

## Supplementary Information

### Acetylation of A $\beta$ <sub>42</sub> at lysine 16 disrupts amyloid formation

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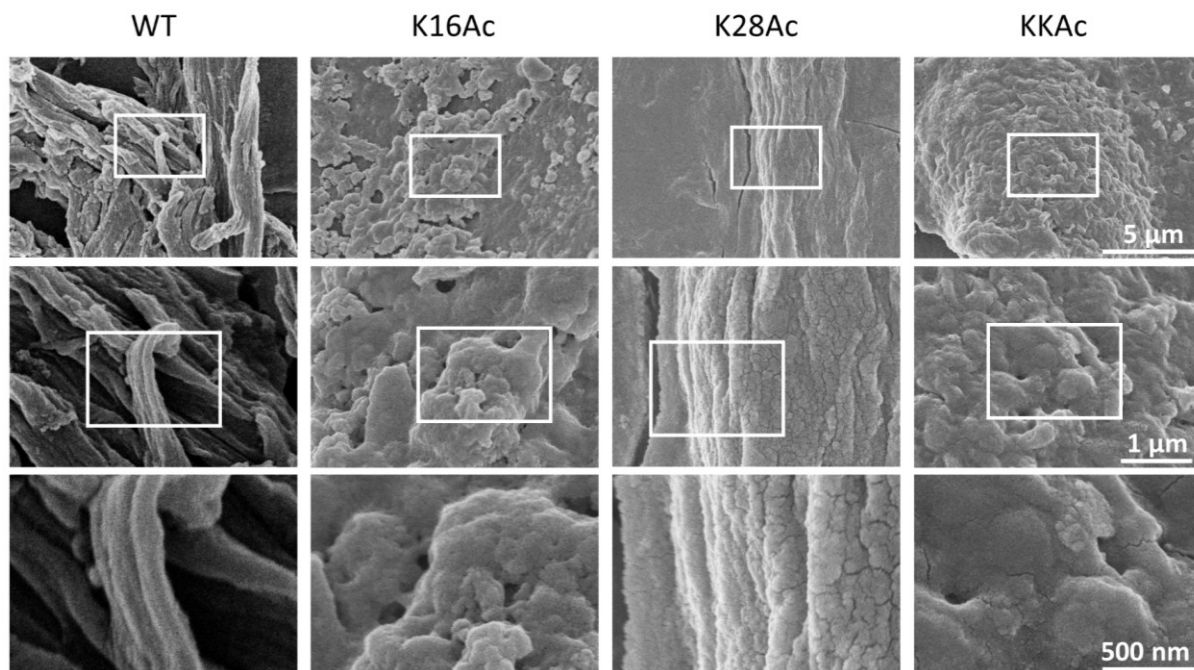
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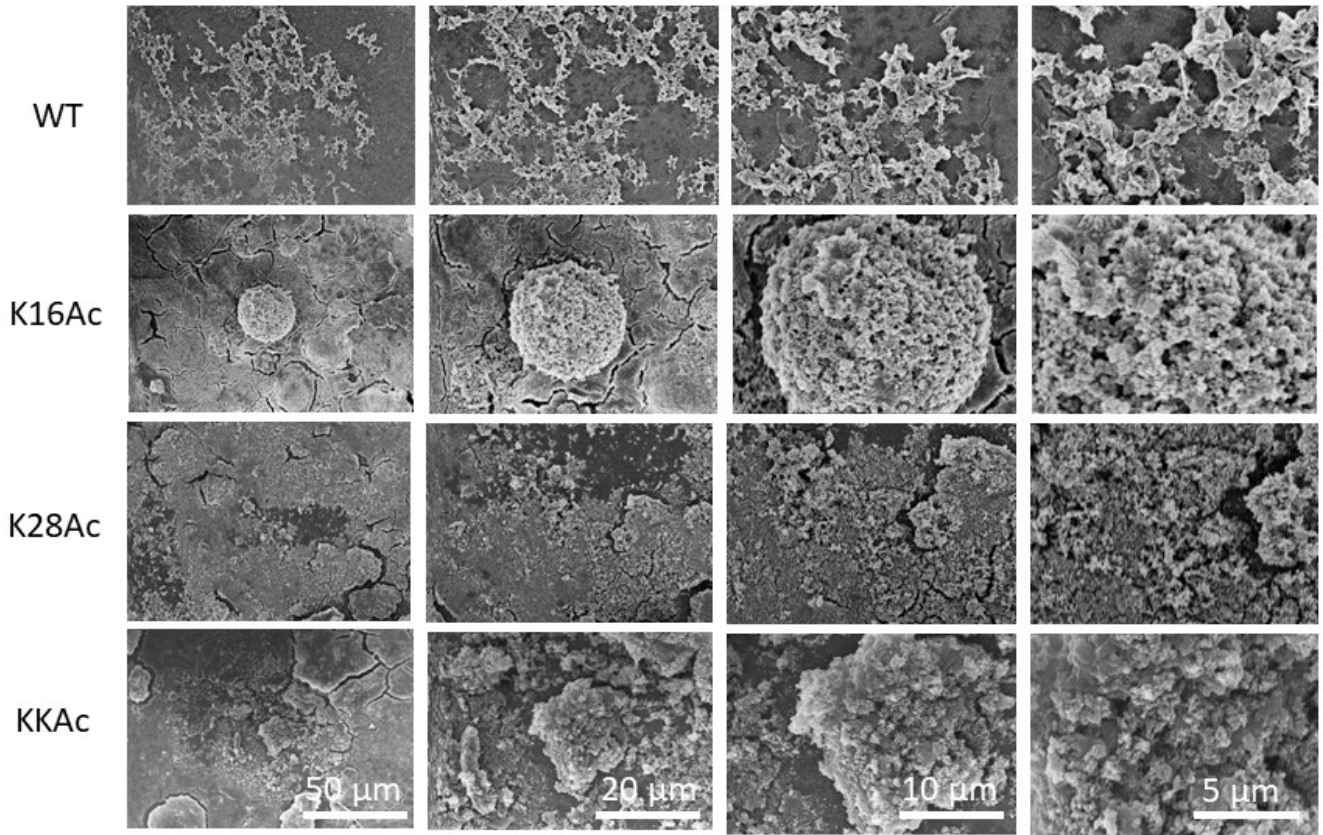
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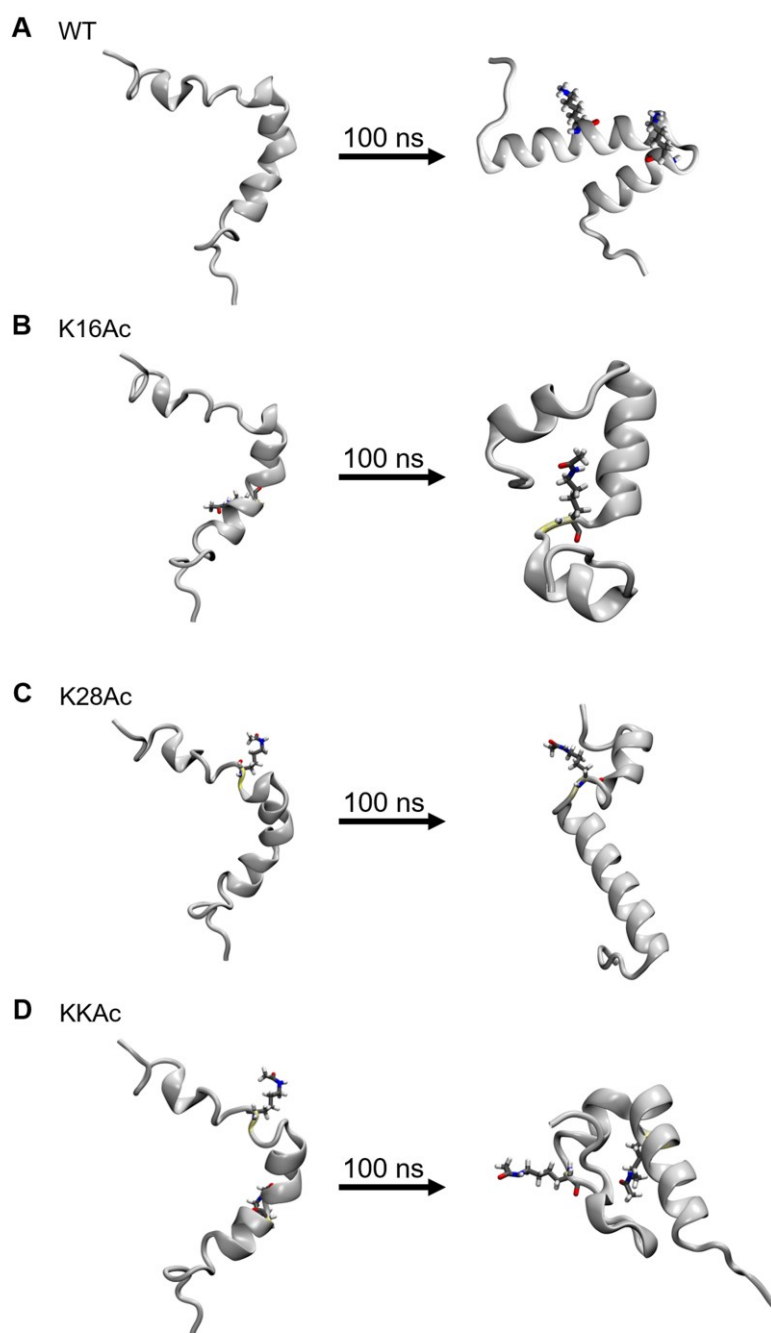
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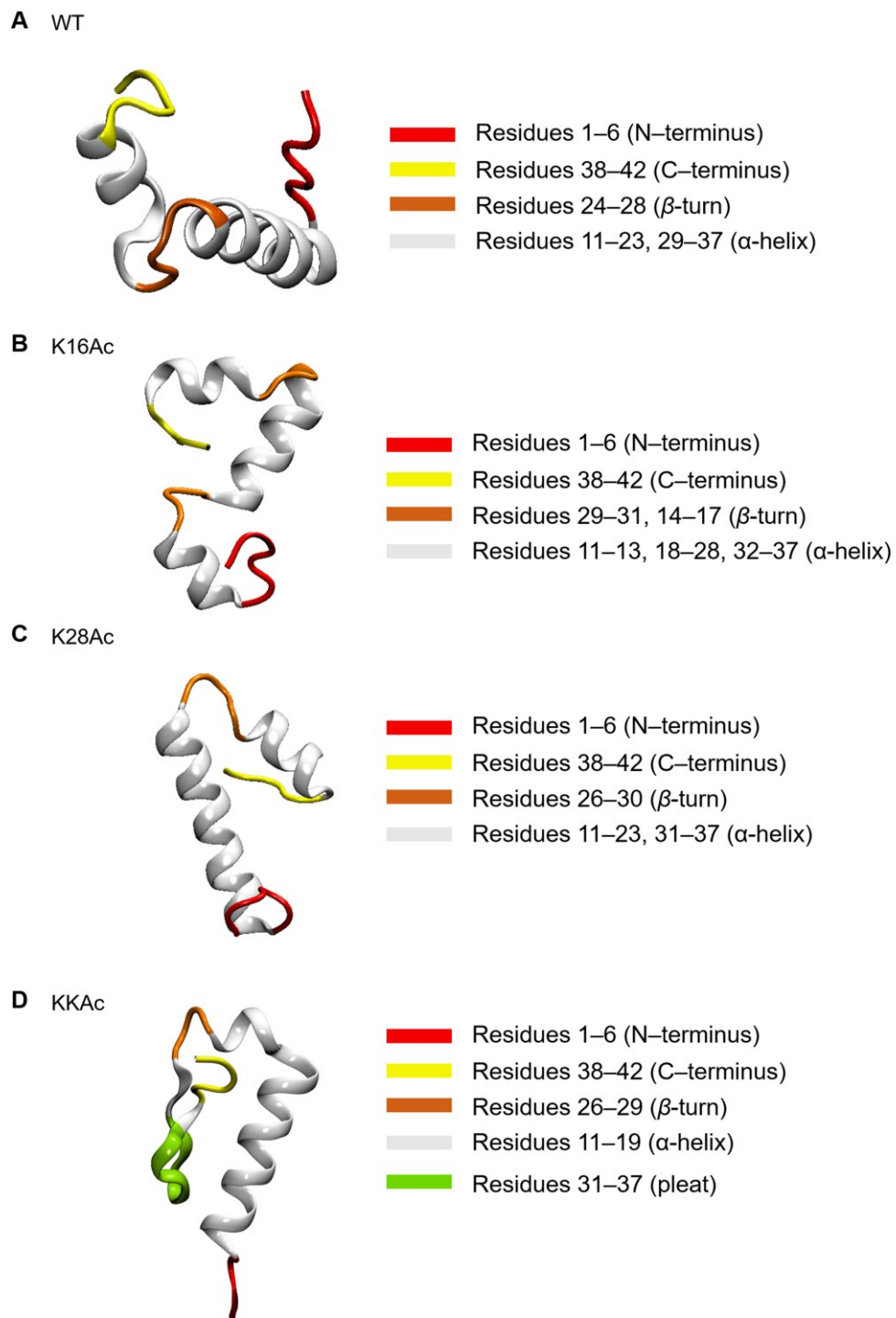
**Supplementary Figure 1.** SEM images of the WT and acetylated A $\beta$ 42 aggregates after 14 days of incubation. Scale bars are 5  $\mu$ m, 1  $\mu$ m, and 500 nm for top, middle, and bottom panels, respectively.



