

Supporting Information

Hydrogels composed of hyaluronic acid and dendritic ELPs: Hierarchical structure and physical properties

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Peptide Synthesis

Peptides DG1-5, 2-5, 3-5, 1-10, 2-10, 3-10 and 2-15 were reported in previous work, with MS, analytical HPLC and gel electrophoresis data.¹

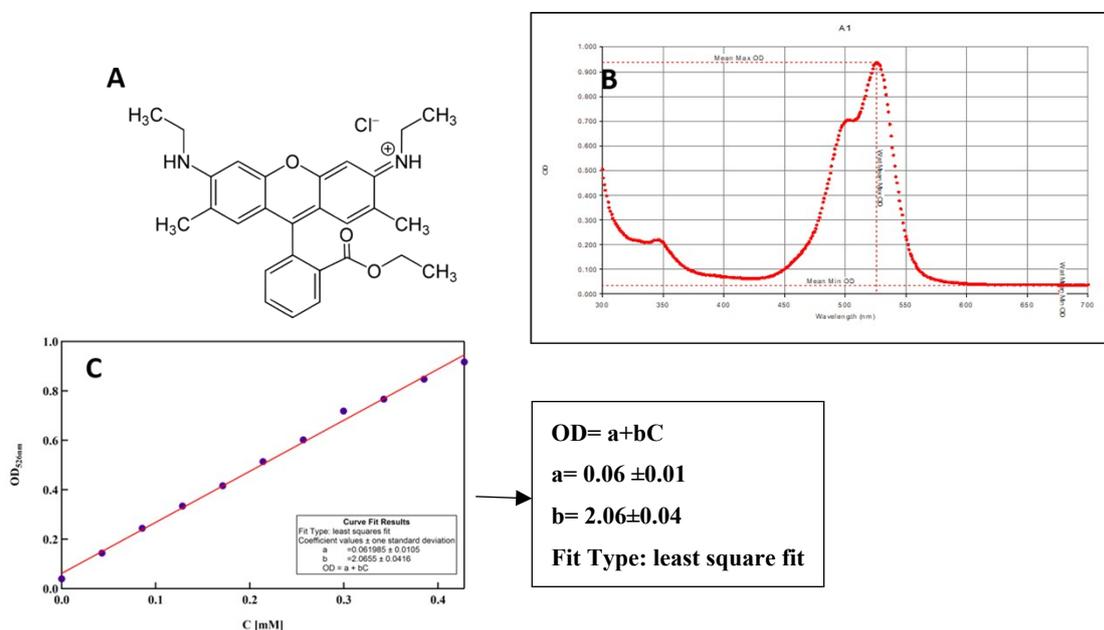


Figure S1. **A.** Chemical structure of Rhodamine 6G. **B.** Absorbance spectrum of rhodamine 6G in 0.01M PBS. $\lambda_{\text{max}}=526$ nm. **C.** Calibration plot of rhodamine 6G.

Peptide name	MW [Da] ^a	C _{NaCl} ^b
DG1-5	1276	N/A ^c
DG1-10	2150	3.25
DG2-5	3537	3.39
DG2-10	6161	0.89
DG3-5	8060	2.24
DG2-15	8784	0.24
DG3-10	14181	0.55

Table S1. Summary of the den_ELPs used in this paper and their transition behavior at 5 mg/mL in 10 mM PBS buffer at pH=7.4. (^a MW indicates exact mass. ^b Total NaCl concentration [M] required to achieve turbidity at 37 °C. ^c For DG1-5 no turbidity was observed in the examined salt range.)¹



Figure S2. Synthesis of HA_DG2-15 at A. 25 °C and B. 4 °C.

Days since swelling	T (°C)	HA-DG1_5	HA-DG1_10	HA-DG2_5	HA-DG2_10	HA-DG3_5
0 (After 10 min in PBS)	25					
1	4					
	25					
4	4					
	25					

Table S2. HA_DGx-y at 4 °C and 25 °C after 10 min and 1,4 d of incubation in PBS solution.

