Supplementary Material (ESI) for Soft Matter

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Self-Coacervation of Modular Squid Beak Proteins – A Comparative Study

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Table S1. List of buffers used in studies of HBP-1 and -2 coacervation at different pH and ionic strength.

Ph range	Buffer (60 mM)
4 – 5.5	Sodium acetate
6	MES
6.5 – 8	Sodium phosphate
9	Tris
10	CAPS

Each buffer was prepared at 0.1 M, 0.5 M, and 1 M ionic strength (adjusted with NaCl).

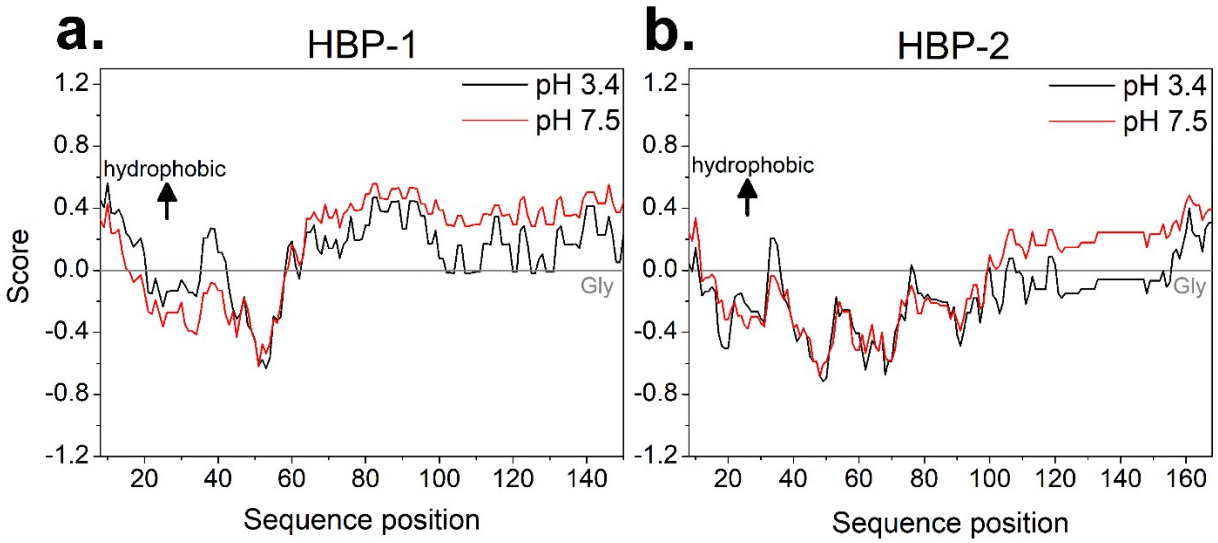

Figure S1. Hydropathy plot of **(a)** HBP-1 and **(b)** HBP-2 at different pHs. Hydrophobic index of HBPs calculated using ProtScale tool available online at http://web.expasy.org/protscale. Hydrophobicity indices at ph 3.4 and 7.5 determined by HPLC (Ref. 33, manuscript); window size: 9; scale not normalized; relative weight for window edges: 100 %; weight variation model: linear.

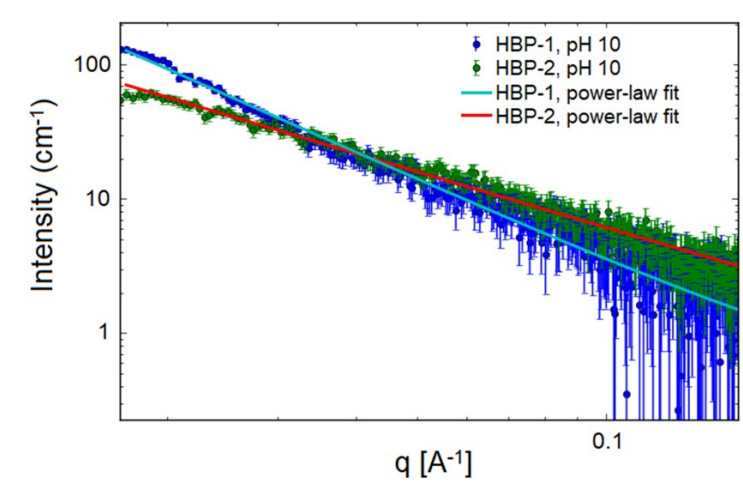

Figure S2. Experimental SAXS curves and power-law fits for HBPs scattering at pH 10. Both coacervate particles appear elongated and larger at this pH. HBP-2 follows a q^{-1} behaviour characteristic for elongated particles and unfolded proteins, whereas HBP-1 appears closer to q^{-2} (scattering typical for Gaussian polymer chains), indicating a partly folded state of the protein.

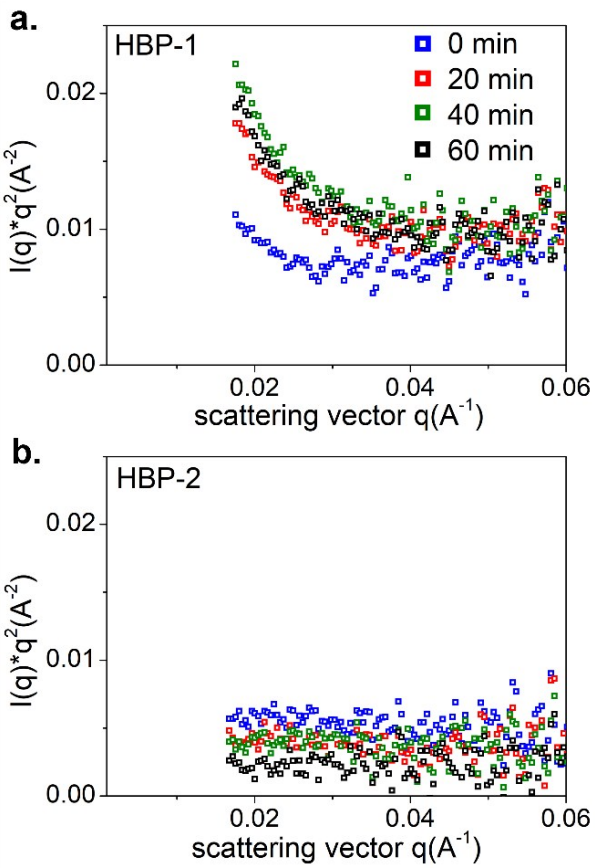

Figure S3. Small Angle X-ray Scattering at different coacervation time. Kratky plot of **(a)** HBP-1 and **(b)** HBP-2 coacervates at different times after dispersion.

Supplementary Videos

HBP-1 and -2 coacervates were prepared by: adding protein stock solution (0.65 mM) to a 60 mM phosphate buffer (pH 6.5, IS 100 mM), with a protein : buffer volume ratio of 1:9.

ESI_video_1 HBP-1 – part 1: formation of condensed coacervate, part 2: removal of buffer surrounding condensed coacervate, part 3: drying of the coacervate.

ESI_video_2 HBP-2 – part 1: self-coacervation process, part 2: dispersion of the coacervate phase by pipetting.

ESI_video_3 HBP-2 – part 1: formation of dispersed coacervate, part 2: drying of the coacervate.