Leveraging colloidal aggregation for drug-rich nanoparticle formulations

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Table S1 Critical micelle concentrations of polymers used to stabilize colloidal drug aggregates.

Polymer	Critical Micelle Concentration (% w/v)
UP80	0.002%
PLAC-PEG	0.002%
F127	0.3%
F68	0.2%
Brij 58	0.009%
Brij L23	0.008%
VitE-PEG	0.02%

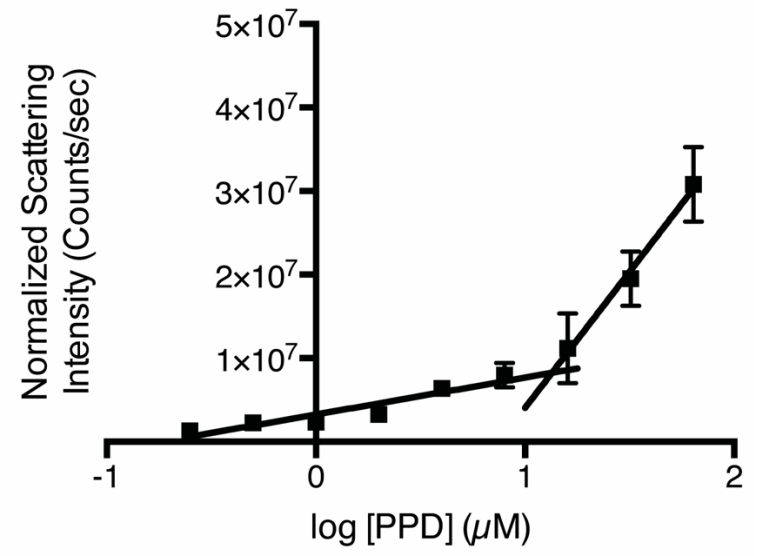

Figure S1 The critical aggregation concentration of PPD is 14 μM in PBS as determined by dynamic light scattering. Formulations contain 2% DMF. (n=3, mean ± SD).

