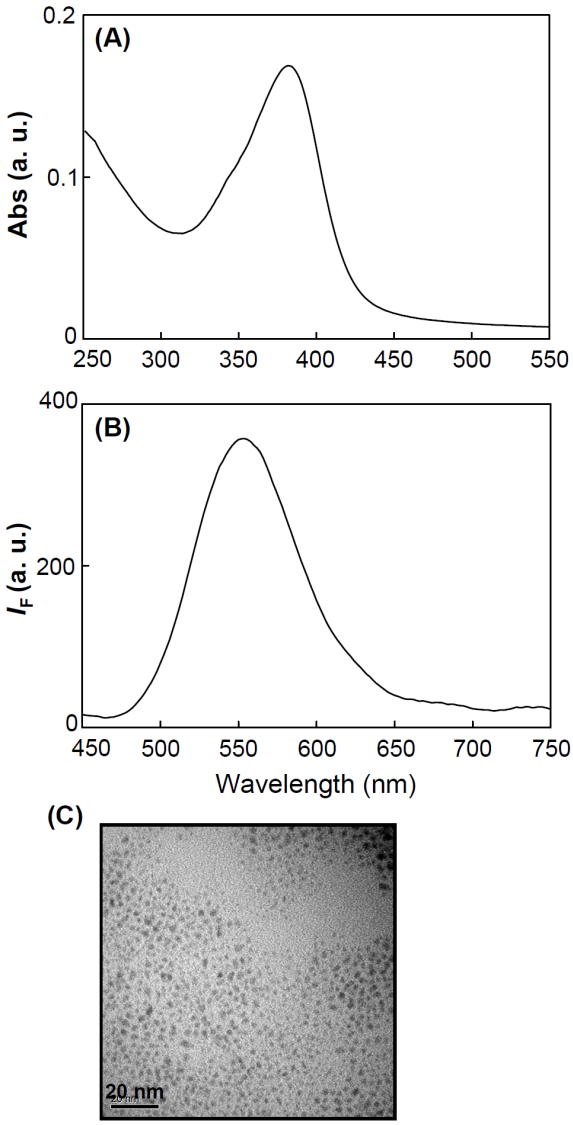

Fig S1. (A) Absorption spectrum, (B) luminescence spectrum and (C) TEM image of the 11-MUA-Au NDs.

