Amphiphilic star polypept(o)ides as nanomeric vectors in mucosal drug delivery

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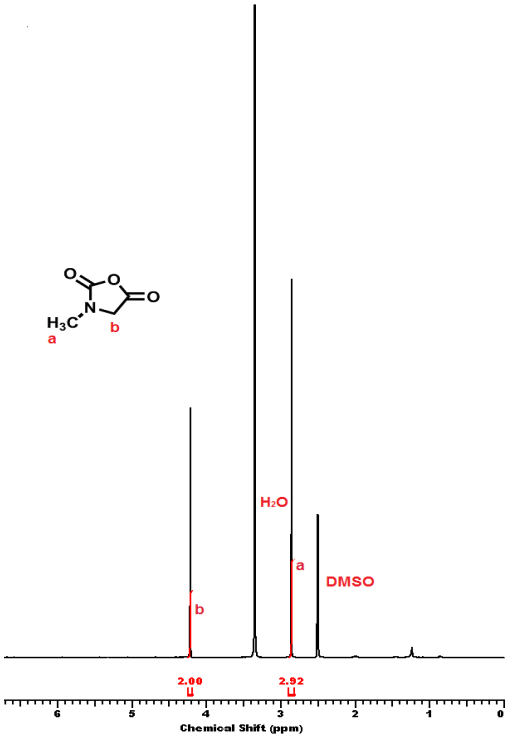


Figure S1. [1]H-NMR spectrum of Sar NCA.

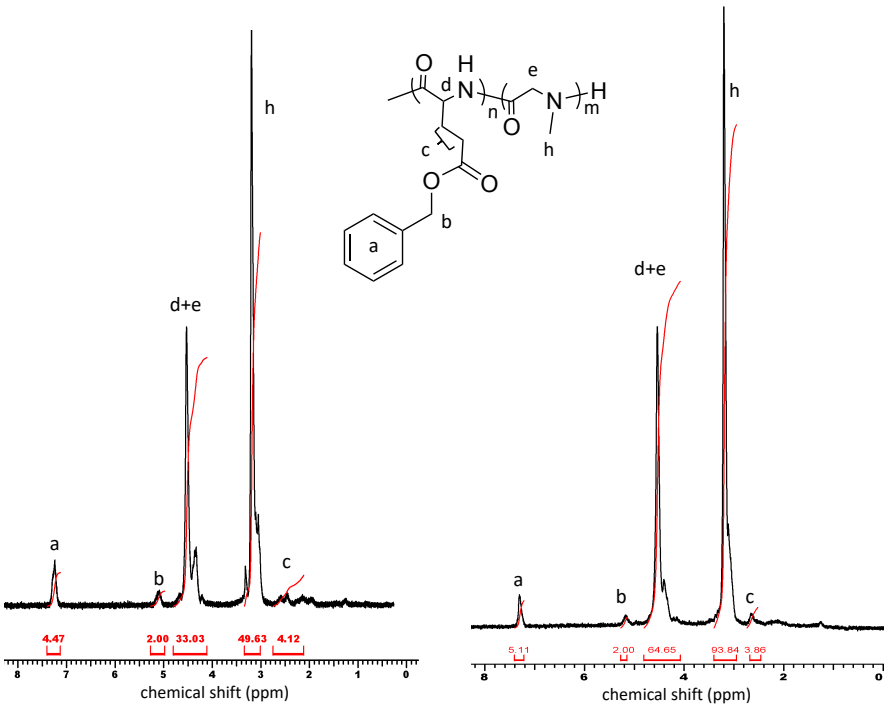


Figure S2. Representative ^{1}H-NMR spectra of S10 (PBLG$_{20}$-*b*-PSar$_{320}$), left, and S11 (PBLG$_{20}$-*b*-PSar$_{640}$), right, in TFA.