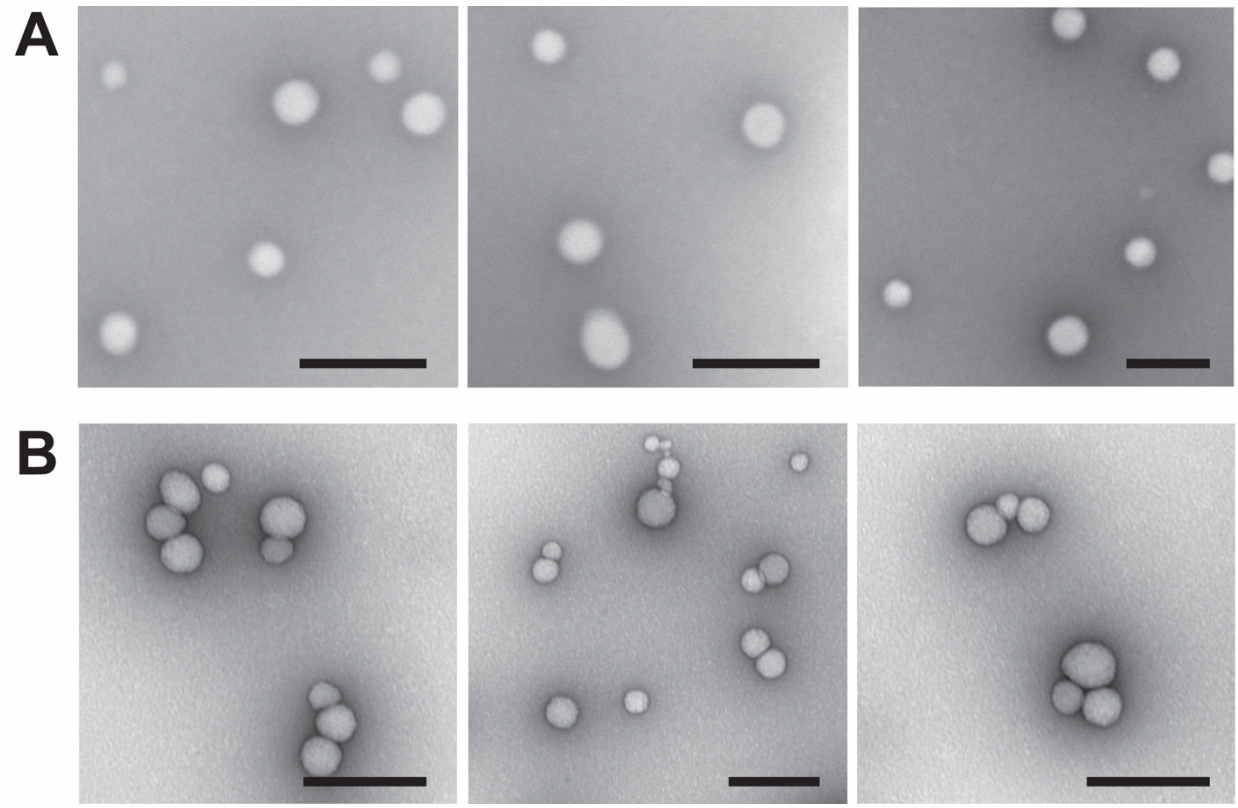

Figure S2 Representative fields of view of (A) fulvestrant-UP80 and (B) PPD-PLAC-PEG colloids in PBS. Scale bar represents 200 nm.