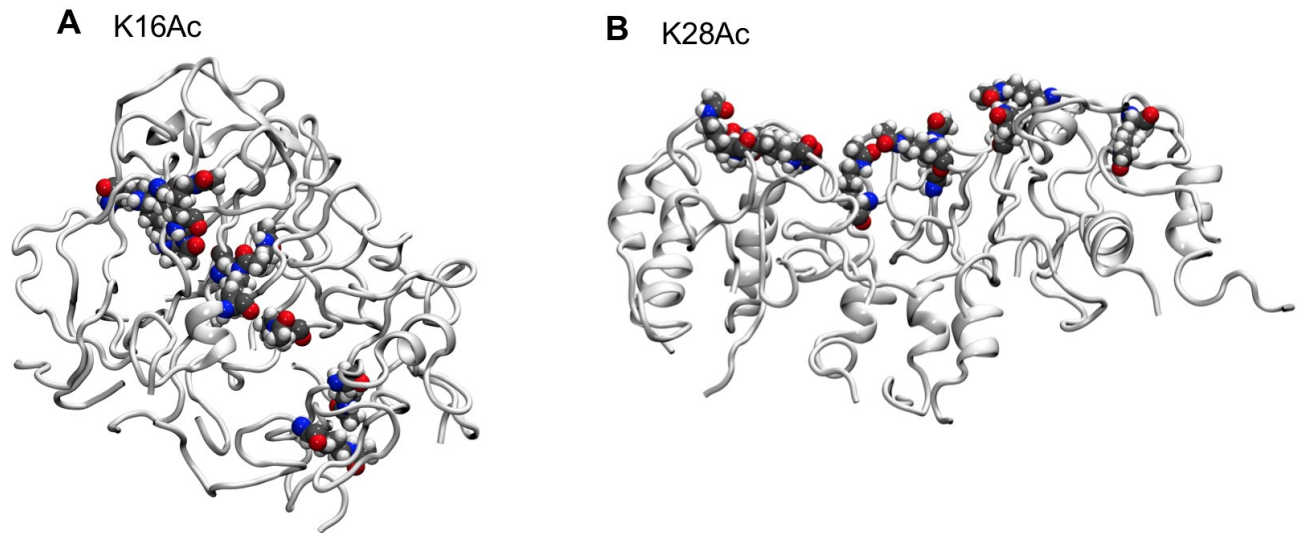
**Supplementary Figure 2.** SEM images of the WT and acetylated A $\beta$ 42 aggregates after 6 h of incubation. Scale bars are 50  $\mu$ m, 20  $\mu$ m, 10  $\mu$ m and 5  $\mu$ m from left to right respectively.