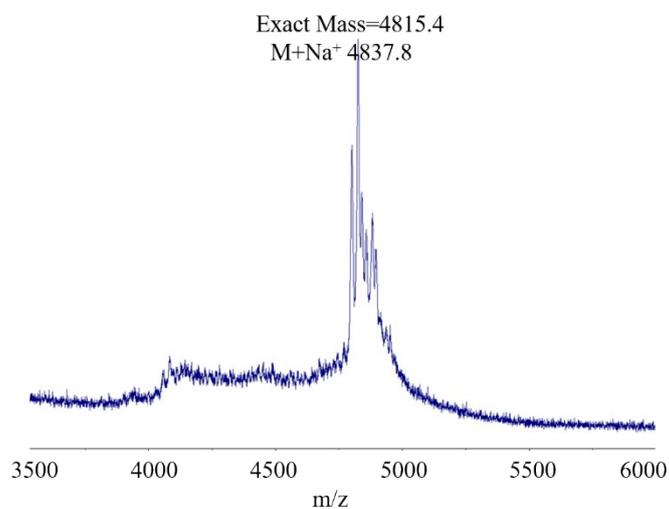


Figure S3. The MALDI-TOF spectrum of peptide DG2-10 control with non-thermoreponsive GGPGG repeating sequence.¹



Figure S4. HA_DG2-10 control after 10 min incubation at PBS solution 25 °C (no opaque regions).

Hydrogel	S_r
HA_DG2-5	18.7±0.7
HA_DG3-5	18±2
HA_DG2-10	12.8±1
HA_DG3-10	10.9±0.5

Table S3. Swelling ratio of the hydrogels after 5 min of immersion at rt in PBS solution (0.01M, pH=7.4).

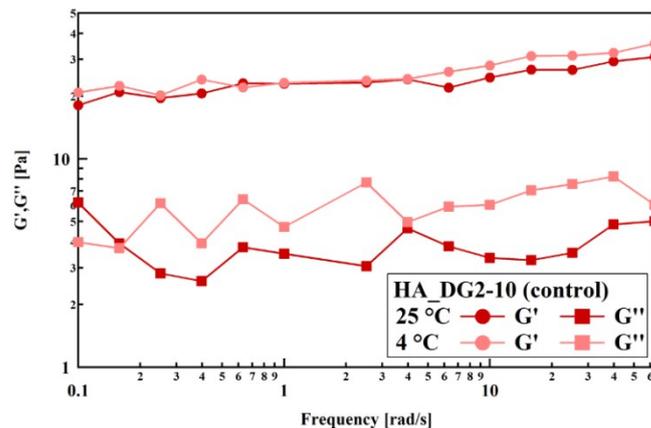


Figure S5. Frequency sweep experiment curve of HA_DG2-10 control after 2h incubation in PBS solution (0.01M) at 23 °C and after 4d incubation in PBS solution (0.01M) at 4 °C.

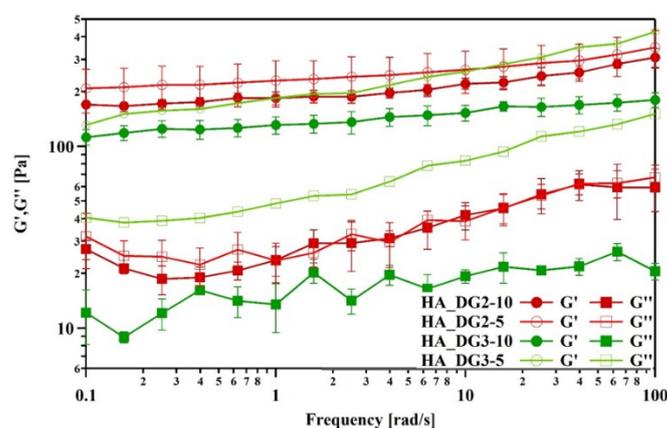


Figure S6. Frequency sweep experiment curve of HA_DG2-5, 2-10, 3-5, and 3-10 after full rehydration.

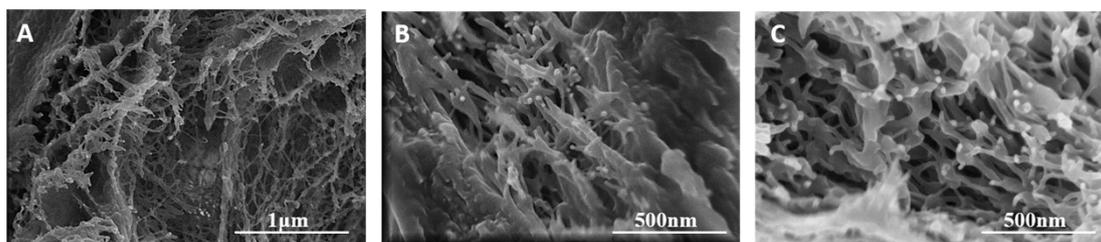


Figure S7. SEM image of A. HA_DG1-5 B. HA_DG2-5 C. HA_DG3-5 hydrogel.

References:

1. M. Zhou, Y. Shmidov, J. B. Matson and R. Bitton, *Colloid. Surface B*, 2017, **153**, 141-151.