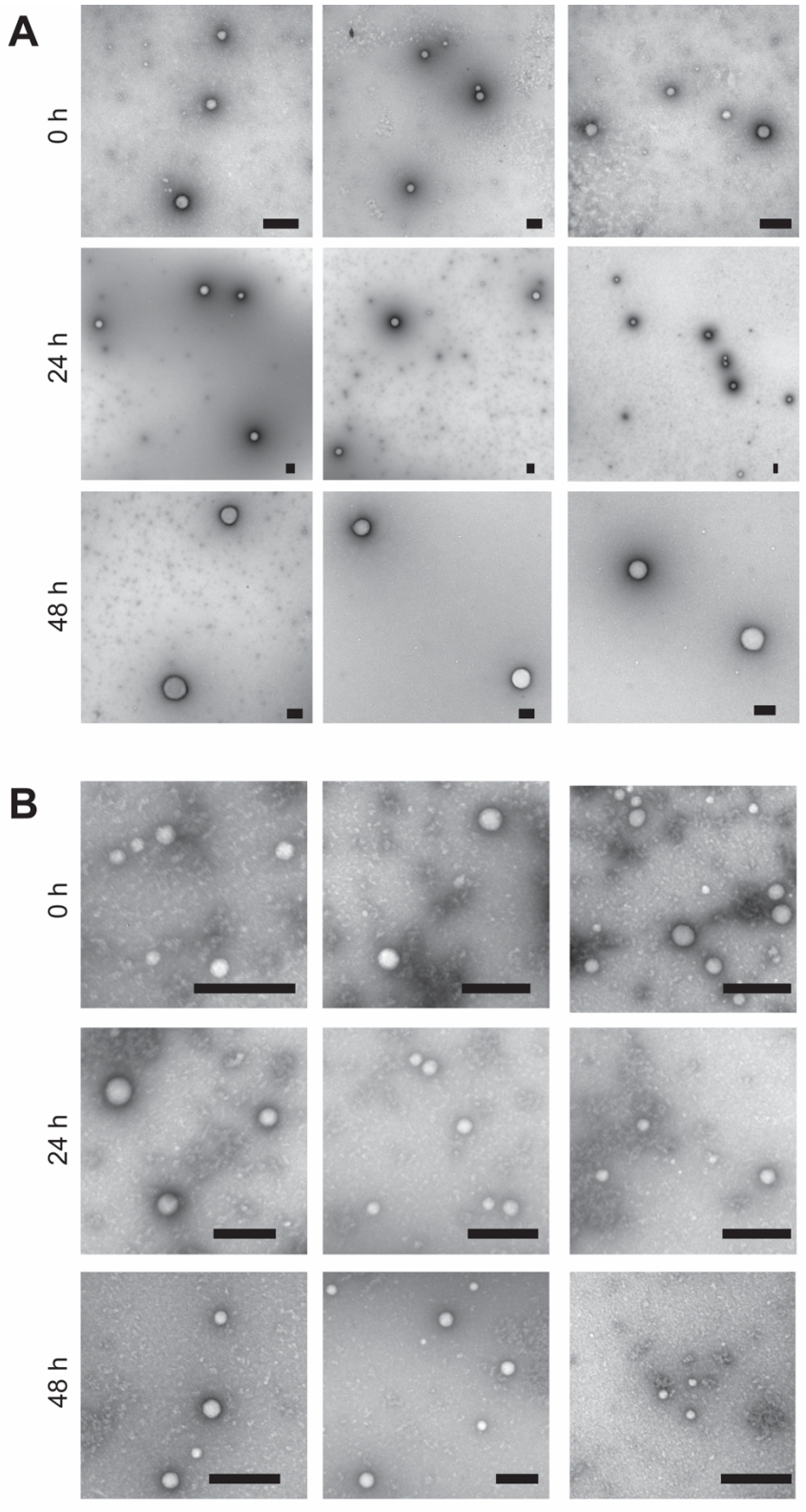

Figure S3 Additional TEM fields of view for (A) fulvestrant-UP80 and (B) PPD-PLAC-PEG during incubation in 10% serum as a function of time. Scale bar represents 200 nm.

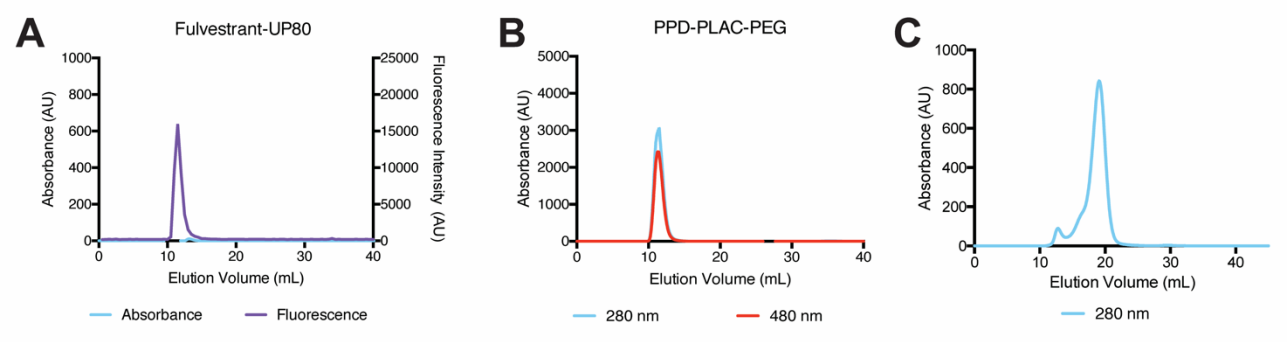

Figure S4 Representative chromatograms of (A) fulvestrant-UP80, (B) PPD-PLAC-PEG and (C) 20% serum following size exclusion chromatography. Fulvestrant-UP80 and PPD-PLAC-PEG were separated in serum-free conditions.