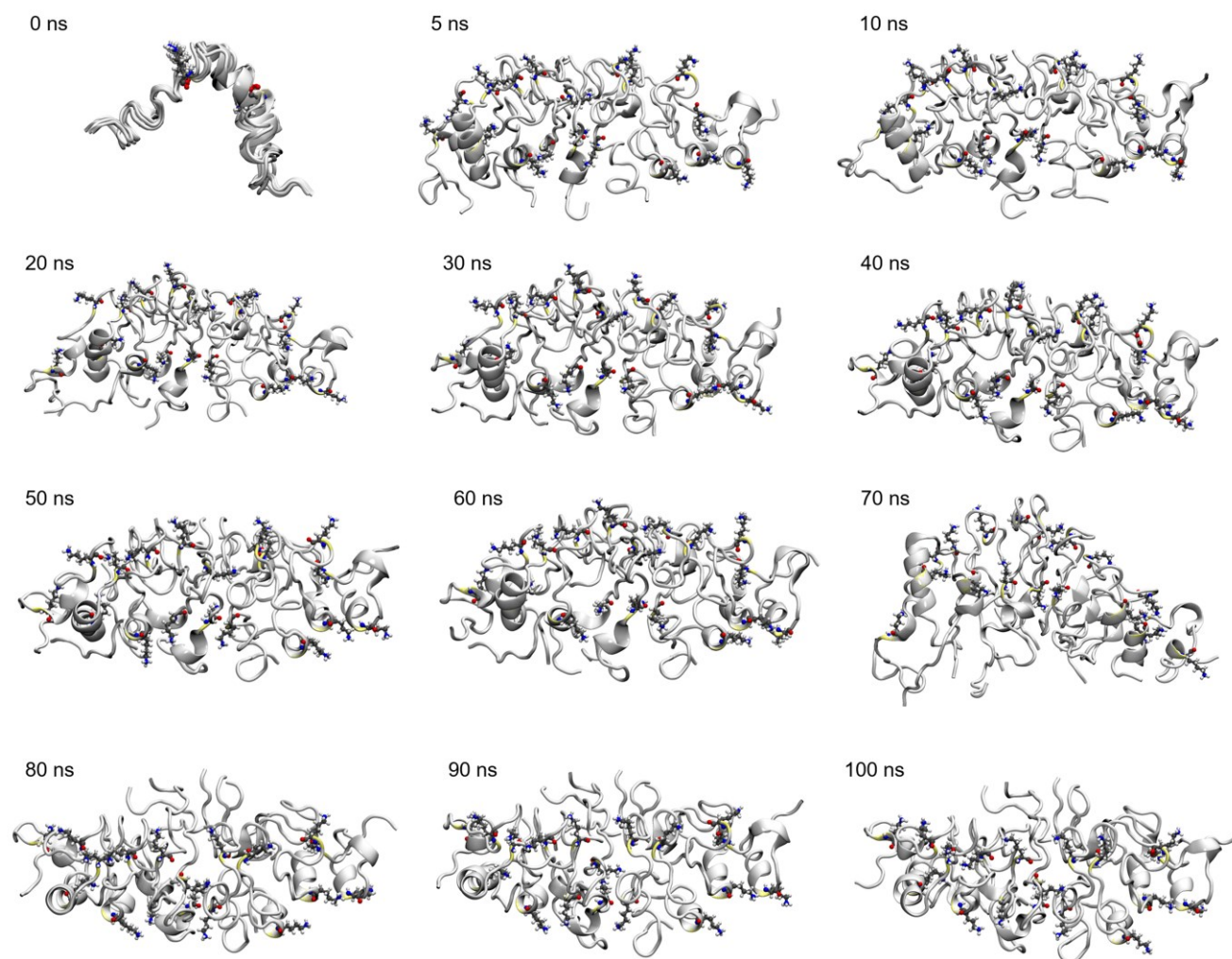
**Supplementary Figure 3.** Simulation snapshots representing the structural changes in WT and acetylated Aβ42 monomer at 100 ns in aqueous solution. (A) WT, (B) K16Ac, (C) K28Ac and (D) KKAc. The waters molecules are not shown for clarity. The inset figure highlights the  $\alpha$ -helix,  $\beta$ -turn, and random coil regions in WT Aβ42 monomer.



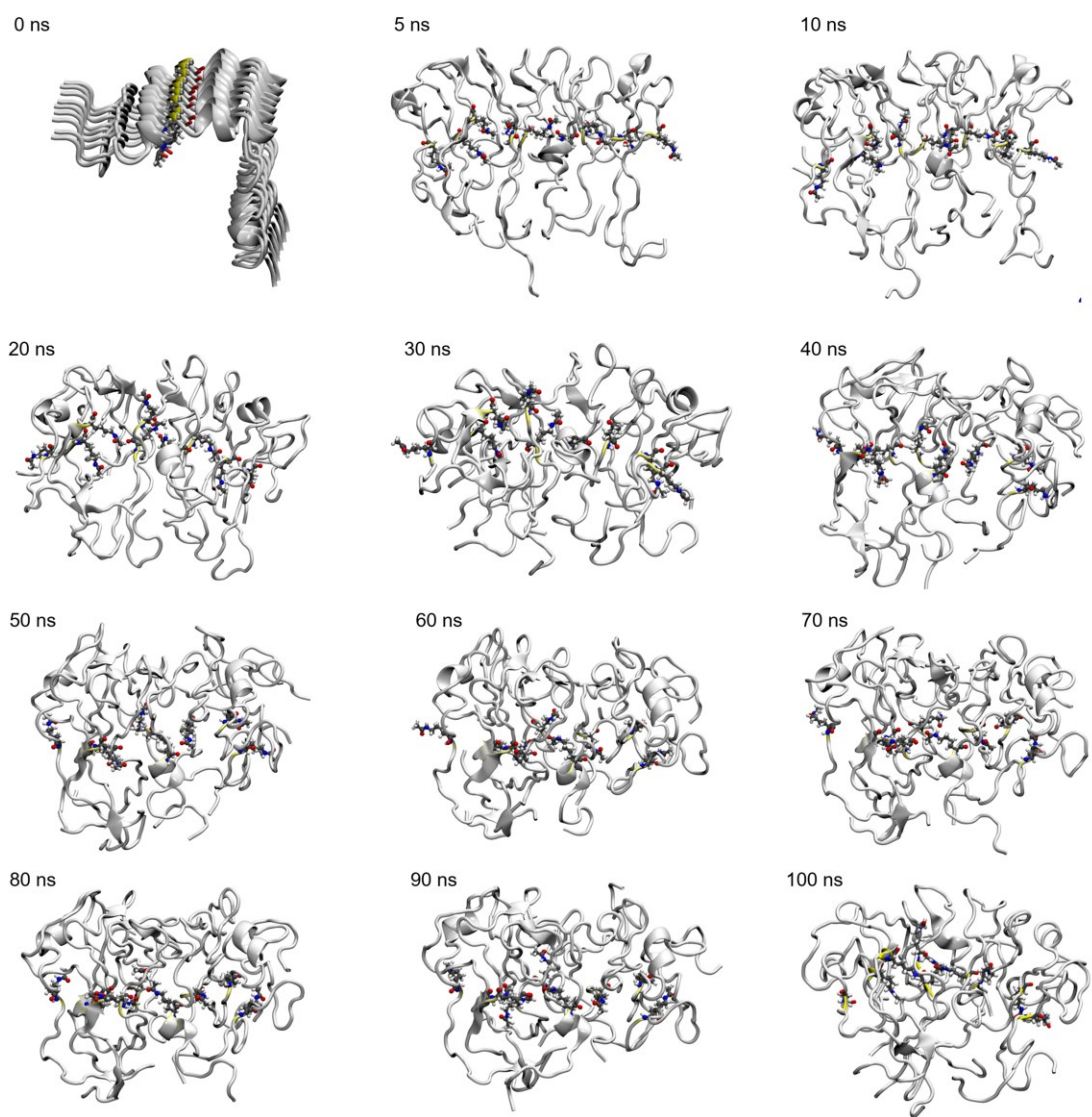
**Supplementary Figure 4.** The  $\alpha$ -helix,  $\beta$ -turn, and random coil regions in A $\beta$ 42 monomer. (A) WT, (B) K16Ac, (C) K28Ac and (D) KKAc.