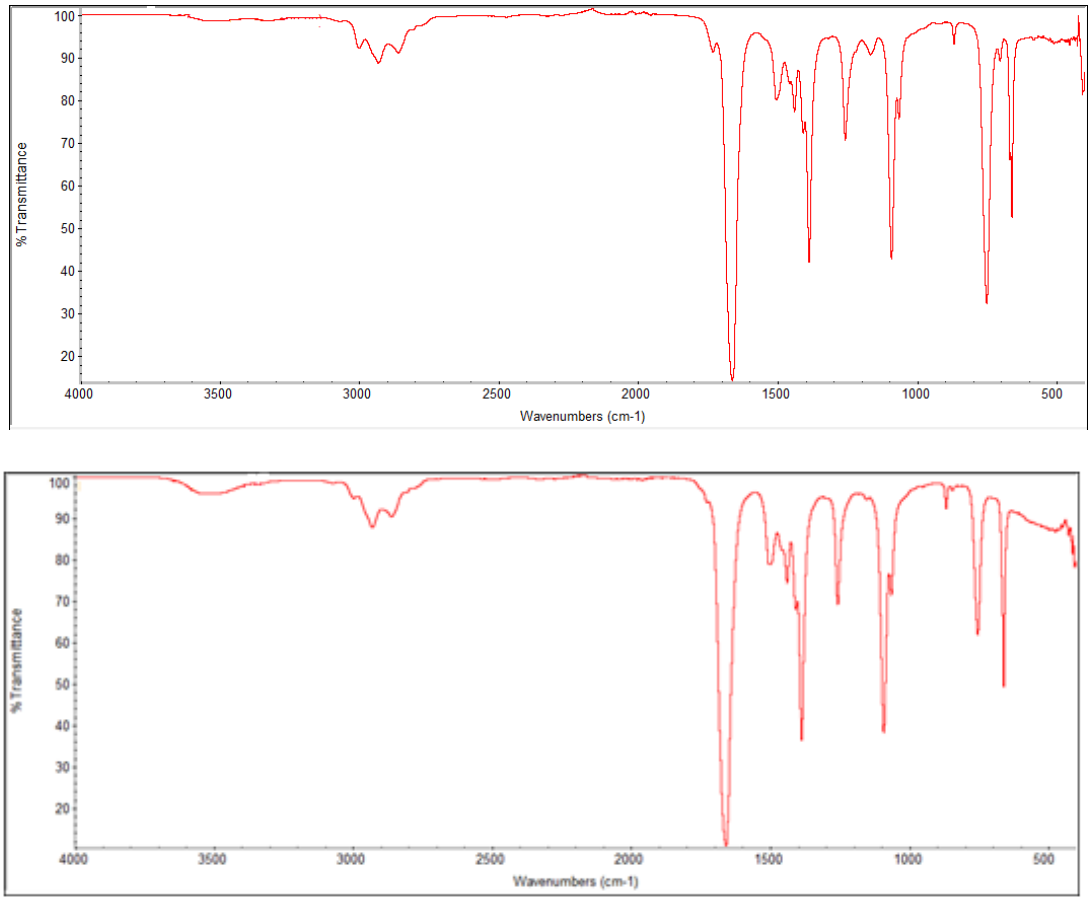


Figure S3. FTIR spectra of 8-arm starPBLG$_{20}$ (top) and starPBLG$_{20}$-*b*-PSar$_{640}$ (bottom).

