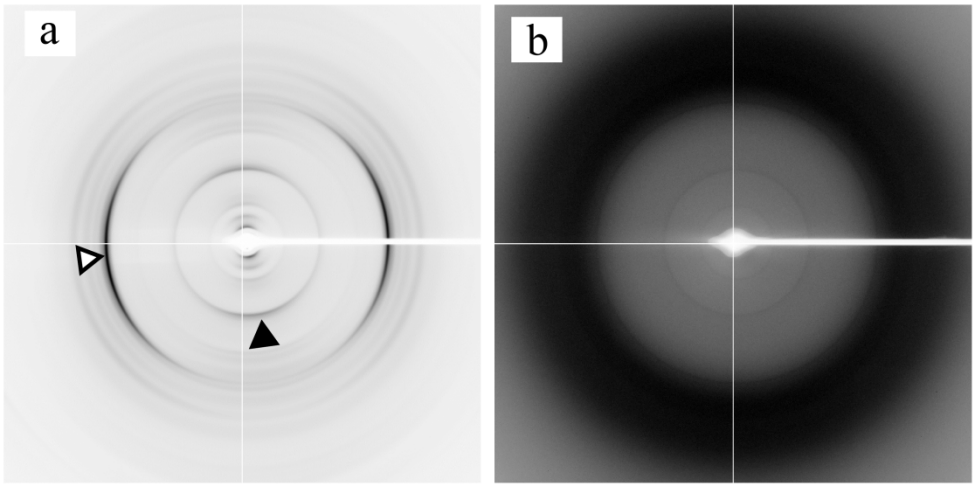
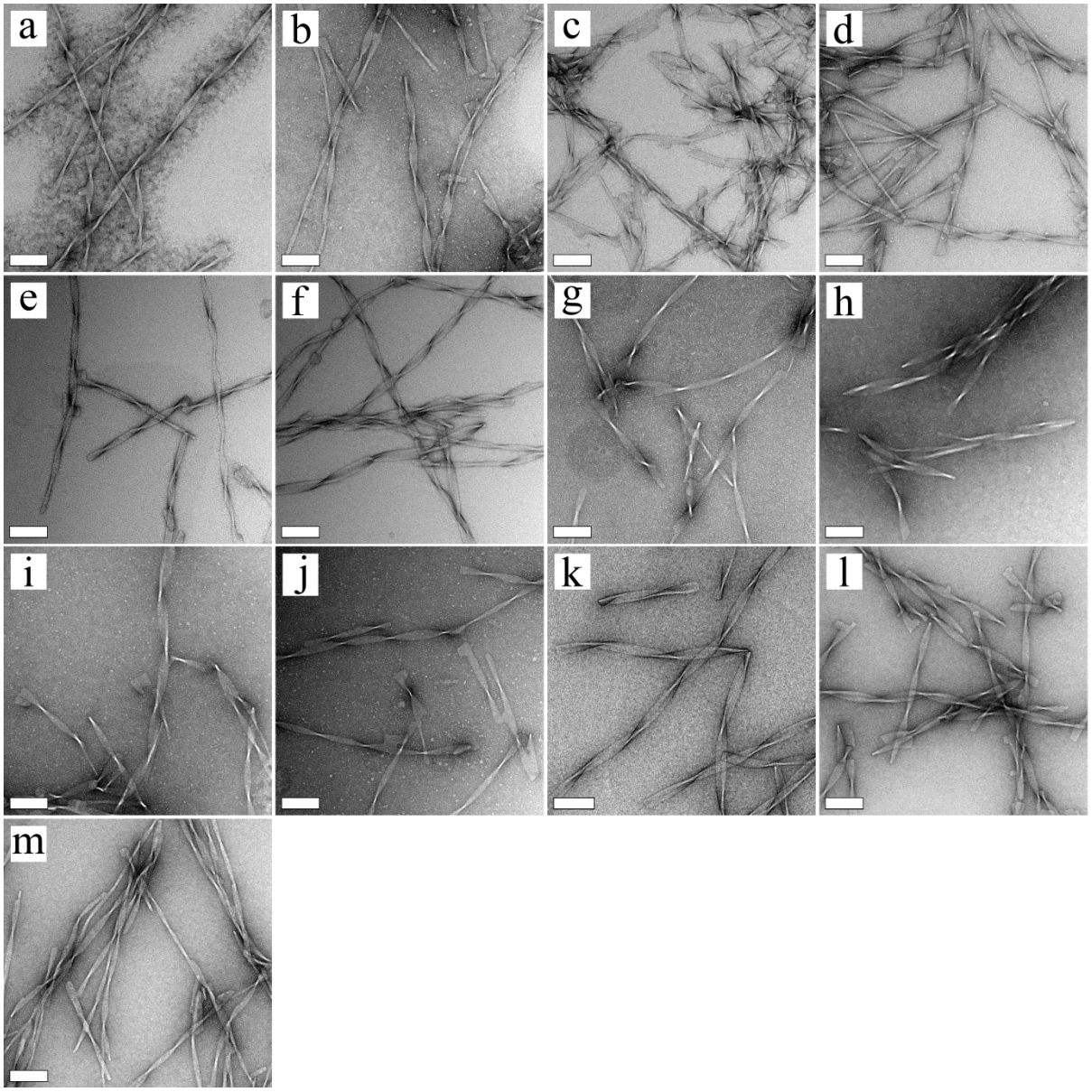
Supplementary Information