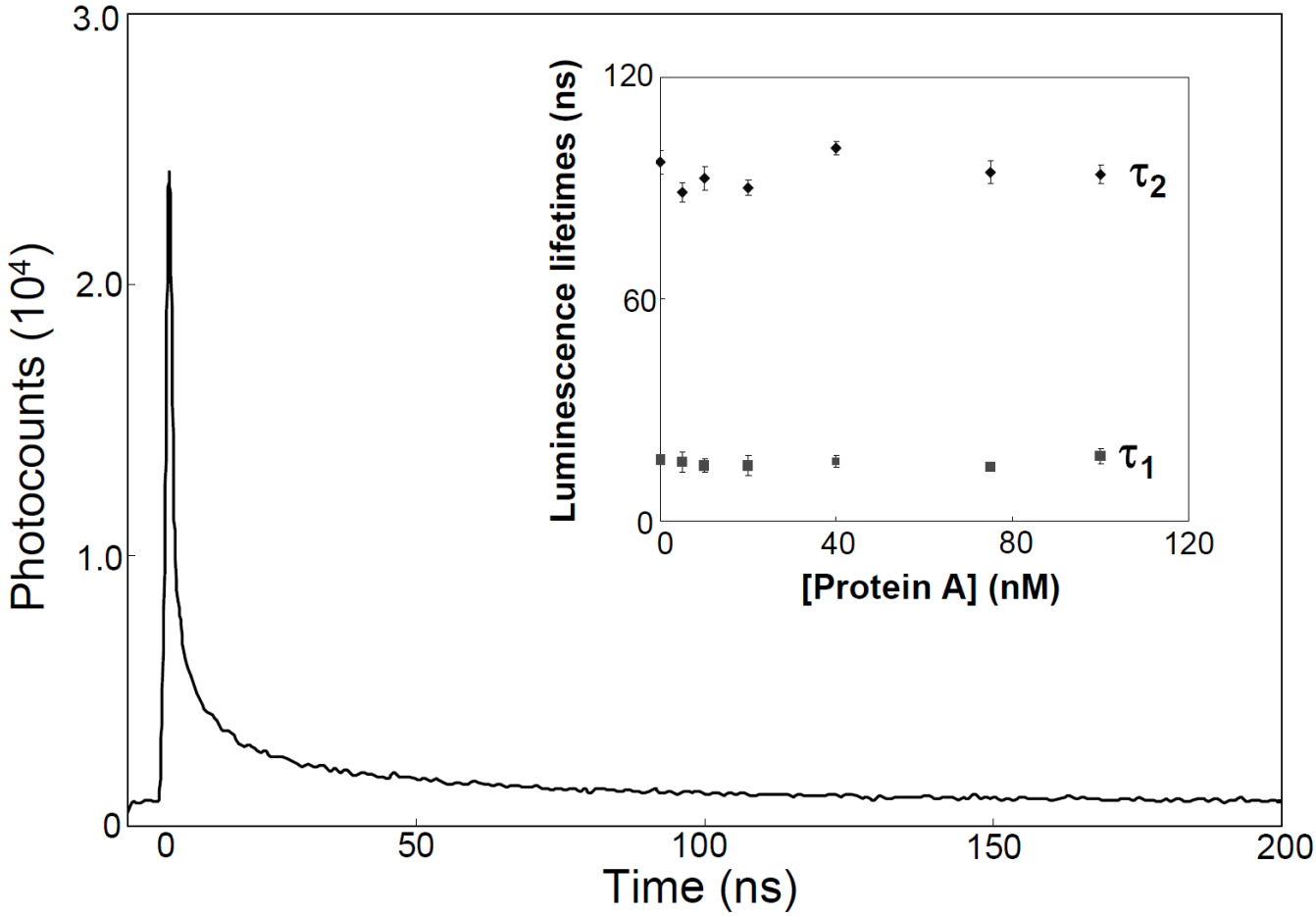

Fig S2. Photoluminescence decay of a representative set of PA-Au NDs; data were obtained after excitation at 375 nm. Inset: Plot of the photoluminescence lifetimes of the PA-Au NDs with respect to the concentration of protein A (0–100 nM). Error bars represent standard deviations from four repeated experiments. The photoluminescence decay was fitted to a biexponential decay. Other conditions were the same as those described in Figure 1.