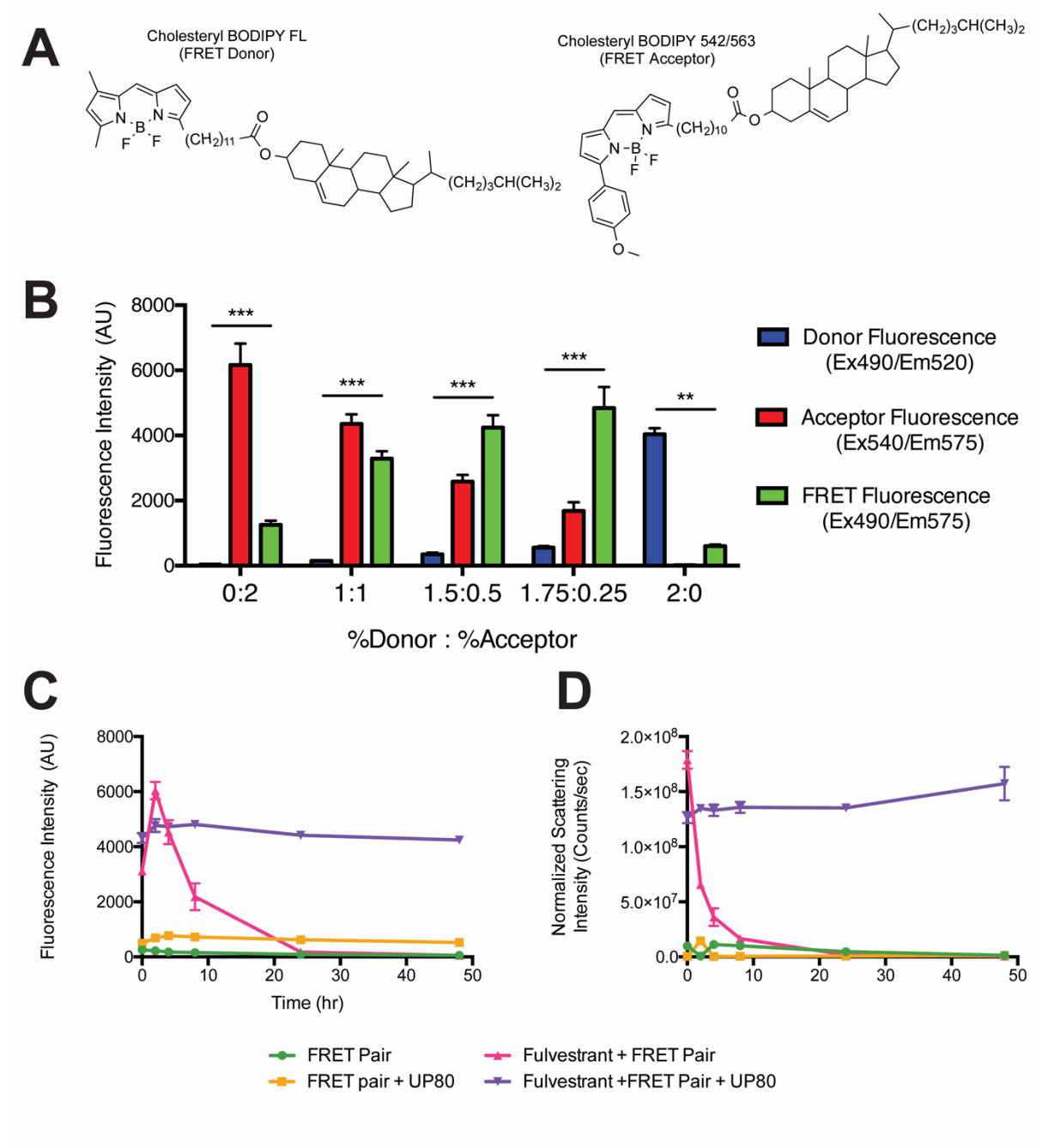

Figure S5 (A) Structure of FRET pair of CholEsteryl BODIPY FL (Donor) and CholEsteryl BODIPY 542/563 (Acceptor). (B) Fluorescence properties of BODIPY dyes (2 mol%) co-formulated with 50 µM fulvestrant and 0.001% UP80 in PBS. (n=3, mean±SD, ** $p<0.01$, ***$p<0.001$ between donor, acceptor and FRET fluorescence within formulations) (C) Stability of fulvestrant-UP80 colloids in PBS measured by FRET fluorescence correlates with stability measured by (D) dynamic light scattering. Decrease in fluorescence and scattering intensity of non-stabilized colloids indicates crystallization and precipitation over time. UP80-stabilized colloids maintain fluorescence intensity, indicating an amorphous state throughout. Dye incorporation is unlikely within nanocrystalline particles. Formulations comprise 50 µM fulvestrant, 1.75 mol% donor, 0.25 mol% acceptor, 0.001% UP80 in PBS (n=3, mean±SD).