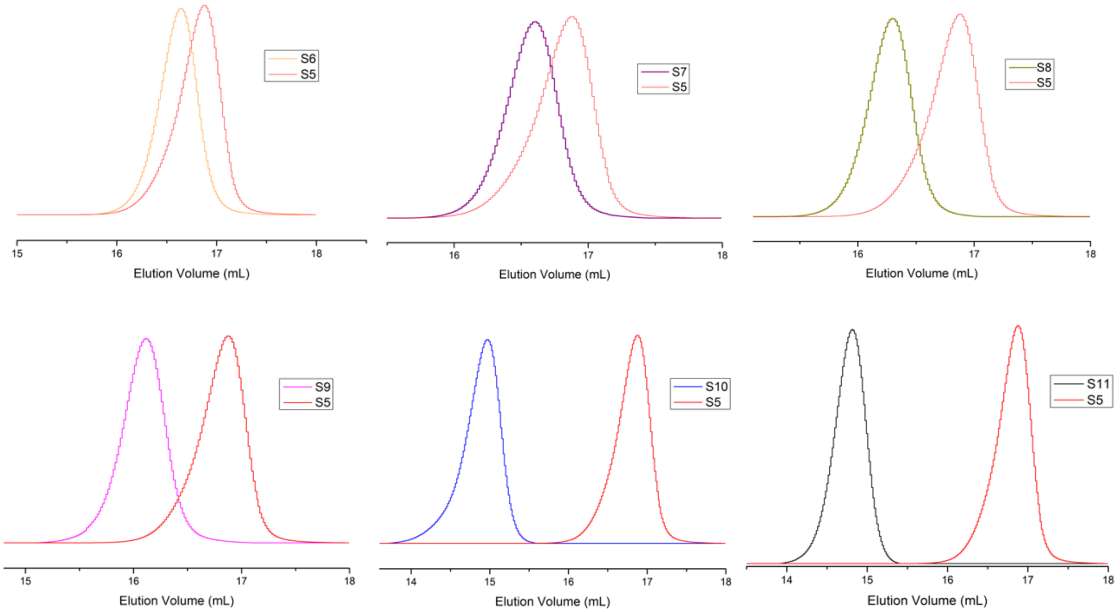


Figure S4. GPC traces of 8-arm star PBLG (S5) and polypept(o)ide star polymers S6-S11.

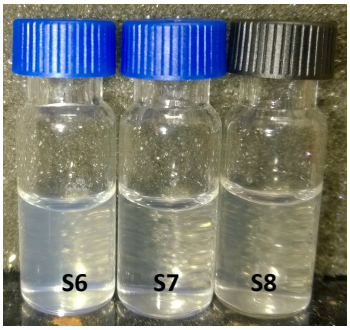


Figure S5. Solutions of star polypept(o)ides S6-S8 in water (5 mg/mL)

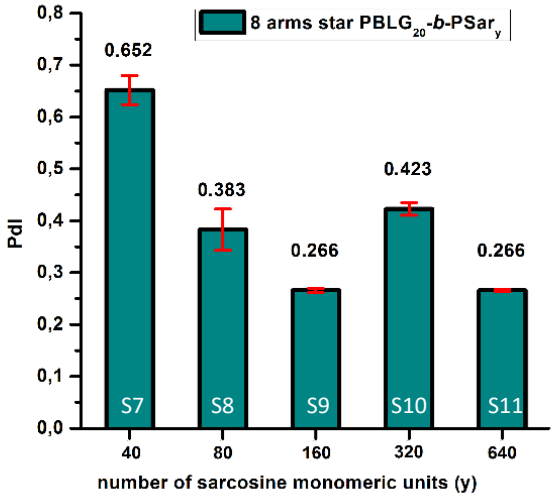


Figure S6. Dispersity index (*PdI*) of star polypept(o)ides S7-S11 at a concentration of 5 mg/mL in water (error bar represents the standard deviation of three measurements).

Table S1. Hydrodynamic radius (R_H) and dispersity index (PdI) of star polymer nanoaggregates in deionized water (error values represent the standard deviation of three measurements).

Sample	10 mg/1 ml	
	RH (nm)	PdI
8 arm star PBLG20-b-PSAR20	230.7 ± 11.2	0.89 ± 0.04
8 arm star PBLG20-b-PSAR40	434.4 ± 12.1	0.61 ± 0.04
8 arm star PBLG20-b-PSAR80	311.1 ± 4.7	0.4 ± 0.02
8 arm star PBLG20-b-PSAR160	179.2 ± 0.9	0.32 ± 0.04
8 arm star PBLG20-b-PSAR320	131.9 ± 1.9	0.44 ± 0.01
8 arm star PBLG20-b-PSAR640	124.9 ± 4.2	0.27 ± 0.002

