Supplementary Data is available free of charge.

Figure S1. Characterization of polymer-fluorophore conjugated unimers and micelles formulated from these constituents.

Figure S2. Biological characterization panel for the FRET empty micelle.

Figure S3. Biological characterization panel for the FRET drug-loaded micelle.

Figure S4. Raw circulation data (fluorescence recovery from live animal bleeding).

Figure S5. Controls – biodistribution data for unimers/free model drug following systemic administration.

Figure S6. Controls – imaged at the FRET channel for the unimers comprising the FRET system.

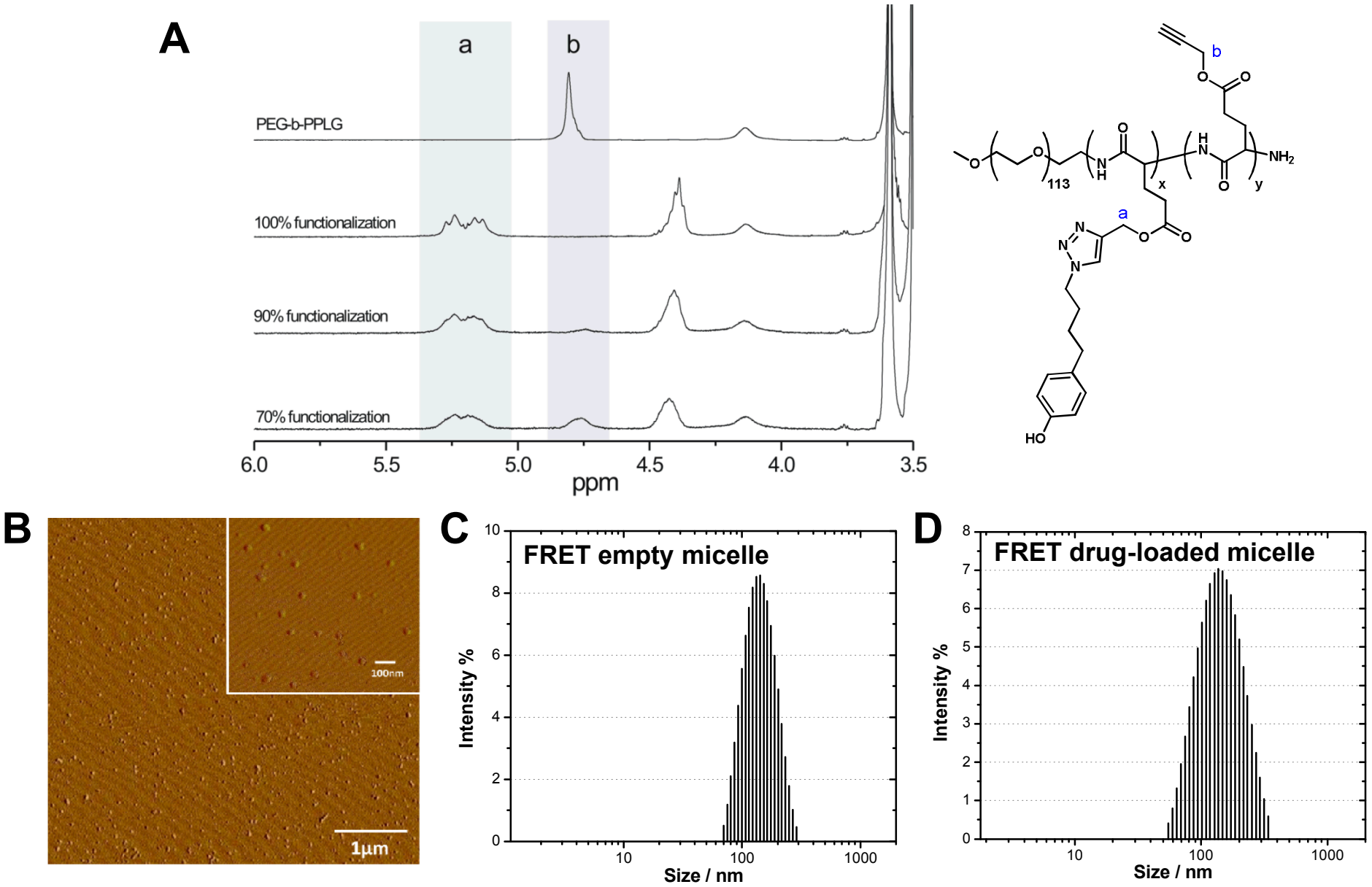

***Figure* S1. (A)** Degree of functionalization (DOF = Area of peak a / (area of peak a + area of peak b) by ^{1}H NMR spectroscopy. PPLG blocks were reacted to a different degree of functionalization (100%, 90% and 70%) by controlling the loading amount of 4-(4-azidobutyl)phenol in the copper-catalyzed alkyne-azide cyclization. **(B)** AFM (atomic force microscopy) image of dried FRET micelles.