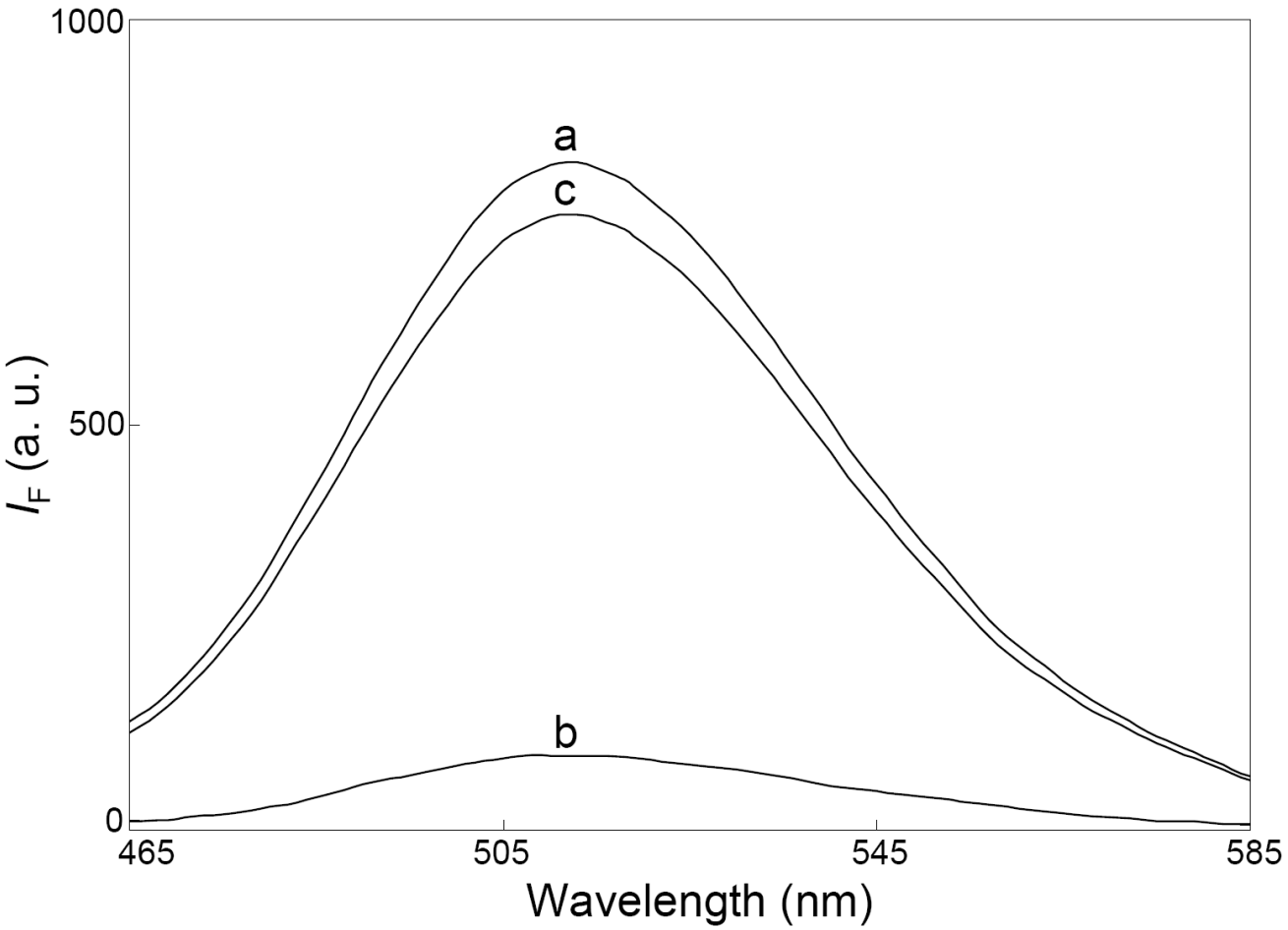

Fig S3. Luminescence spectra of solutions of (a) PA-Au NDs (10 nM), (b) the supernatant of the PA-Au ND (10 nM) solution in the presence of hIgG (500 nM) after centrifugation, and (c) the resuspended aggregates of the PA-Au NDs (10 nM) and hIgG (500 nM) after centrifugation. Other conditions were the same as those described in Figure 2.

