A Near-infrared Turn-on Fluorescent Sensor for Sensitive and Specific Detection of Albumin from Urine Samples

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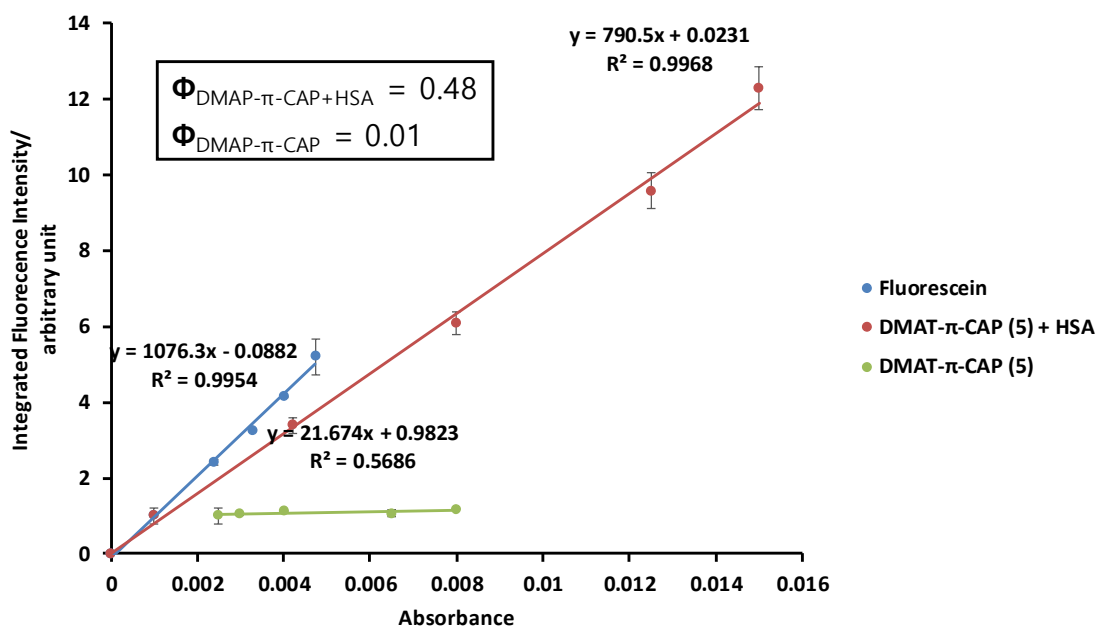
$$\Phi_X = \Phi_{ST} \left(\frac{Grad_x}{Grad_{ST}} \right) \left(\frac{\eta_x^2}{\eta_{ST}^2} \right)$$

$\Phi_{ST} = 0.65$ (fluorescein), $\eta_x = \eta_{ST}$

$Grad_{ST} = 1076.3$, $Grad_{DMAP-\pi-CAP} = 21.7$, $Grad_{DMAP-\pi-CAP+HSA} = 790.5$

$\Phi_{DMAP-\pi-CAP} = 0.013$, $\Phi_{DMAP-\pi-CAP+HSA} = 0.48$

Figure S1. Determination of fluorescence quantum yield of DMAT-π-CAP using fluorescein as the reference.