Size distribution for FRET empty **(C)** and FRET drug-loaded **(D)** micellar formulations, as determined by dynamic light scattering. Data collected in 10mM NaCl in DI water at 25^{o}C.

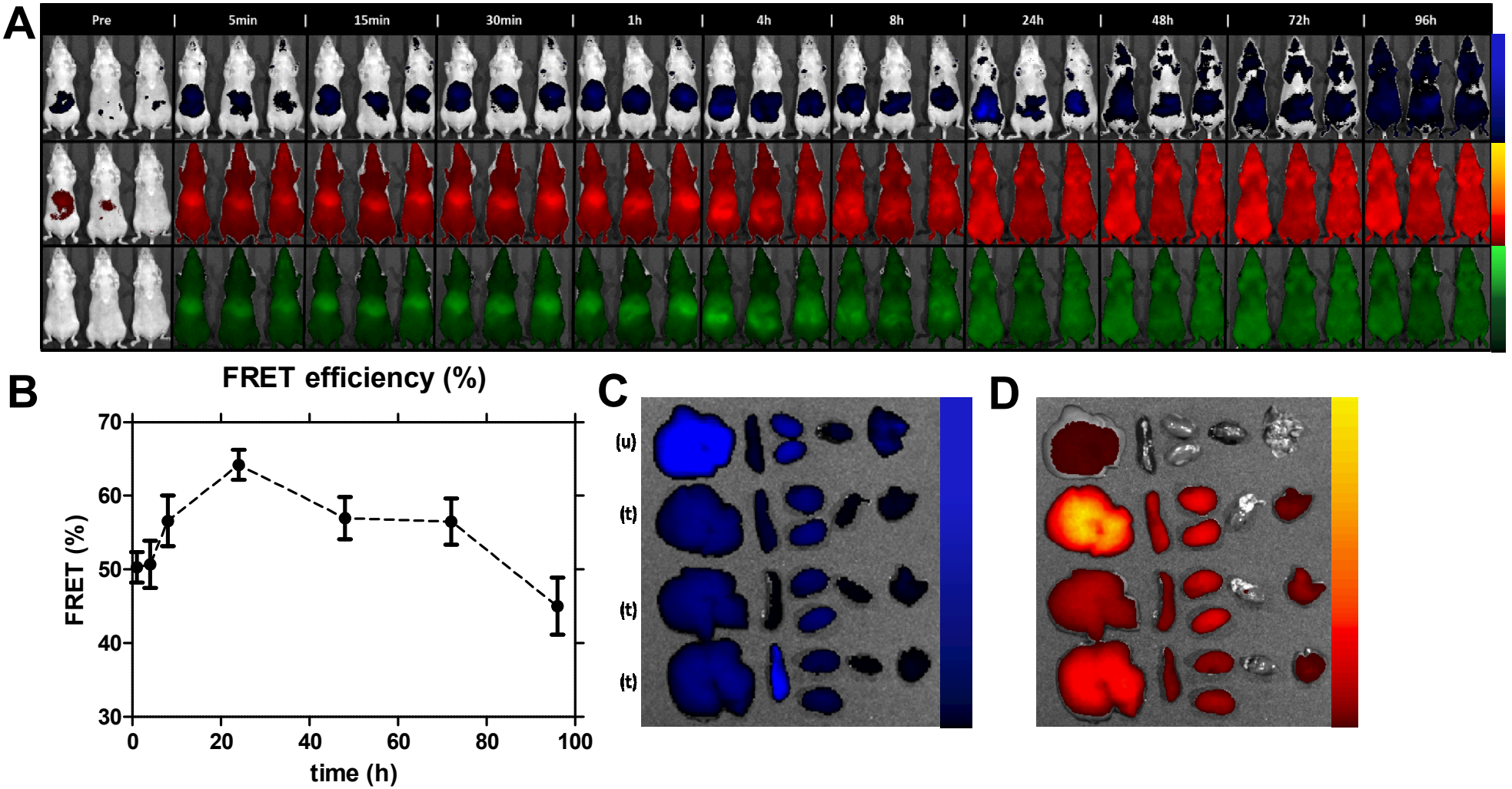

Figure S2. **FRET empty micellar formulation biological characterization**. **(A)** Top row of images corresponds to λ_{ex} = 640 nm, λ_{em} = 700 nm (donor channel); middle row of images corres ponds to λ_{ex} = 640 nm, λ_{em} = 800 nm (FRET channel); bottom row of images corresponds to λ_{ex} = 745 nm, λ_{em} = 800 nm (acceptor channel). **(B)** FRET efficiency data collected from IVIS imaging using whole-animal region of interest analyses on both the donor and FRET fluorescent channel. Background subtracted radiant efficiency was collected from each channel, and FRET efficiency was calculated as the percentage of total signal collected observed in the FRET channel. **(C)** Biodistribution at the donor channel, λ_{ex} = 640 nm, λ_{em} = 700 nm. (u) is the control untreated mice, (t) is representative of mice administered the FRET empty micelle. **(D)** Biodistribution at the FRET channel, λ_{ex} = 640 nm, λ_{em} = 800 nm. (u) is the control untreated mice, (t) is representative of mice administered the FRET empty micelle.