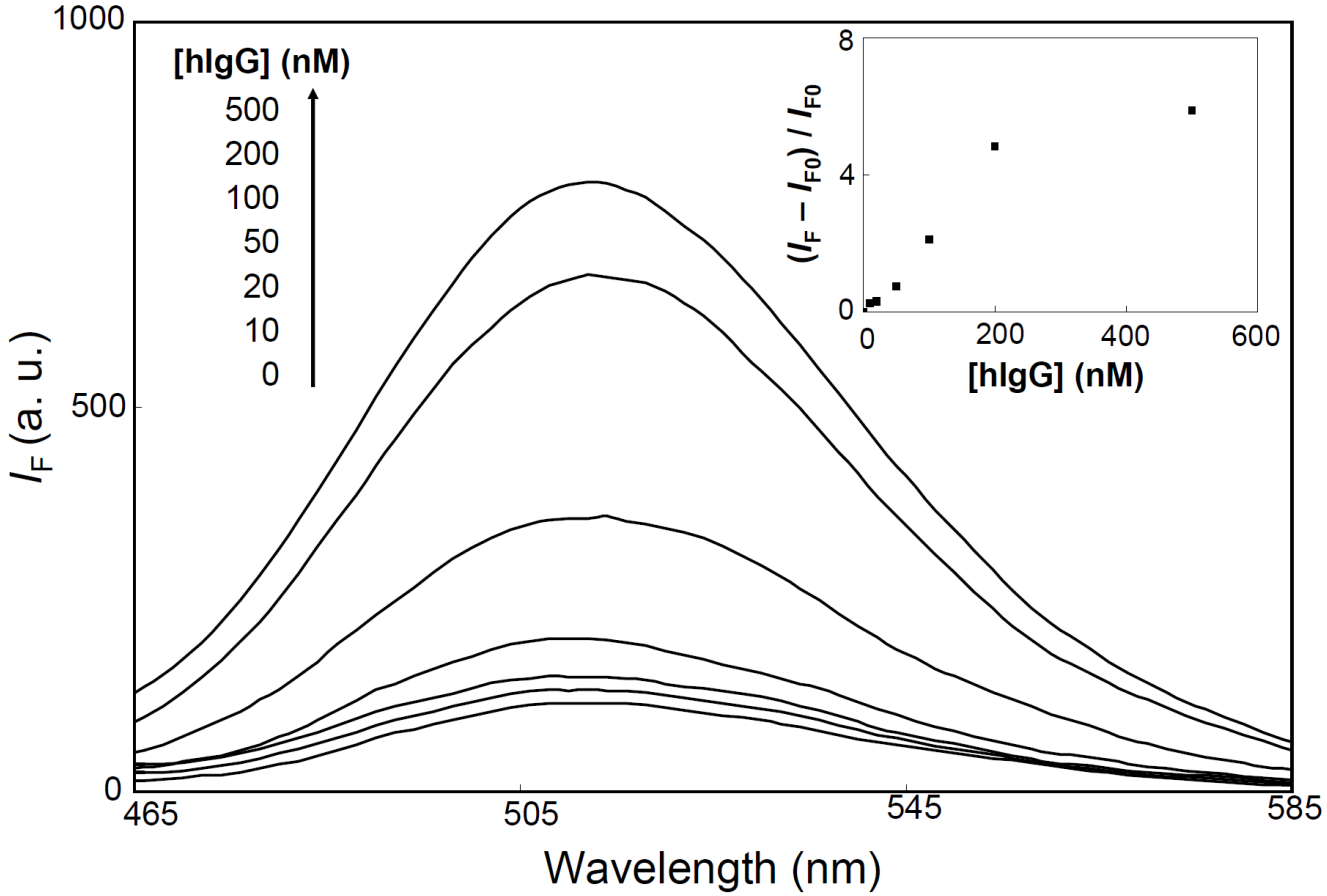

Fig S4. Luminescence spectra of the resuspended solution of PA-Au ND probe (10 nM) with various concentrations of hIgG (0–500 nM) in the presence of BSA (10 μM). Inset: Plot of the $(I_F - I_{F0})/I_{F0}$ ratios of solutions of PA-Au ND probe. Other conditions were the same as those described in Figure 2.