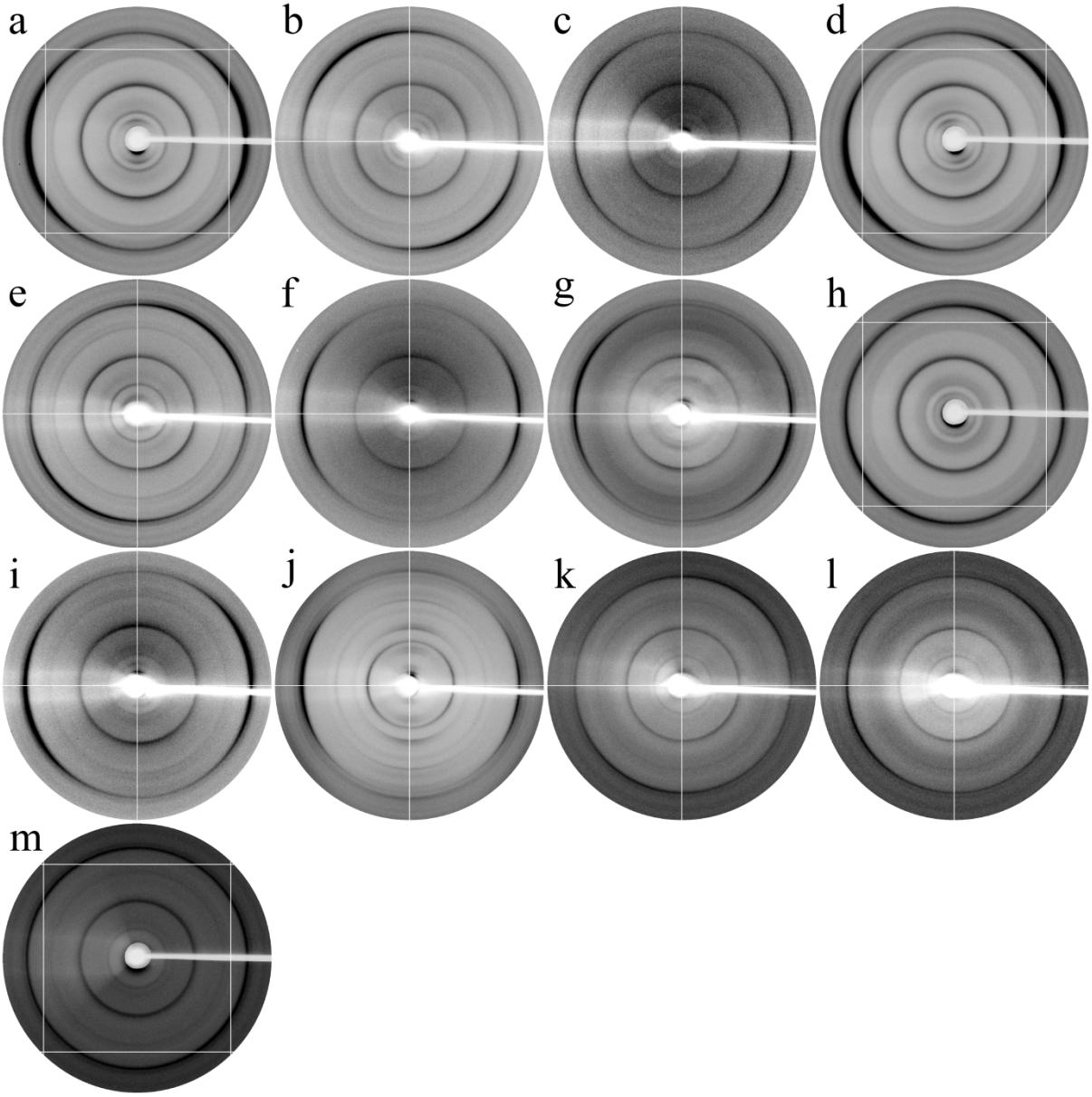
Supplementary figures



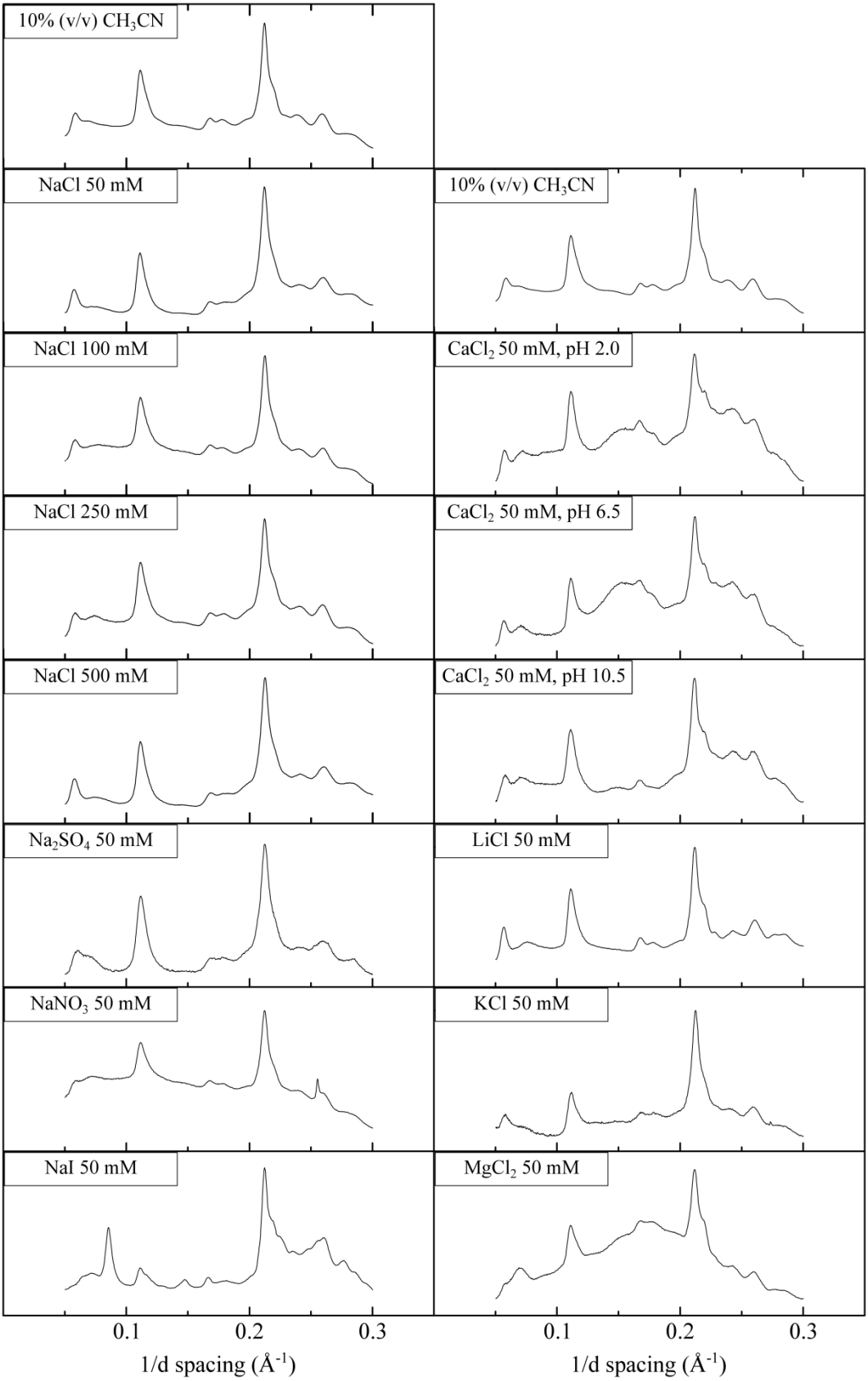
SI Figure 1: WAXS 2D patterns obtained from TTR1-GGK fibrils using a) a dried stalk of seeded TTR1-GGK fibrils or b) a hydrated pellet of TTR1-GGK fibrils. The open and closed triangles indicate major anisotropic reflections at 4.7 Å and 9.0 Å respectively.