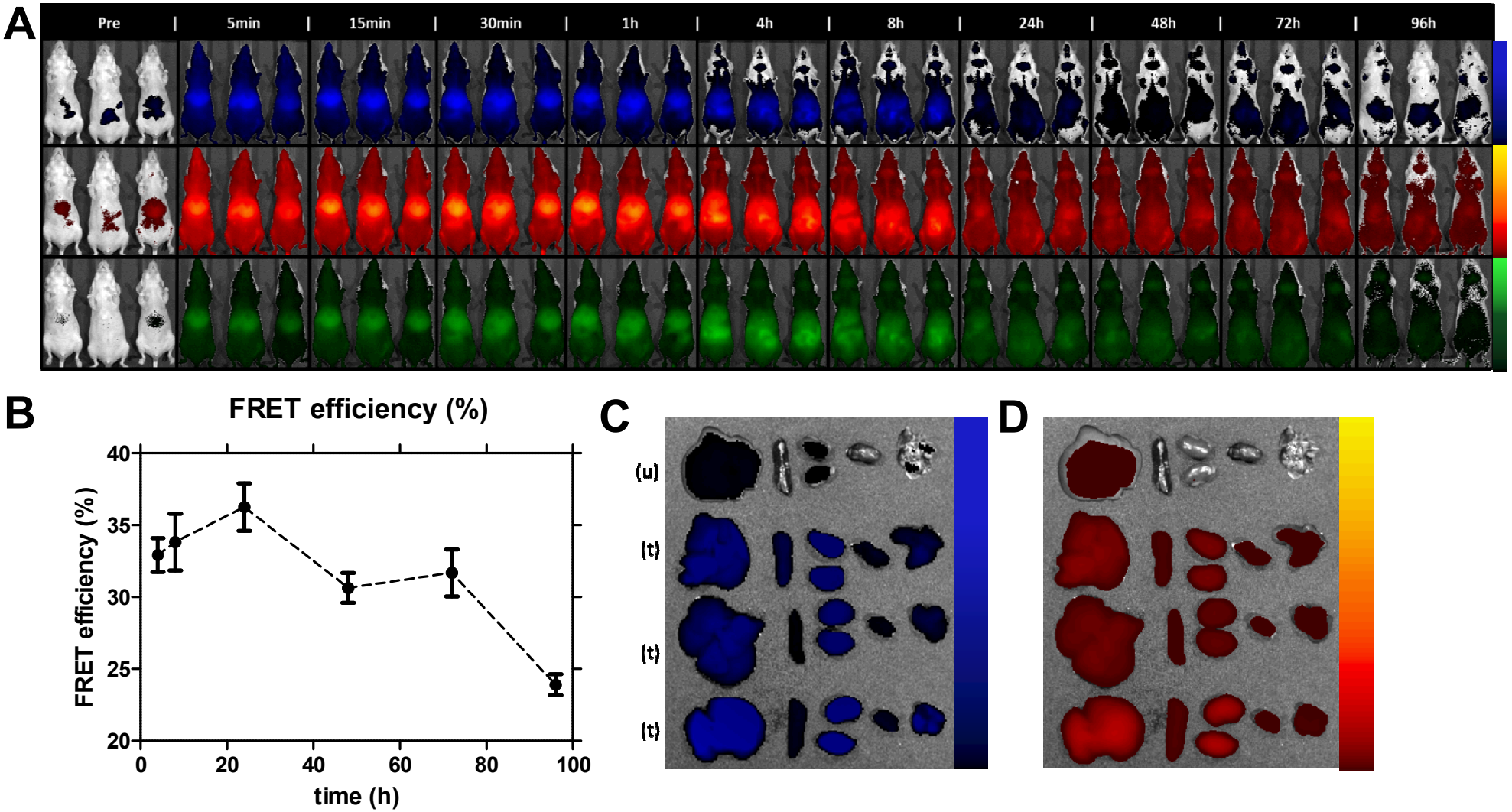

Figure S3. **FRET drug-loaded micellar formulation biological characterization. (A)** Top row of images corresponds to λ_{ex} = 640 nm, λ_{em} = 700 nm (donor channel); middle row of images corresponds to λ_{ex} = 640 nm, λ_{em} = 800 nm (FRET channel); bottom row of images corresponds to λ_{ex} = 745 nm, λ_{em} = 800 nm (acceptor channel). **(B)** FRET efficiency data collected from IVIS imaging using whole-animal region of interest analyses on both the donor and FRET fluorescent channel. Background subtracted radiant efficiency was collected from each channel, and FRET efficiency was calculated as the percentage of total signal