**Supplementary Figure 5.** Orientation of (A) K16Ac residues in 9 strands of K16Ac peptides, and (B) K28 residues in 9 strands of K28Ac aggregates at 100 ns.

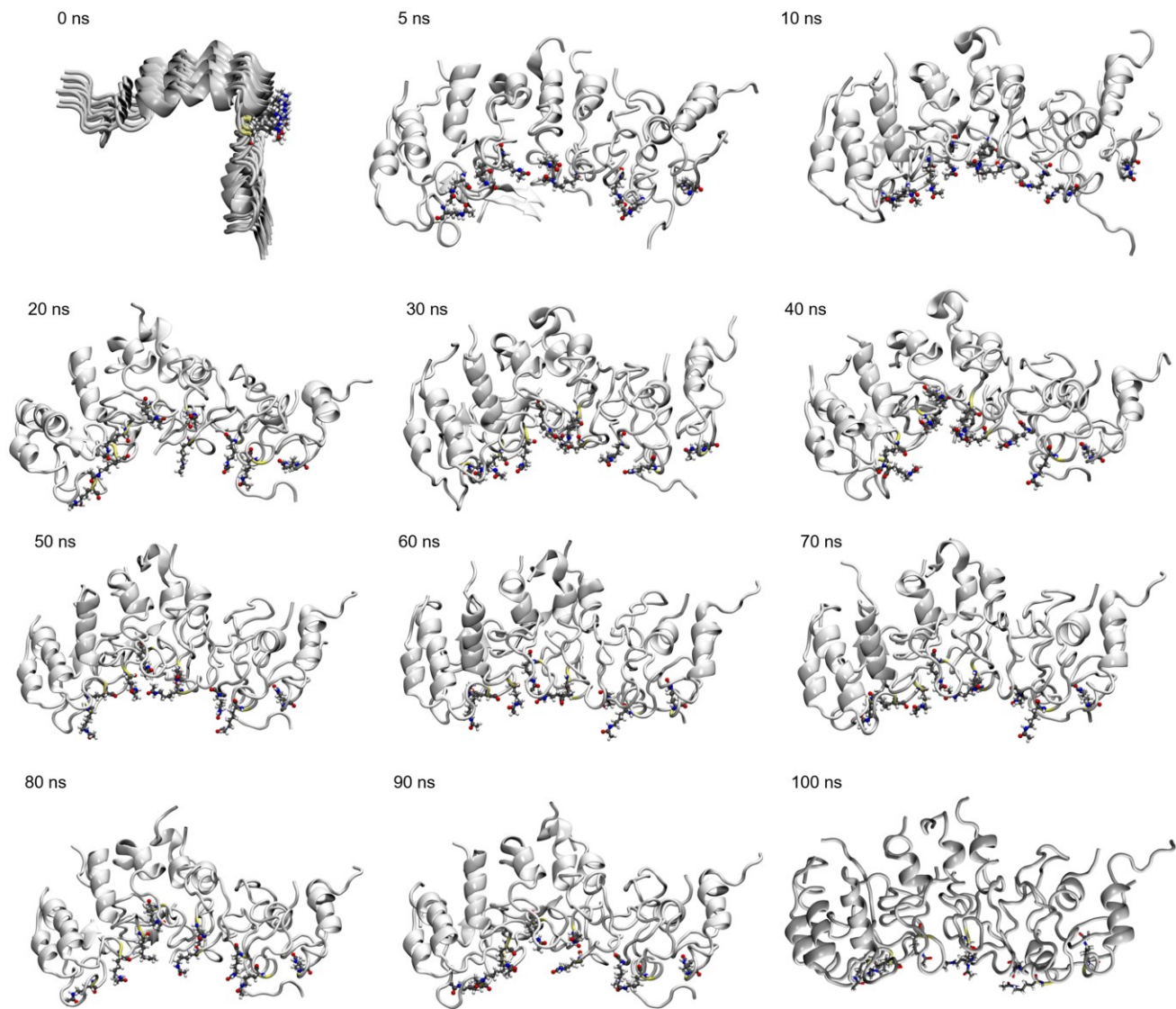


**Supplementary Figure 6.** Simulation snapshots depicting the structural changes in aggregation of 9 strands of WT A $\beta$ 42 peptides for 100 ns of dynamics. The waters molecules are not shown for clarity.

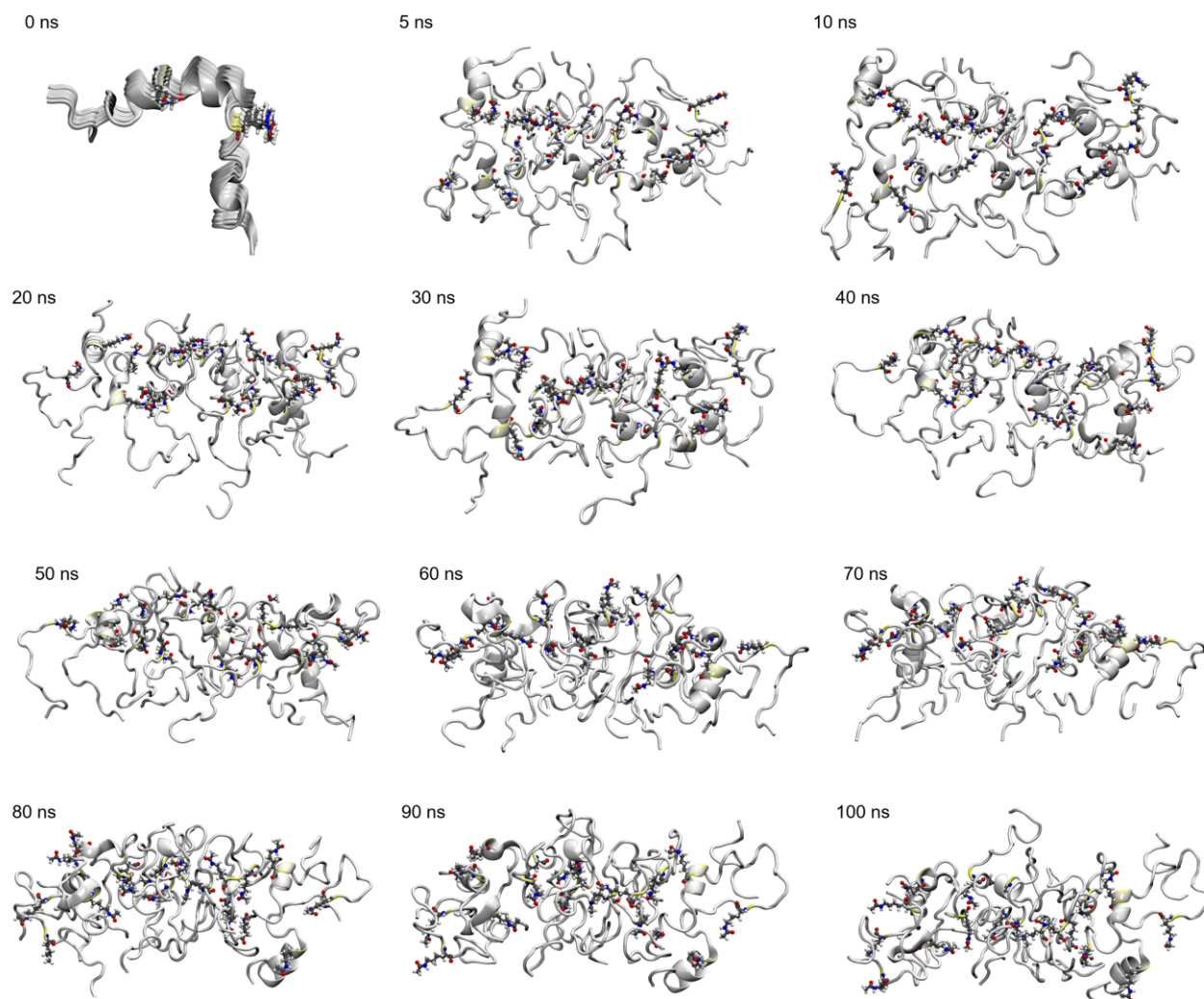


**Supplementary Figure 7.** Simulation snapshots depicting the structural changes in aggregation of 9 strands of K16Ac peptides for 100 ns of dynamics. The waters molecules are not shown for clarity.