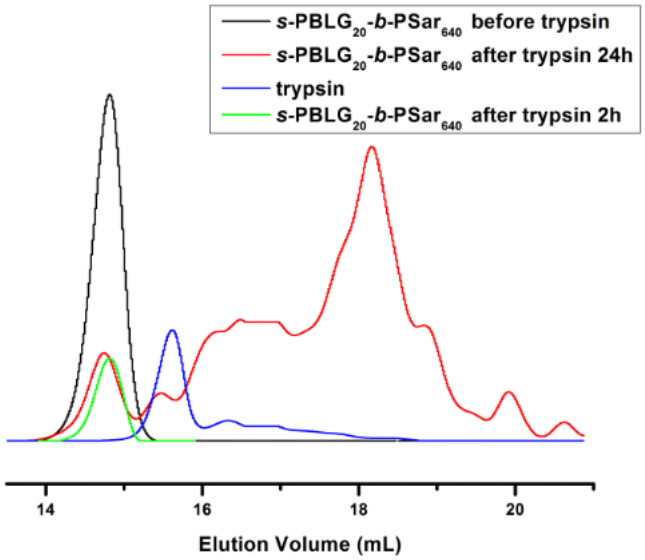


Figure S7. SEC traces of S11 before and after incubation with trypsin.

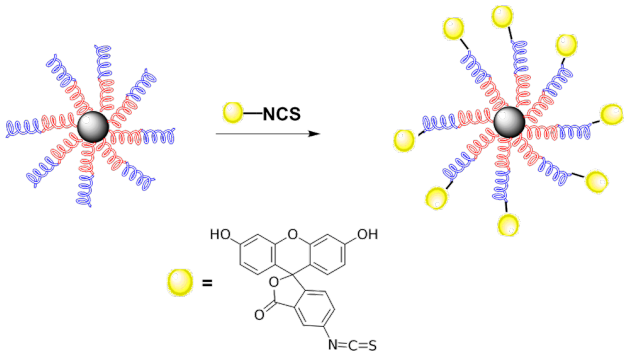
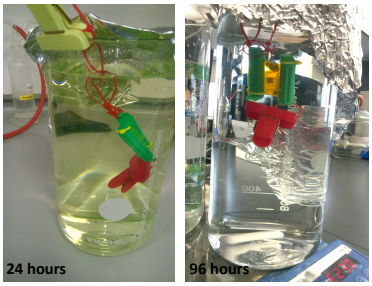


Figure S8. Labelling of S11 with fluorescein isothiocyanate, FITC.



Time (hours)	Absorbance (A)
24	0.145
48	0.003
72	0.005
96	0.001

Figure S9. Left: Images of dialysis to remove excess FITC from S11 after 24 and 96 hours. Right: UV-Vis (λ=495 nm) absorbance of dialysate demonstrating removal of excess FITC.

Table S2. Experimental data for the mass transport of FITC-S11 through artificial mucus (FITC-S11 + Mucus) and controls without mucus (FITC-S11 – Mucus).

	Cumulative transport (μg)				Percentage of theoretical
	60 min	120 min	180 min	240 min	
Experiment 1					
FITC-S11 + Mucus 1	0.38	1.88	3.20	3.53	35.25
FITC-S11 + Mucus 2	0.26	1.32	2.05	2.39	23.85
FITC-S11 - Mucus 1	2.76	6.27	7.59	8.31	83.12
FITC-S11 - Mucus 2	2.74	6.45	7.60	8.18	81.84
Experiment 2					
FITC-S11 + Mucus 1	1.32	2.27	3.05	4.04	40.37
FITC-S11 + Mucus 2	2.23	3.41	4.25	5.38	53.81
FITC-S11 - Mucus 1	2.16	10.45	9.35	10.19	101.87
FITC-S11 - Mucus 2	3.08	5.65	6.82	8.18	81.78
Experiment 3					
FITC-S11 + Mucus 1	4.30	5.49	6.77	7.55	75.52
FITC-S11 + Mucus 2	1.39	3.52	5.01	8.33	83.28
FITC-S11 - Mucus 1	6.24	8.25	9.41	9.78	97.84
FITC-S11 - Mucus 2	5.90	8.47	9.47	9.97	99.68