collected observed in the FRET channel. **(C)** Biodistribution at the donor channel, λ_{ex} = 640 nm, λ_{em} = 700 nm. (u) is the control untreated mice, (t) is representative of mice administered the FRET micelles. **(D)** Biodistribution at the FRET channel, λ_{ex} = 640 nm, λ_{em} = 800 nm. (u) is the control untreated mice, (t) is representative of mice administered the FRET empty micelle.

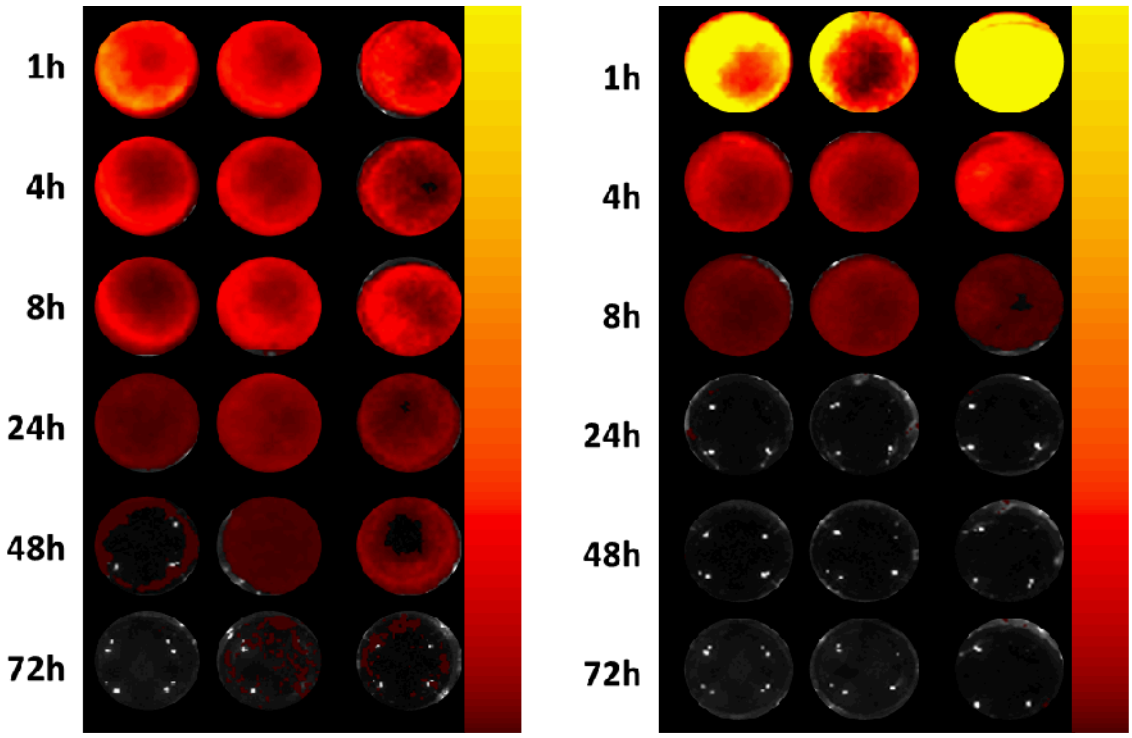

Figure S4. **Circulation data.** IVIS imaging conducted at FRET channel, λ_{ex} = 640 nm, λ_{em} = 800 nm. **(left)** FRET empty micelle formulation; **(right)** FRET drug-loaded micelle formulation, λ_{ex} = 640 nm, λ_{em} = 800 nm.