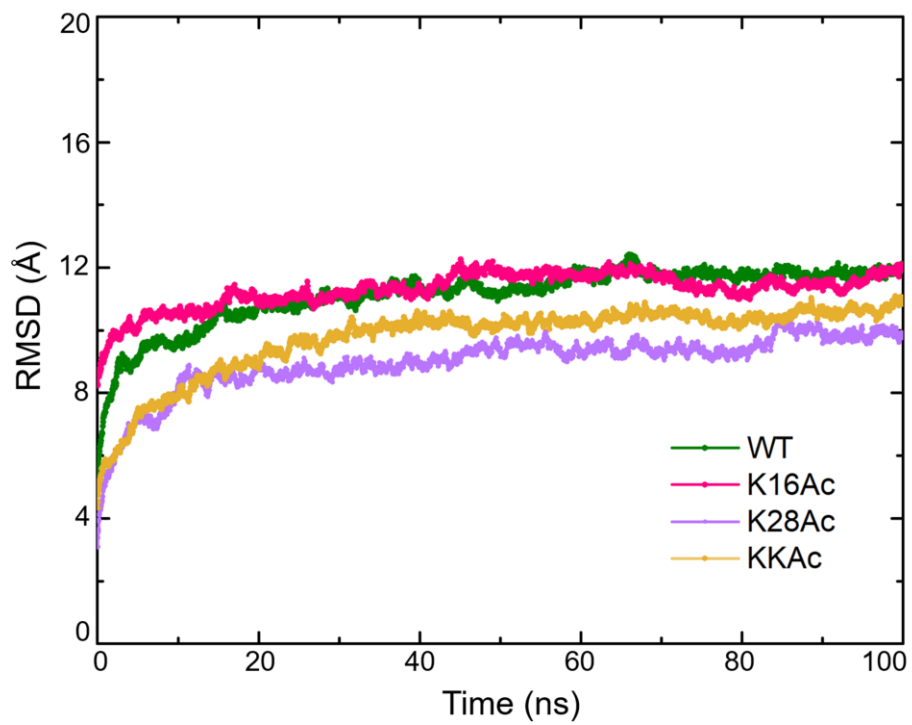




**Supplementary Figure 8.** Simulation snapshots depicting the structural changes in aggregation of 9 strands of K28Ac peptides for 100 ns of dynamics. The waters molecules are not shown for clarity.

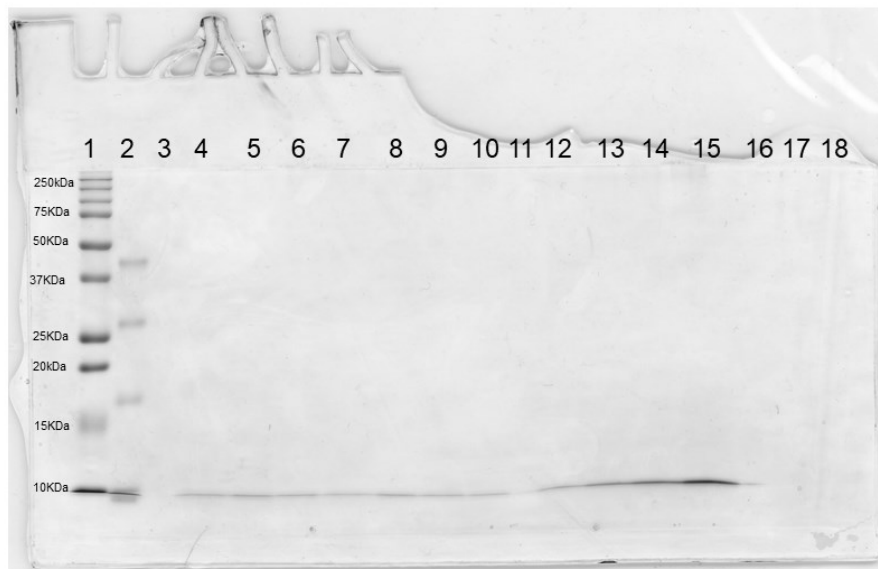


**Supplementary Figure 9.** Simulation snapshots depicting the structural changes in aggregation of 9 strands of KKAc peptides for 100 ns of dynamics. The waters molecules are not shown for clarity.



**Supplementary Figure 10.** (A) Root mean-square deviation (RMSD) in 9 strands of WT, K16Ac, K28Ac, and KKAc A $\beta$ 42 peptides in aqueous solution.

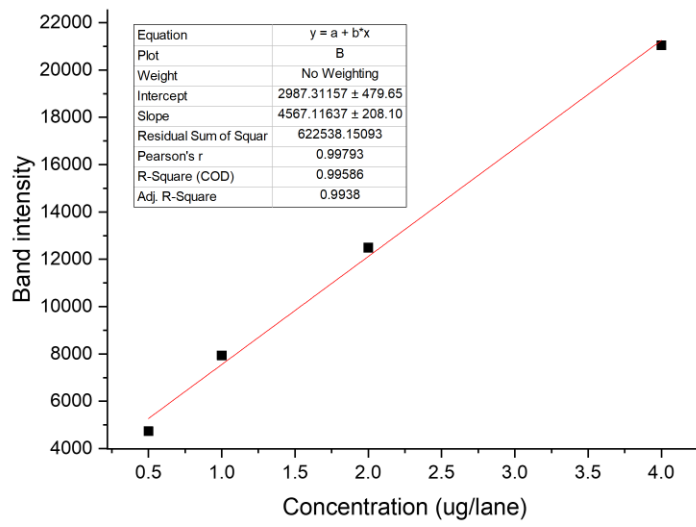
## Hydrophobic bead binding assay



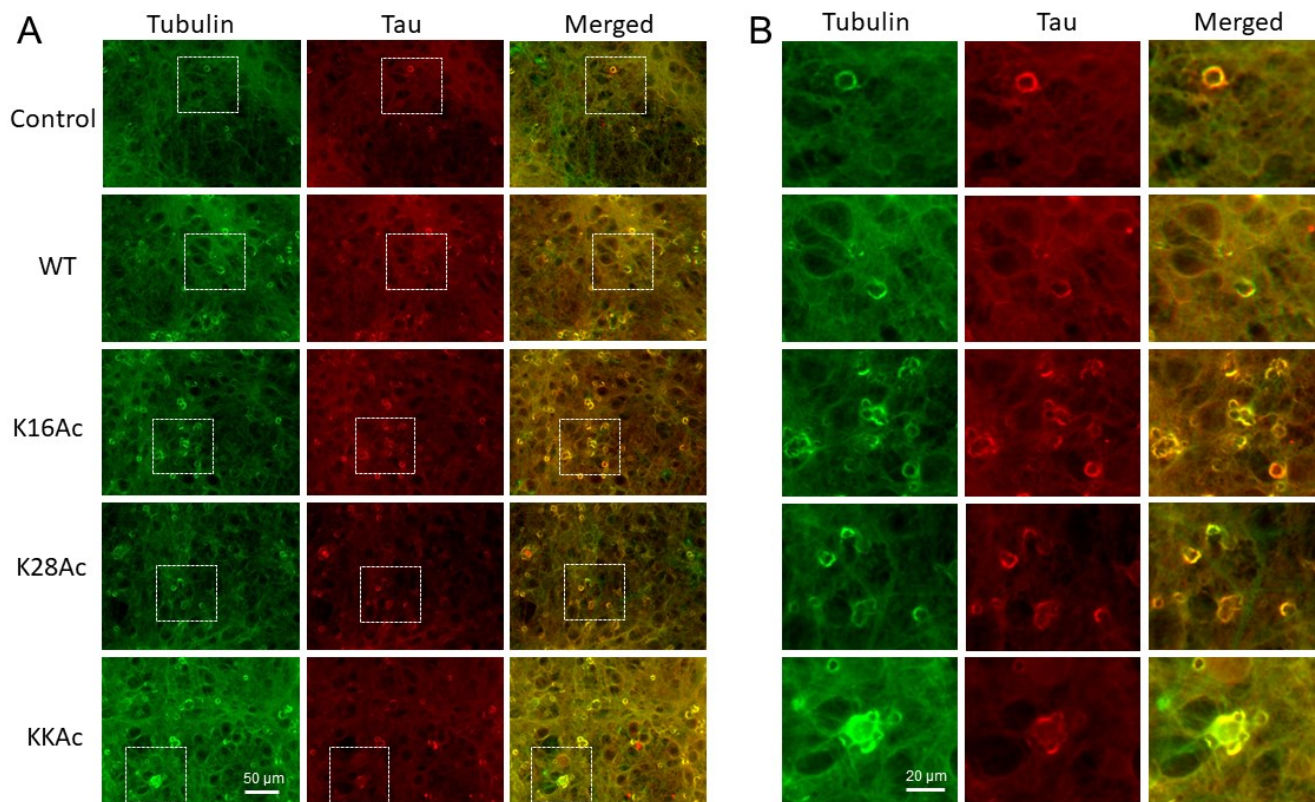
Loading order:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	- Lane
M	M	B	WT	K16Ac	K28Ac	KKAc	WT:K16Ac	WT:K28Ac	WT:KKAc	B	WTC1	WTC2	WTC3	WTC4	B	B	B	- Sample
Regular	Low MW		7d	7d	7d	7d	7d	7d	7d									

