

Supplementary Information

Table S1. Protein mixtures, self-assembly conditions, and large amyloid fiber properties.

Template:Adder	mol:mol	Temperature (°C)	pH	Morphology	E (GPa)	θ (°)	h (nm)
AHWG	N/A	25	7.5	Cylinder	0.082	19.1	1680
THWG 3 day	N/A	37	8	Cylinder	0.158	27.5	520
THWG pH 4	N/A	37	4	Cylinder	0.222	24.3	5100
THWG pH 6	N/A	37	6	Cylinder	0.338	21.9	3770
THWG pH 8	N/A	37	8	Cylinder	2.397	29.4	2900
THWG pH 10	N/A	37	10	Cylinder	0.283	15.6	4400
THWG-95 °C	N/A	37/95	8	Cylinder	6.558, 5.487	33.5	2547
THGd:My 100 mM NaCl	0.36:0.64	37	8	Cylinder	0.149	19.6	1424
Gd20KK:P7	0.50:0.50	37	8	Cylinder	0.224	19.1	1244
P4An:My	0.50:0.50	37	8	Cylinder	0.700	22.9	1418
THWG 100 mM NaCl	N/A	37	8	Tape	0.184	16.8	1102
THGd:My	0.63:0.37	37	8	Tape	0.166	15.7	600
THGd:My	0.36:0.64	37	8	Tape	0.142	14.5	1380
THGd:My	0.16:0.84	37	8	Tape	0.122	14.7	1425
THGd:Am	0.85:0.15	37	8	Tape	0.170	11.7	1020
THGd:Am	0.66:0.34	37	8	Tape	0.130	20.0	
THGd:Am	0.39:0.61	37	8	Tape	0.178	9.0	1370
Am	N/A	37	8	Tape	0.152	10.1	1415
Al	N/A	37	8	Tape	N/A	8.0	3680
In	N/A	37	8	Tape	N/A	10.1	1167
THGd:Al	0.36:0.64	37	8	Tape	N/A	17.6	1503
THGd:Hm	0.36:0.64	37	8	Tape	N/A	15.8	1580
THGd:In	0.36:0.64	37	8	Tape	N/A	16.8	1278
THGd:My pH 4	0.36:0.64	37	4	Tape	0.092	12.4	1085
THGd:My pH 6	0.36:0.64	37	6	Tape	0.132	11.9	1315
THGd:My pH 10	0.36:0.64	37	10	Tape	0.168	14.7	1027
THGd:P4An	0.07:0.93	37	8	Tape	0.222	12.9	1940

Table S1. *Cont.*

Template:Adder	mol:mol	Temperature (°C)	pH	Morphology	E (GPa)	θ (°)	h (nm)
Gd20KK:P4An	0.50:0.50	37	8	Tape	0.122	19.8	1090
Gd20KK:My	0.36:0.64	37	8	Tape	N/A	13.5	2136
CB4	N/A	37	8	Tape	0.080	12.0	1062
CB4:My	0.36:0.64	37	8	Tape	0.070	19.1	705
THGd	N/A	37	8	Ellipse	0.582	15.1	915
P4	N/A	37	8	Ellipse	0.693	15.1	628
P4An	N/A	37	8	Ellipse, tape, twisted tape	0.380	13.9	1052
P7	N/A	37	8	Highly twisted tape	0.742	17.1	1134
THGd:P7	0.07:0.93	37	8	Ellipse, tape, twisted tape	0.362	15.8	1464
P4:My	0.50:0.50	37	8	Ellipse	0.415	16.7	1200
P7:My	0.50:0.50	37	8	Tape, highly twisted tape	0.332	20.0	1064
P4An:My pH 7	0.50:0.50	37	7	Tape, highly twisted tape	0.153	17.6	1518
THWG 22 °C	N/A	22	8	Ellipse, tape	N/A	15.7	1428
THWG 60 °C	N/A	60	8	Ellipse, tape	N/A	23.7	968
THWG 80 °C	N/A	80	8	Ellipse, tape	N/A	22.9	710
THGd:My 22 °C	0.36:0.64	22	8	Ellipse	N/A	20.5	833
THGd:My 60 °C	0.36:0.64	60	8	Ellipse, tape, highly twisted tape	N/A	15.3	1712
THGd:My 80 °C	0.36:0.64	80	8	Ellipse	N/A	20.2	1278