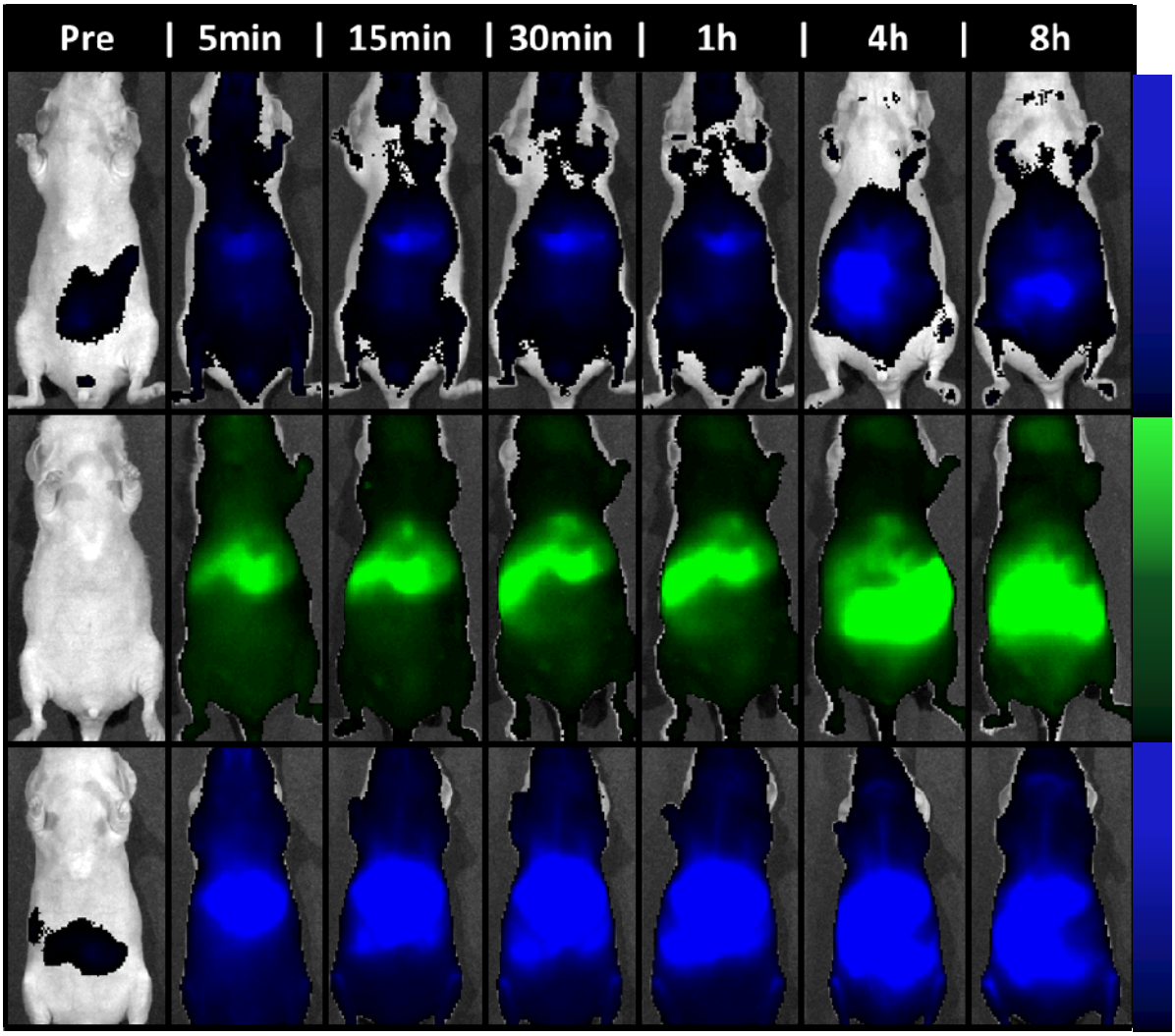

Figure S5. (**top**, **middle row**) IVIS fluorescence imaging of free fluorophore-conjugated unimers comprising FRET micelle carrier. (top row) Cy5.5-labeled polymer (injected at 0.1 mg/mL, whereby following injection the micellar would rapidly dissociate following dissociation below its critical micelle concentration of 0.1 mg/mL; 0.005 mg/mL following dilution) imaged at λ_{ex} = 640 nm, λ_{em} = 700 nm (donor channel). (**middle row**) Cy7-labeled polymer (injected at 0.1 mg/mL, whereby following injection the micellar would rapidly dissociate following dissociation below its critical micelle concentration of 0.1 mg/mL; 0.005 