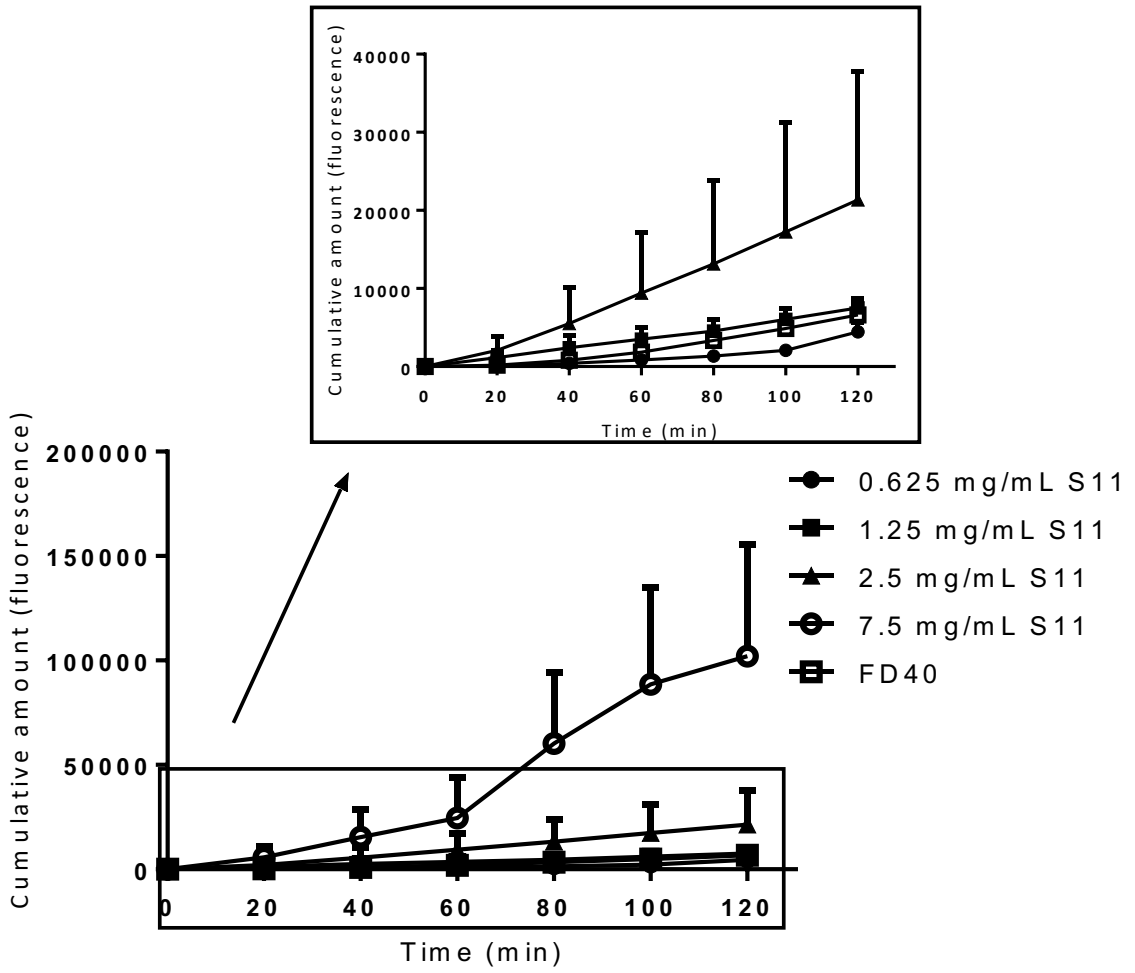


Figure S10. Cumulative permeated signal for 0.625-7.5 mg/mL FITC-S11 (S11) and FD40 (2.5 mg/mL) across rat jejunal mucosae mounted in Franz Cells (n=3-4). Inset shows magnification of groups in the absence of the 7.5 mg / mL S11 group.