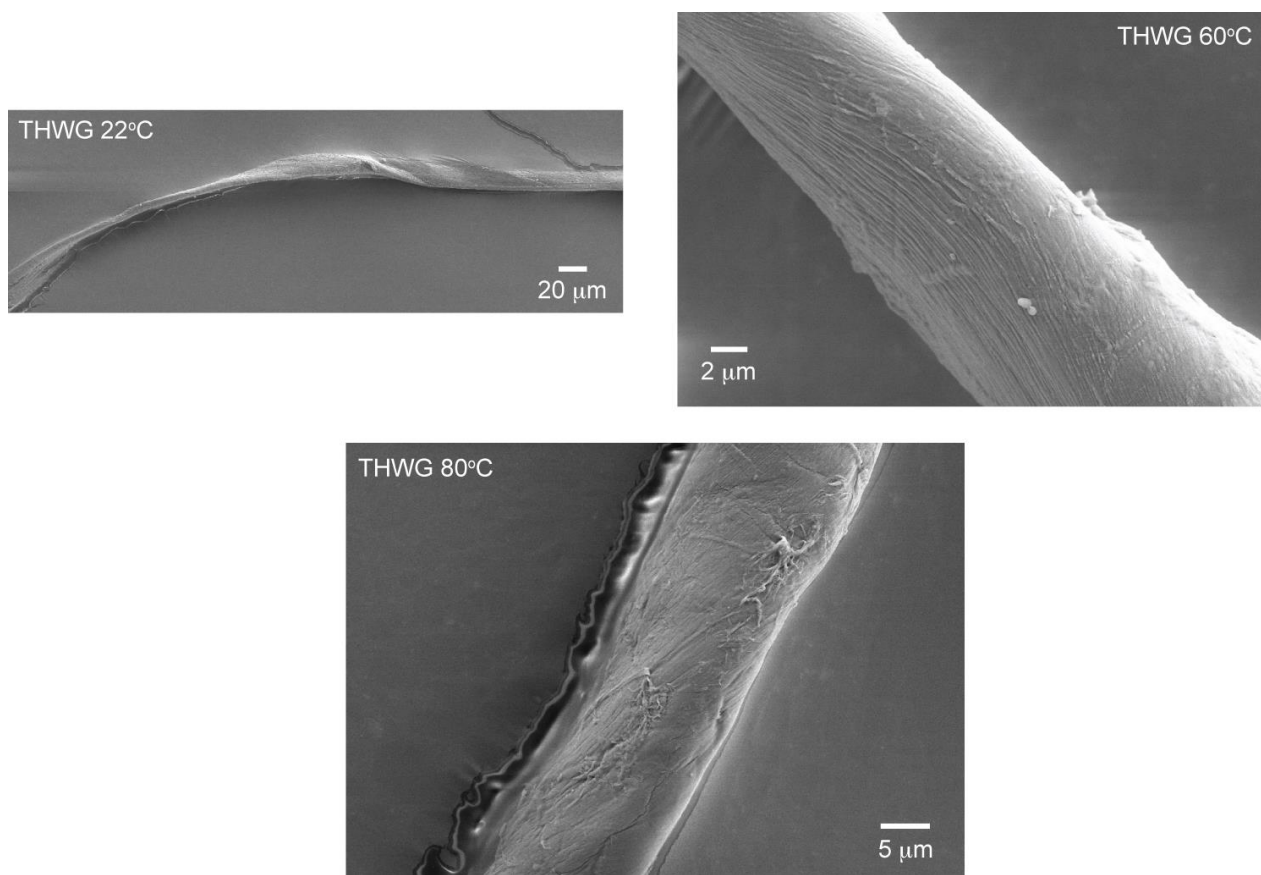


Figure S1. THWG shows elliptical and rectangular cross-sections when self-assembled at temperatures other than 37 °C. Shown are THWG flat tape at 22 °C, ellipse at 60 °C, and ellipse at 80 °C.

Table S2. Properties of proteins used in mixtures.

Protein	α (%)	# aa	MW	AI	GRAVY	pI	– (%)	+ (%)	TANGO
A1	35	142	16,247	91.3	–0.169	4.9	14.1	9.2	1317
Am	25	512	58,549	69.6	–0.607	6.3	12.1	10.6	2272
Hm	67	142	15,245	93.5	0.013	8.7	8.5	9.9	321
In	45	110	11,981	102.91	0.193	5.2	9.1	6.4	861
My	76	154	17,083	88.8	–0.381	7.2	13.6	13.6	624
CB4	74	23	2461	152.6	1.022	8.5	0.0	4.4	677
Gd20	85	20	2060	171.0	1.820	9.4	0.0	5.0	1477
Gd20KK	91	22	2316	155.5	1.300	11.2	0.0	13.6	1176
P4	0	20	2332	204.0	1.000	5.5	0.0	0.0	116
P4An	0	20	2332	204.0	1.005	7.0	10.0	10.0	13
P7	90	20	2332	102.0	–1.250	5.5	0.0	0.0	586

Notes: α is % α -helix; # aa is number of amino acids; MW is molecular weight in g/mol; AI is aliphatic index; GRAVY is grand average of hydropathicity; pI is isoelectric point; –, + is percentage of negative and positive amino acids, respectively; TANGO is the AGG potential or tendency for β -sheet aggregation. A1 is α -lactalbumin (UniProt P00711); Am is amylase (UniProt P06278); Hm is hemoglobin (UniProt P01958); In is insulin (UniProt P01308); My is myoglobin (UniProt P68082).

Table S3. Amino acid sequences of engineered proteins.

Protein	Sequence
CB4	SLGGVVAYLQ LANIQQAVFI SRI
Gd20KK	MKTFLILALL AIVATTATTA KK
P4	LVLVQQQQLV LVQQQQLVLV
P4An	LVLVKEHEL VLVNHHKHLVLV
P7	QQQQQQQLVL VLVQQQQQQQ