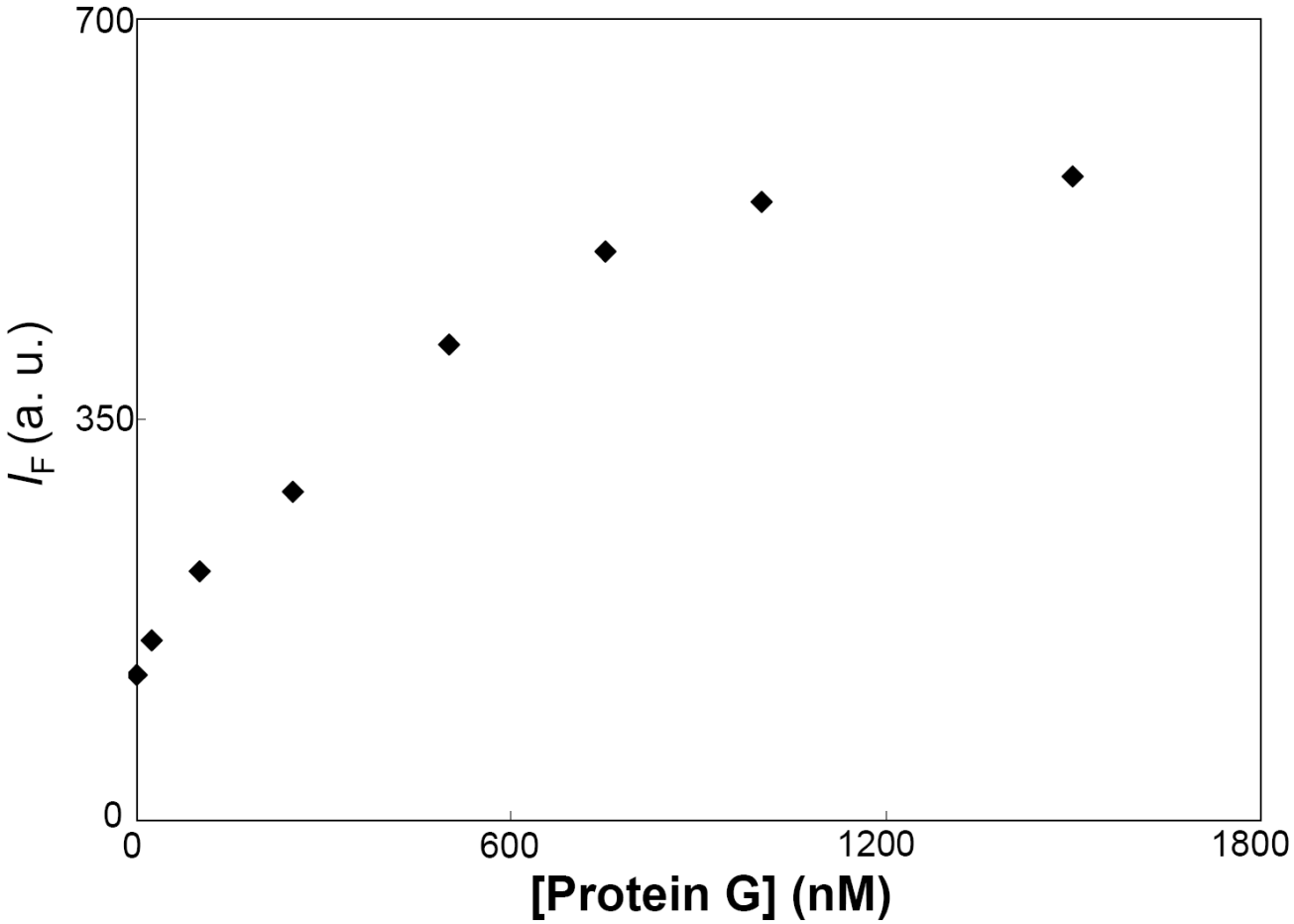

Fig S5. Luminescence intensities at 520 nm of sodium phosphate solutions (5 mM, pH 7.4) containing the PA-Au NDs (10 nM) and hIgG (500 nM), plotted against the concentration of protein G (0–1500 nM). Other conditions were the same as those described in Figure 2.