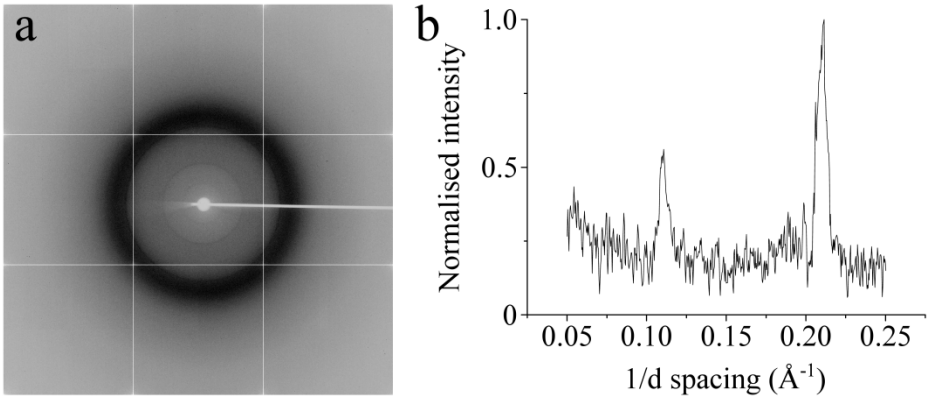
SI Figure 2: Transmission electron microscopy images of mature fibrils assembled from the TTR1-GGK peptide in different solution conditions at pH 2.0 unless otherwise stated containing: a) 50 mM NaCl, b) 100 mM NaCl, c) 250 mM NaCl, d) 500 mM NaCl, e) 50 mM LiCl, f) 50 mM KCl, g) 50 mM $MgCl_2$, h) 50 mM Na_2SO_4, i) 50 mM $NaNO_3$, j) 50 mM NaI, k) 50 mM $CaCl_2$, l) 50 mM $CaCl_2$ at pH 6.5 or m) 50 mM $CaCl_2$ at pH 10.5. The scale bars are all 100 nm in length.



SI Figure 3: WAXS 2D diffraction patterns obtained from dried stalks of fibrils assembled in different solution conditions at pH 2.0 unless otherwise stated: a) 50 mM NaCl, b) 100 mM NaCl, c) 250 mM NaCl, d) 500 mM NaCl, e) 50 mM LiCl , f) 50 mM KCl, g) 50 mM $MgCl_2$, h) 50 mM Na_2SO_4, i) 50 mM $NaNO_3$, j) 50 mM NaI, k) 50 mM $CaCl_2$, l) 50 mM $CaCl_2$ at pH 6.5 and m) 50 mM $CaCl_2$ at pH 10.5. The white lines arise from the X-ray detectors used.

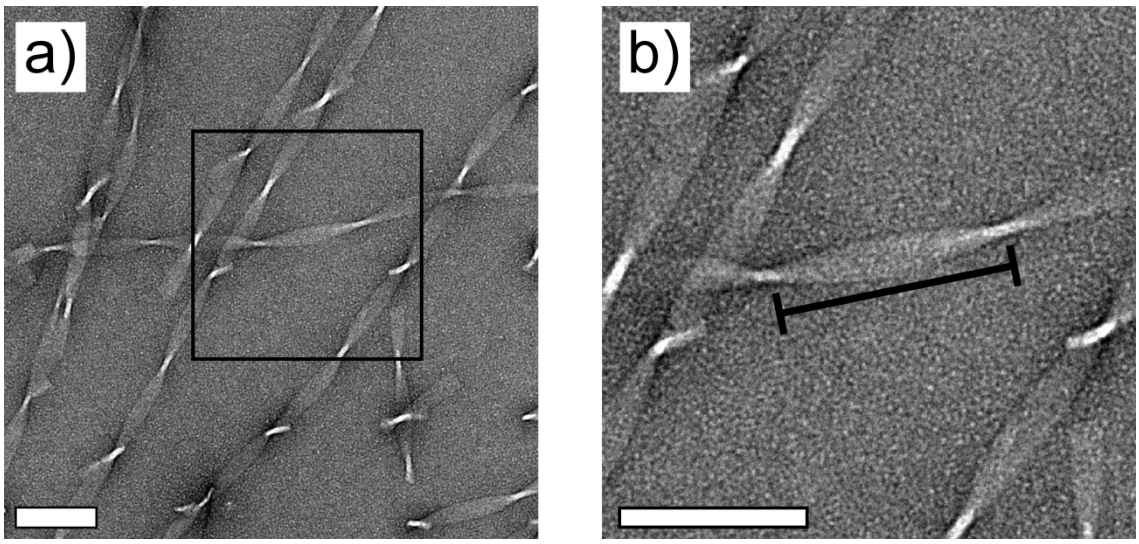


SI Figure 4: Normalised WAXS 1D profiles obtained from dried stalks. The data corresponds to the diffraction patterns shown in SI Figure 3. The pattern obtained from fibrils assembled in 10% (v/v) CH_3CN is added to each column for comparison.