**Supplementary Figure 11.** Full-size gel image of SDS-PAGE of hydrophobic bead bound A $\beta$ 42 peptides. Seven-day incubated WT, acetylated (K16Ac, K28Ac, KKAc), and 1:1 mixture (WT:K16Ac, WT:K28Ac, and WT:KKAc) of A $\beta$ 42 peptides were further incubated with phenyl-Sepharose beads overnight with gentle agitation at 25<sup>o</sup>C. The beads were then washed with binding buffer 3X times. A $\beta$ 42 peptides bound to peptides were eluted by boiling with denaturing buffer for 3 minutes before loading on SDS-PAGE along with loading controls of WT peptides. Fresh A $\beta$  peptides loaded as controls were 0.5, 1, 2 and 4  $\mu$ g/lane and represented by WTC 1, WTC 2, WTC 3 and WTC 4 respectively (*See Figure 4B in main paper*).



**Supplementary Figure 12.** The band intensity of the loading controls of WT A $\beta$ 42 peptides (WTC 1 = 0.5, WTC 2 = 1; WTC 3 = 2; and WTC 4 = 4  $\mu$ g/lane respectively) in Supplementary Figure 12 was analyzed using the *Image J* software and was plotted using the *OriginPro* (*OriginPro* 2019b). This plot was used to calculate the percentage of A $\beta$ 42 peptides bound to hydrophobic beads. See *Figure 4C* and *methods section in main paper for details*.



**Supplementary Figure 13.** Immunostaining of primary neuronal cells from rat brain. Primary neuronal cells were incubated with 2  $\mu$ M of 7 d incubated A $\beta$ 42 WT and acetylated peptides for 24 h at 37  $^{\circ}$ C. Control indicates cells that are untreated and incubated under identical conditions with which A $\beta$ 42 treated cells were compared. The cells were fixed and then stained for immunofluorescence with antibodies for tubulin (green) and Tau (red). The images were acquired using Leica DMIL LED at 20X magnification. Scale bar =50  $\mu$ m (A). Zoomed in images of (A) are represented in (B) and are shown in boxes in panel A. Scale bar for panel B=20  $\mu$ m.

**Supplementary Table 1.** Calculated surface area and hydrophobic patch values of WT and acetylated (K16Ac, K28 Ac and KKAc) aggregates obtained using SPDB software. Hydrophobic patch values below 100 Å<sup>2</sup> are not reported.

Parameters	WT	K16Ac	K28Ac	KKAc
Surface area (Å <sup>2</sup> )	19199	20209	19703	19582
Hydrophobic patch area (Å <sup>2</sup> )	579	219	248	223
	278	208	200	196
	243	193	199	143
	220	173	179	133
	189	151	153	130
	181	143	140	121
	164	136	138	121
	118	122	125	120
	109	120	110	115
	105	117	105	111
	-	104	101	-
	-	-	101	-

### Simulation systems.

Initial structural configuration of WT Aβ<sub>42</sub> monomer with sequence

DAEFRHDSGYEVHHQKLVFFAEDVGSNKG  
AIIGLMVGGVVIA

was taken from the PDB entry 1Z0Q. For MD simulations of WT and acetylated (K16Ac, K28Ac, and KKAc) Aβ<sub>42</sub> monomer, the peptide was first placed in a periodic box having dimension of 61.90 × 60.00 × 60.00 Å<sup>3</sup>. The simulation box was uniformly solvated with water molecules with explicit waters defined using the

TIP3P water model. Counter ions were added to the system to maintain charge neutralization. The solvated peptide system (WT and acetylated) was subjected to 200 steps of the energy minimization at a time step of 1 fs followed by 100 ns of production run.

To simulate the assembly and fibrillization process of 9 strands of WT and acetylated Aβ<sub>42</sub> peptide aggregates in aqueous solution, initial structure was taken to be the 9 monomer strands aligned. The peptides were then placed in the periodic box having dimension of 85.00 × 80.00 × 85.00 Å<sup>3</sup> and solvated with water molecules with the TIP3P water model. The total number of atoms and number of water molecules for all systems are provided in Table S2. Counterions were added to maintain charge neutralization in the system. The solvated peptides (WT and acetylated) was subjected to 200 steps of the energy minimization at a time step of 1 fs followed by 100 ns of production run.

All simulations were performed at 310 K temperature and 101.3 kPa pressure in the NPT ensemble using NAMD program and CHARMM27 force field. The experiments were performed at 310 K. Data were saved every 20 ps intervals for analysis of the structural changes for 100 ns of MD trajectory. Convergence of the simulations was further confirmed using the root mean-square deviation (RMSD) analysis, implemented in VMD 1.9.2. suite of program. In addition, electrostatic potential isosurface for WT and acetylated peptides were computed using VMD program. Surface hydrophobic patches of WT and acetylated peptides corresponding to the structures at 100 ns, were mapped on the molecular surface for the 4 systems using the SPDB program.

**Supplementary Table 2.** Number of water molecules and total number of atoms in WT and acetylated (K16Ac, K28Ac, and KKAce) A $\beta$ 42 monomer and peptide aggregates for MD simulations in aqueous solution.

		WT	K16Ac	K28Ac	KKAce
A $\beta$ 42 monomer	# total atoms	20868	21728	20873	20779
	# water molecules	20238	21093	20238	20139
	# A $\beta$ 42 monomer	627	631	631	635
	# counterions	3	4	4	5

		WT	K16Ac	K28Ac	KKAce
9 strands of A $\beta$ 42 peptides	# total atoms	58893	49486	58770	58824
	# water molecules	53222	43776	53055	53064
	# A $\beta$ 42 monomer	5643	5679	5679	5715
	# counterions	27	31	36	45



## Statistical Analysis

One-way ANOVA was used for the statistical analysis of Fluorescence experiments (ANS, Bis-ANS) and toxicity assays (MTS, LDH, and DCF-HDA) carried out in SH-SY5Y and primary neuronal cells. Statistical analysis for all 7 days data is provided below.