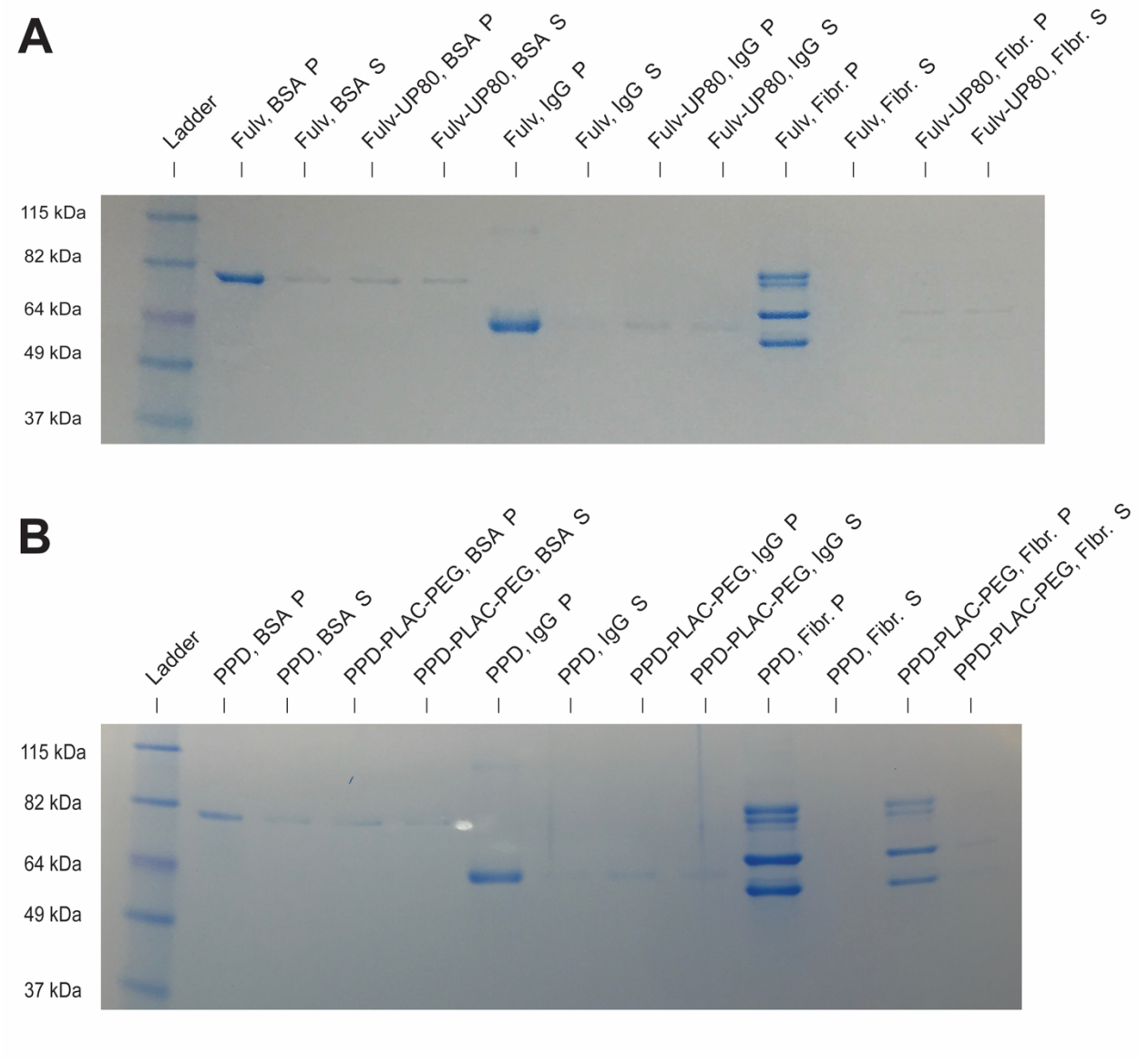

Figure S6 Representative SDS-PAGE images of (A) fulvestrant and (B) PPD colloids after incubation with 50 nM bovine serum albumin (BSA), immunoglobulin G (IgG) and fibrinogen (Fibr.). Pellet (P) and supernatant (S) fraction were separated by centrifugation of formulation at 16000x *g* for 1 h at 4 ^{o}C. Representative image of 3 repeats.