SI Figure 5: a) WAXS 2D diffraction pattern for a hydrated pellet of TTR1-GGK fibrils assembled in the presence of 50 mM $CaCl_2$ at pH 2.0 and b) corresponding WAXS 1D profile.

The pitch of TTR1-GGK fibrils assembled in under each of the conditions listed in SI Table 3 was measured within TEM images using the ImageJ software (NIH, Bethesda, MD, USA). The pixel size was calibrated using the imprinted scale bar. An example of the fibril pitch is given in SI Figure 6b. The measured pitch for each conditions is given in SI Table 3.



SI Figure 6: TEM image of TTR1-GGK fibrils. b) Magnified TEM image of the square section in a). The pitch of the fibrils was measured as indicated by the black bar.

Supplementary Tables

SI Table 1: Position of the major amide I peak in ATR-FTIR spectra for a hydrated layer of TTR1-GGK fibrils.

Sample [a]	Position of amide I main peak [cm^{-1}]
Unseeded [b]	1629
500 mM NaCl	1630
250 mM NaCl	1630
100 mM NaCl	1630
NaCl	1630
$CaCl_2$	1629
$CaCl_2$ pH 6.5	1631
CaCl2 pH 10.5	1631
$MgCl_2$	1628
KCl	1630
LiCl	1629
NaI	1629
$NaNO_3$	1630
Na_2SO_4	1630

[a] Fibrils were formed at pH 2.0 unless otherwise stated. The salt concentration used was 50 mM unless otherwise stated. [b] Unseeded fibril formation was in a solution of 10% (v/v) CH_3CN at pH 2.0.

SI Table 2: Position of maxima in WAXS diffraction patterns for TTR1-GGK fibrils assembled in different solution conditions corresponding to the spacing between β-strands and β-sheets.

Sample	Inter-strand spacing [Å]	Inter-sheet spacing [Å]
Unseeded [a]	4.71 ± 0.01	8.99 ± 0.03
Seeded [a]	4.72 ± 0.01	9.00 ± 0.02
Hydrated pellet [a]	4.74 ± 0.03	9.11 ± 0.07
500 mM NaCl	4.71 ± 0.01	8.96 ± 0.01
250 mM NaCl	4.71 ± 0.01	8.98 ± 0.01
100 mM NaCl	4.70 ± 0.03	8.97 ± 0.03
NaCl	4.71 ± 0.02	8.96 ± 0.02
$CaCl_2$	4.72 ± 0.01	8.98 ± 0.06
$CaCl_2$ hydrated pellet	4.74 ± 0.01	9.01 ± 0.02
$CaCl_2$ pH 6.5	4.72 ± 0.01	8.98 ± 0.02
CaCl2 pH 10.5	4.72 ± 0.02	9.00 ± 0.03
$MgCl_2$	4.72 ± 0.01	9.00 ± 0.04
KCl	4.71 ± 0.01	8.95 ± 0.02
LiCl	4.72 ± 0.01	9.02 ± 0.01
NaI	4.74 ± 0.01	8.96 ± 0.02
$NaNO_3$	4.71 ± 0.01	8.99 ± 0.04
Na_2SO_4	4.71 ± 0.01	8.95 ± 0.03

[a] Fibrils were assembled in 10% (v/v) CH_3CN. The solution was at pH 2.0 at a salt concentration of 50 mM unless otherwise stated.

SI Table 3: TTR1-GGK fibril pitch length measured from TEM images as described above. Data is the mean ± S.D. (n = 50).

Sample [a]	Pitch length [nm]
Unseeded [b]	132 ± 6
500 mM NaCl	110 ± 15
250 mM NaCl	115 ± 28
100 mM NaCl	114 ± 12
NaCl	131 ± 19
$CaCl_2$	150 ± 35
$CaCl_2$ pH 6.5	124 ± 14
CaCl2 pH 10.5	120 ± 17
$MgCl_2$	122 ± 11
KCl	118 ± 19
LiCl	108 ± 11
NaI	135 ± 17
$NaNO_3$	128 ± 18
Na_2SO_4	132 ± 29

[a] Fibrils were formed at pH 2.0 unless otherwise stated. The salt concentration used was 50 mM unless otherwise stated. [b] Unseeded fibril formation was in a solution of 10% (v/v) CH_3CN at pH 2.0.