**A. Statistical Analysis of ANS data.** All acetylated and 1:1 mixtures of A $\beta$ 42 7d data were compared with WT of 7d.  $p < 0.05$  was considered as significant and represented as \*,  $p < 0.005$  represented as \*\* and  $p < 0.0005$  represented as \*\*\* (Refer to figure 4A in main paper)

### ANS Data

7d	Expt1	Expt2	Expt3	Mean	S.D.	S.D./1000	a.u.=Mean/1000
WT	17853.333	19293.333	17563.333	18236.667	756.498	0.756	18.237
K16	33093.333	31493.333	31863.333	32150.000	683.927	0.684	32.150
K28	23783.333	23823.333	19723.333	22443.333	1923.400	1.923	22.443
KKAc	30623.333	25883.333	29623.333	28710.000	2040.022	2.040	28.710
WT:K16	22933.333	22143.333	25563.333	23546.667	1462.015	1.462	23.547
WT:K28	24173.333	24893.333	22973.333	24013.333	791.960	0.792	24.013
WT:KKAc	20563.333	22353.333	24143.333	22353.333	1461.529	1.462	22.353

**Note:** All experiment values reported are blank subtracted.

#### WT vs K16Ac- 7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
WT	3	54710	18236.6667	858433.3333
K16Ac	3	96450	32150	701633.3333

##### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2.9E+08	1	290371267	372.2549464	4.25336E-05	7.708647
Within Groups	3120133	4	780033.333			
Total	2.93E+08	5				

#### WT vs K28Ac-7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
WT	3	54710	18236.67	858433.3
K28Ac	3	67330	22443.33	5549200

##### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	26544067	1	26544067	8.285139	0.045086	7.708647
Within Groups	12815267	4	3203817			
Total	39359333	5				

#### WT vs KKAc-7d

Anova: Single Factor

##### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	54710	18236.67	858433.3
KKAc	3	86130	28710	6242533

##### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.65E+08	1	1.65E+08	46.34188	0.002433	7.708647
Within Groups	14201933	4	3550483			
Total	1.79E+08	5				

#### WT vs WT:K16Ac-7d

Anova: Single Factor

##### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	54710	18236.67	858433.3
WT:K16Ac	3	70640	23546.67	3206233

##### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	42294150	1	42294150	20.81064	0.010324	7.708647
Within Groups	8129333	4	2032333			
Total	50423483	5				

#### WT vs WT: K28Ac-7d

Anova: Single Factor

##### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
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WT	3	54710	18236.6667	858433.3333
WT:K28Ac	3	72040	24013.3333	6580800

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5005481	1	5005481.6	13.45698257	0.02142173	7.70864
Within Groups	1487846	4	3719616.6		1	7
Total	6493328	5				

**WT vs WT: KKAc- 7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
WT	3	54710	18236.67	858433.3
WT:KKAc	3	67060	22353.33	3204100

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	25420417	1	25420417	12.51456	0.024065	7.708647
Within Groups	8125067	4	2031267			
Total	33545483	5				

**B. Statistical Analysis of Bis-ANS data.** All acetylated and 1:1 mixtures of A $\beta$ 42 7d data were compared with WT of 7d. p<0.05 was considered as significant and represented as \*, p<0.005 represented as \*\* and p<0.0005 represented as \*\*\* (Refer to figure 2I in main paper)

**Bis-ANS data**

7d	Expt1	Expt2	Expt3	Mean	S.D.	S.D./1000	a.u.=Mean/1000
WT	110050.000	131940.000	121690.000	121226.667	8942.559	8.943	121.227
K16Ac	134300.000	152400.000	158530.000	148410.000	10286.344	10.286	148.410
K28Ac	115950.000	116760.000	103390.000	112033.333	6120.699	6.121	112.033
KKAc	128950.000	150580.000	129300.000	136276.667	10114.993	10.115	136.277
WT:K16Ac	130470.000	125990.000	108660.000	121706.667	9404.936	9.405	121.707
WT:K28Ac	121440.000	145550.000	119930.000	128973.333	11737.672	11.738	128.973
WT:KKAc	115590.000	135420.000	131370.000	127460.000	8554.660	8.555	127.460

**Note:** All experiment values reported are blank subtracted

**WT vs K16Ac-7d**

Anova: Single Factor

## SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	363680	121226.6667	1.2E+08
K16Ac	3	445230	148410	1.59E+08

## ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1108400417	1	1108400417	7.955008	0.047806	7.708647
Within Groups	557334666.7	4	139333666.7			
Total	1665735083	5				

**WT vs K28Ac- 7d**

Anova: Single Factor

## SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	363680	121226.7	1.2E+08
K28Ac	3	336100	112033.3	56194433

## ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.27E+08	1	1.27E+08	1.439423	0.296435	7.708647
Within Groups	3.52E+08	4	88074233			
Total	4.79E+08	5				

**WT vs KKAc- 7d**

Anova: Single Factor

## SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	363680	121226.6667	1.2E+08
KKAc	3	408830	136276.6667	1539064

## ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	339753750	1	339753750	5.592972	0.077245	7.708647
Within Groups	242986195.3	4	60746548.83			
Total	582739945.3	5				

**WT vs WT:K16Ac- 7d**

Anova: Single Factor

## SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	363680	121226.7	1.2E+08
WT:K16Ac	3	365120	121706.7	1.33E+08

## ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	345600	1	345600	0.002736	0.960792	7.708647
Within Groups	5.05E+08	4	1.26E+08			
Total	5.06E+08	5				

**WT vs WT:K28Ac**

Anova: Single Factor

## SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	363680	121226.7	1.2E+08
WT:K28Ac	3	386920	128973.3	2.07E+08

## ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	90016267	1	90016267	0.55121	0.499055	7.708647
Within Groups	6.53E+08	4	1.63E+08			
Total	7.43E+08	5				

**WT vs WT:KKAc-7d**

Anova: Single Factor

## SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
WT	3	363680	121226.7	1.2E+08
WT: KKAc	3	382380	127460	1.1E+08

## ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	58281667	1	58281667	0.507399	0.515612	7.708647
Within Groups	4.59E+08	4	1.15E+08			
Total	5.18E+08	5				

**C. Statistical Analysis of MTS data:** SH-SY5Y cells incubated with 5 $\mu$ M of 7 d aggregates. WT, acetylated and 1:1 mixtures of A $\beta$ 42 7d data were compared with untreated cells which was used as control. p<0.05 was considered as significant and represented as \*, p<0.005 represented as \*\* and p<0.0005 represented as \*\*\* (Refer to figure 5 in main paper)

**MTS data**

Samples	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Mean	S.D.	Normalized
Untreated	0.033	0.053	0.043	0.073	0.043	0.036	0.047	0.013	1.000
WT	0.008	0.025	0.035	0.041	0.037	0.041	0.031	0.012	0.670
K16Ac	0.033	0.030	0.037	0.041	0.029	0.033	0.034	0.004	0.728
K28Ac	0.032	0.026	0.031	0.038	0.032	0.040	0.033	0.005	0.713
KKAc	0.018	0.040	0.030	-0.023	0.026	0.029	0.020	0.020	0.437
WT:K16Ac	0.019	0.005	0.032	0.029	0.031	0.059	0.029	0.016	0.619
WT:K28Ac	0.032	0.019	0.030	0.026	0.025	0.030	0.027	0.004	0.588
WT:KKAc	0.015	0.012	0.013	0.020	0.029	0.013	0.017	0.006	0.358

**Note:** All experiment values reported are blank subtracted; Normalized = Mean of Test/Mean of Untreated

**Untreated vs WT-7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.279	0.0465	0.000212
WT	6	0.187	0.031167	0.000163

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.000705	1	0.000705	3.756435	0.081329	4.964603
Within Groups	0.001878	10	0.000188			
Total	0.002583	11				

**Untreated vs K16Ac-7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.279	0.0465	0.000212
K16Ac	6	0.203	0.033833	2.02E-05

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.000481	1	0.000481	4.143472	0.06916	4.964603
Within Groups	0.001162	10	0.000116			

Total	0.001643	11
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### Untreated vs K28Ac-7d

Anova: Single Factor

#### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.279	0.0465	0.000212
K28Ac	6	0.199	0.033167	2.58E-05

#### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.000533	1	0.000533	4.483048	0.060295	4.964603
Within Groups	0.00119	10	0.000119			
Total	0.001723	11				

### Untreated vs KKAc-7d

Anova: Single Factor

#### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.279	0.0465	0.000212
KKAc	6	0.122	0.020333	0.000494

#### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.002054	1	0.002054	5.81756	0.036561	4.964603
Within Groups	0.003531	10	0.000353			
Total	0.005585	11				

### Untreated vs WT:K16Ac-7d

Anova: Single Factor

#### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.279	0.0465	0.000212
WT:K16Ac	6	0.173333	0.028889	0.000113

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.00093	1	0.00093	5.718895	0.037867	4.964603
Within Groups	0.001627	10	0.000163			
Total	0.002557	11				