mg/mL following dilution) imaged at λ_{ex} = 745 nm, λ_{em} = 800 nm (acceptor channel). (**bottom row**) Free Cy5.5 drug used in FRET drug-loaded micelle.

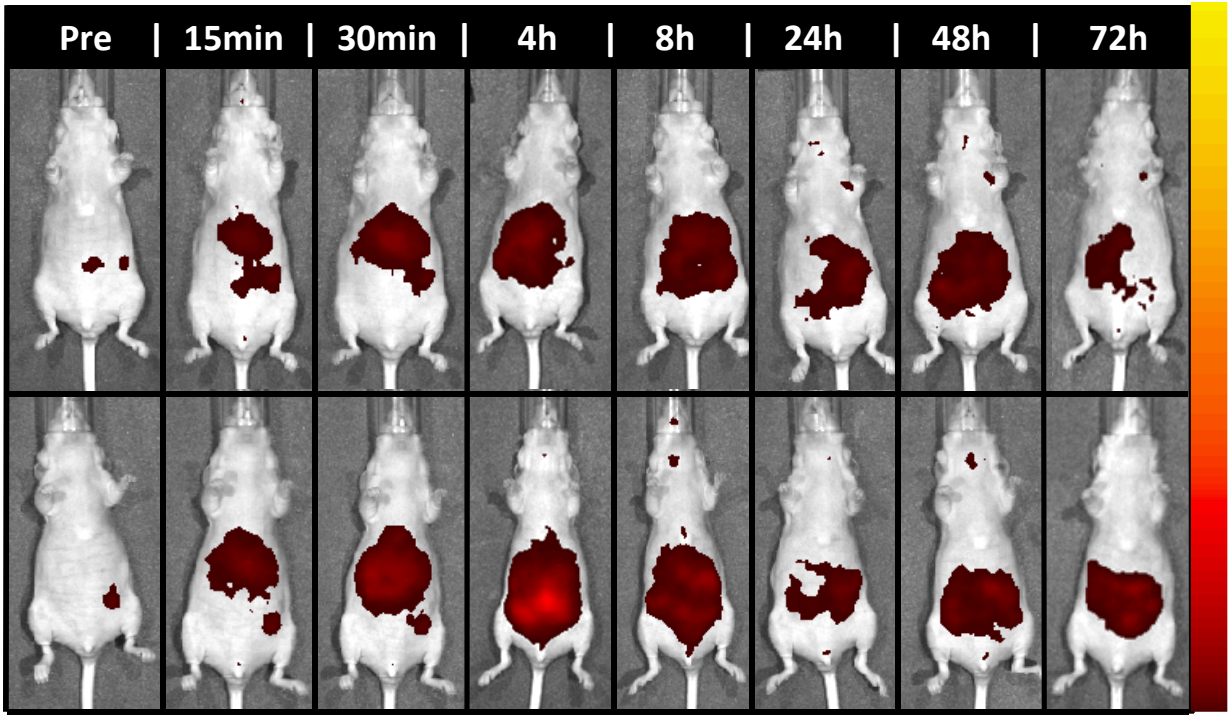

Figure S6. IVIS fluorescence imaging at the FRET channel (λ_{ex} = 640 nm, λ_{em} = 800 nm) following systemic administration of free fluorophore-conjugated unimers comprising FRET micelle carrier. (**top row**) Cy5.5-labeled polymer, (**bottom row**) Cy7-labeled polymer. Unimers injected at 0.1 mg/mL, whereby following injection the micellar would rapidly dissociate following dissociation below its critical micelle concentration of 0.01 mg/mL (0.005 mg/mL following dilution).