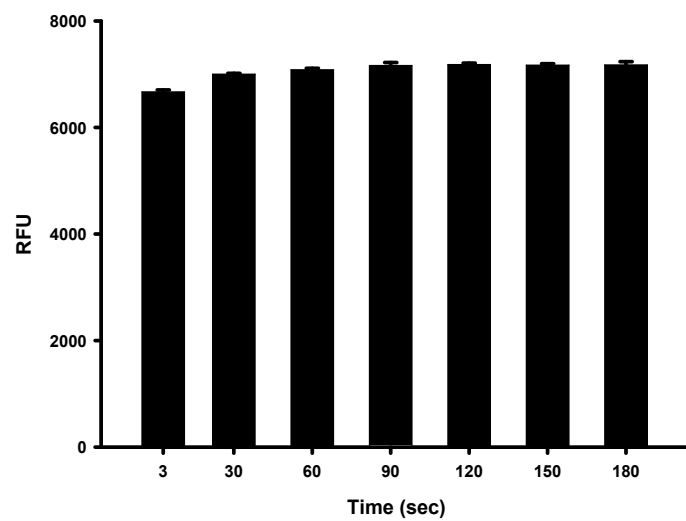**Figure S2.** Time-dependent fluorescence intensity of DMAT-π-CAP (5 μM, λ_{ex} = 730 nm) bound to HSA (10 μM).
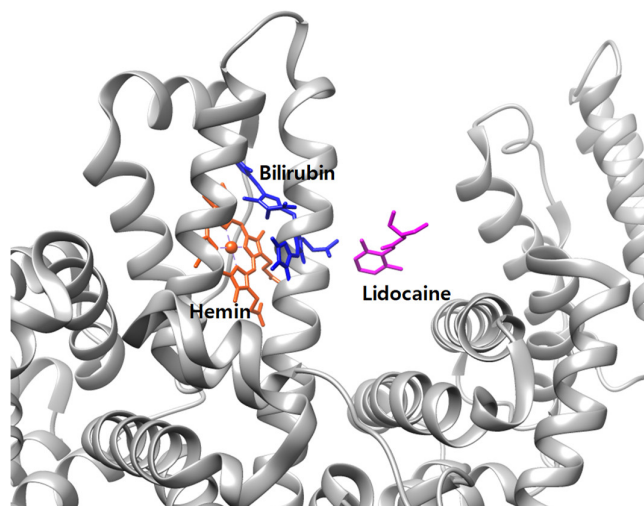
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Figure S3. Superimposed structures of the subdomain IB of HSA complexed with hemin (PDB ID lo9x), bilirubin (PDB ID 2vue), and lidocaine (PDB ID 3jqz)
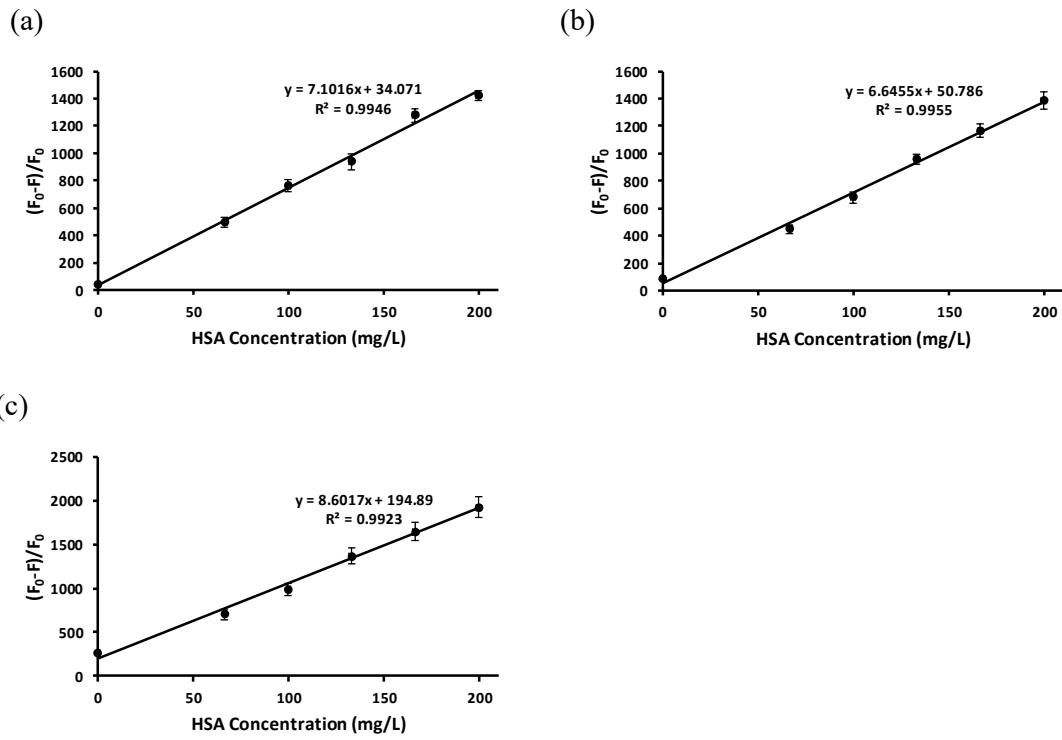
(a)

$y = 7.1016x + 34.071$
$R^2 = 0.9946$

(b)

$y = 6.6455x + 50.786$
$R^2 = 0.9955$

(c)

$y = 8.6017x + 194.89$
$R^2 = 0.9923$

Figure S4. Fluorescence response of 5 μM DMAT-π-CAP in three different urine samples spiked with various concentrations of HSA (13.3–133.0 mg/L). (F0-F)/F0 indicates relative fluorescence intensity.

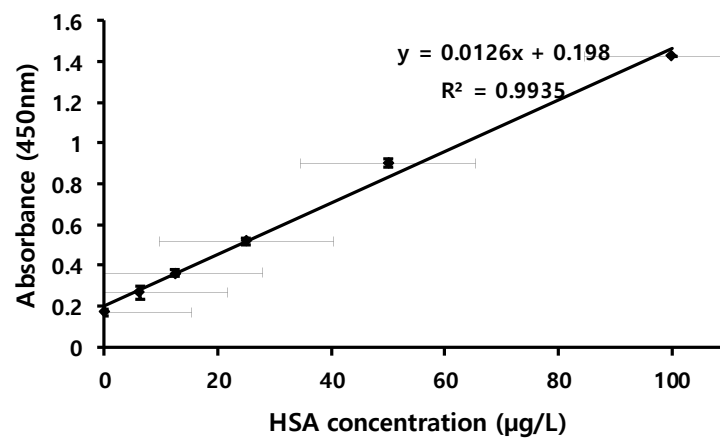**Figure 5.** A calibration curve for human HSA immunoassay.