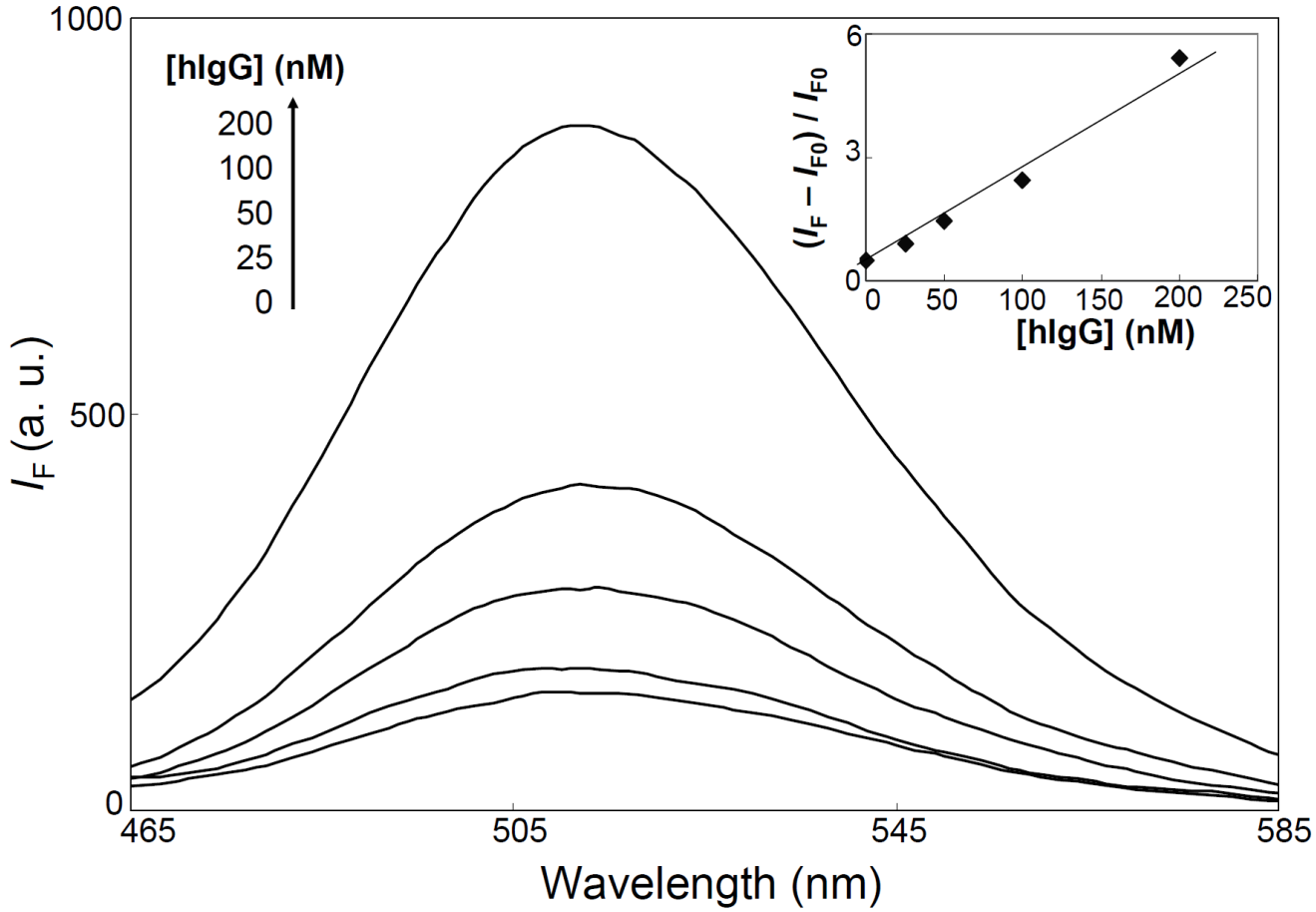

Fig S6. Luminescence spectra of the resuspended solution of PA-Au ND probe (10 nM) with various concentrations of hIgG (0–200 nM) spiked into aliquots of 400-fold-diluted plasma sample. Inset: Plot of the $(I_F - I_{F0})/I_{F0}$ ratios of solutions of PA-Au ND probe. Other conditions were the same as those described in Figure 2.