**Untreated vs WT:K28Ac-7d**

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	6	0.279	0.0465	0.000212
WT:K28Ac	6	0.164	0.027333	2.24E-05

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.001102	1	0.001102	9.39676	0.011934	4.964603
Within Groups	0.001173	10	0.000117			
Total	0.002275	11				

**Untreated vs KKAc-7d**

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	6	0.279	0.0465	0.000212
WT:KKAc	6	0.1	0.016667	4.28E-05

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.00267	1	0.00267	20.94457	0.001016	4.964603
Within Groups	0.001275	10	0.000127			
Total	0.003945	11				



**D. Statistical Analysis of LDH data:** SH-SY5Y cells incubated with 5 $\mu$ M of 7 d aggregates. WT, acetylated and 1:1 mixtures of A $\beta$ 42 7d data were compared with untreated cells which was used as control. p<0.05 was considered as significant and represented as \*, p<0.005 represented as \*\* and p<0.0005 represented as \*\*\* (Refer to figure 5 in main paper)

**LDH data**

Samples	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Mean	S.D.	Normalized	% Cytotoxicity
Max LDH	0.169	0.207	0.311	0.301	0.228	0.355	0.262	0.065	1.000	100.000
Untreated	-0.015	0.024	0.057	0.004	0.012	0.099	0.031	0.038	0.116	11.634
WT	0.155	0.136	0.135	0.131	0.135	0.127	0.137	0.009	0.521	52.066
K16Ac	0.175	0.183	0.177	0.167	0.268	0.136	0.184	0.040	0.702	70.184
K28Ac	0.171	0.141	0.169	0.154	0.195	0.141	0.162	0.019	0.617	61.729
KKAc	0.272	0.262	0.243	0.265	0.265	0.310	0.270	0.020	1.028	102.797
WT:K16Ac	0.155	0.256	0.166	0.157	0.152	0.255	0.190	0.046	0.725	72.537
WT:K28Ac	0.173	0.189	0.273	0.151	0.182	0.149	0.186	0.042	0.710	71.011
WT:KKAc	0.252	0.294	0.286	0.318	0.304	0.181	0.273	0.046	1.041	104.069

**Note:** All experiment values reported are blank subtracted; Normalized = Mean of Test/Mean of Untreated, % Cytotoxicity = Normalized X100

**Untreated vs WT-7d**

Anova: Single Factor

**SUMMARY**

Groups	Count	Sum	Mean	Variance
Untreated	6	0.183	0.0305	0.00171
WT	6	0.819	0.1365	9.35E-05

**ANOVA**

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.033708	1	0.033708	37.37719	0.000113623	4.964603
Within Groups	0.009018	10	0.000902			
Total	0.042726	11				

**Untreated vs K16Ac-7d**

Anova: Single Factor

**SUMMARY**

Groups	Count	Sum	Mean	Variance
Untreated	6	0.183	0.0305	0.00171
K16Ac	6	1.104	0.184	0.001956

**ANOVA**

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.033708	1	0.033708	37.37719	0.000113623	4.964603
Within Groups	0.009018	10	0.000902			
Total	0.042726	11				

Between Groups	0.070687	1	0.070687	38.56307	0.0001	4.964603
Within Groups	0.01833	10	0.001833			
Total	0.089017	11				

**Untreated vs K28Ac-7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.183	0.0305	0.001710167
K28Ac	6	0.971	0.161833	0.002048967

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.051745	1	0.051745	27.53045915	0.000375	4.964602744
Within Groups	0.018796	10	0.00188			
Total	0.070541	11				

**Untreated vs KKAc-7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.183	0.0305	0.00171
KKAc	6	1.617	0.2695	0.000489

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.171363	1	0.171363	155.8365	2.0133E-07	4.964603
Within Groups	0.010996	10	0.0011			
Total	0.182359	11				

**Untreated vs WT: K16Ac-7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	6	0.183	0.0305	0.00171
WT:K16Ac	6	1.141	0.190167	0.002583

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.07648	1	0.07648	35.62914	0.000137691	4.964603
Within Groups	0.021466	10	0.002147			
Total	0.097946	11				

#### Untreated vs WT: K28Ac-7d

Anova: Single Factor

##### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	6	0.183	0.0305	0.00171
WT:K28Ac	6	1.117	0.186167	0.002071

##### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.072696	1	0.072696	38.44807	0.000101	4.964603
Within Groups	0.018908	10	0.001891			
Total	0.091604	11				

#### Untreated vs WT:KKAc-7d

Anova: Single Factor

##### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	6	0.183	0.0305	0.00171
WT:KKAc	6	1.637	0.272833	0.0025

##### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.176176	1	0.176176	83.69289	3.5714E-06	4.964603
Within Groups	0.02105	10	0.002105			
Total	0.197227	11				

**E. Statistical Analysis of DCFH-DA data:** SH-SY5Y cells incubated with 5µM of 7 d aggregates. WT, acetylated and 1:1 mixtures of Aβ42 7d data were compared with untreated cells which was used as control. p<0.05 was considered as significant and represented as \*, p<0.005 represented as \*\* and p<0.0005 represented as \*\*\* (Refer to figure 5 in main paper)

### DCFHDA data

Samples	Well 1	Well 2	Well 3	Well 4	Well 5	Mean	S.D.	Normalized	% Free Radical
tBHP	1.029	1.157	1.165	1.129	1.227	1.141	0.065	1.000	100.000
Untreated	0.063	0.065	0.086	0.104	0.118	0.087	0.022	0.076	7.645
WT	0.313	0.159	0.192	0.201	0.221	0.217	0.052	0.190	19.024
K16Ac	0.458	0.472	0.463	0.472	0.435	0.460	0.013	0.403	40.306
K28Ac	0.626	0.514	0.512	0.432	0.466	0.510	0.066	0.447	44.711
KKAc	0.646	0.629	0.621	0.690	0.701	0.658	0.032	0.576	57.643
WT:K16Ac	0.594	0.585	0.513	0.560	0.536	0.558	0.030	0.489	48.887
WT:K28Ac	0.530	0.397	0.529	0.541	0.541	0.508	0.056	0.445	44.507
WT:KKAc	1.149	1.040	0.994	0.995	1.007	1.037	0.058	0.909	90.928

**Note:** All experiment values reported are blank subtracted; Normalized = Mean of Test/Mean of Untreated, % Free Radical = Normalized X100

#### Untreated vs WT-7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	5	0.4361	0.08722	0.000584
WT	5	1.085233	0.217047	0.003362

##### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.042137	1	0.042137	21.35565	0.001707487	5.317655072
Within Groups	0.015785	8	0.001973			
Total	0.057922	9				

#### Untreated vs K16Ac-7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	5	0.4361	0.08722	0.000584477
K16Ac	5	2.2993	0.45986	0.000222993

##### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.347151	1	0.347151424	859.8497133	1.98174E-09	5.317655
Within Groups	0.00323	8	0.000403735			
Total	0.350381	9				

#### Untreated vs K28Ac-7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	5	0.4361	0.08722	0.000584
K28AC	5	2.550633	0.510127	0.005405

##### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.447125	1	0.447125	149.3156	1.86708E-06	5.317655
Within Groups	0.023956	8	0.002994			
Total	0.471081	9				

#### Untreated vs KKAc-7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	5	0.4361	0.08722	0.000584477
KKAc	5	3.288333	0.657667	0.0013063

##### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.813523	1	0.813523	860.5176589	1.97565E-09	5.317655072
Within Groups	0.007563	8	0.000945			
Total	0.821087	9				

#### Untreated vs WT:K16Ac-7d

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.4361	0.08722	0.000584477
WT:K16Ac	5	2.788833	0.557767	0.0011343

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.553535	1	0.553535	644.1038177	6.22434E-09	5.317655
Within Groups	0.006875	8	0.000859			
Total	0.560411	9				

**Untreated vs WT:K28Ac-7d**

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.4361	0.08722	0.000584477
WT:K28Ac	5	2.538967	0.507793	0.003853733

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.442205	1	0.442205	199.2716982	6.16418E-07	5.317655
Within Groups	0.017753	8	0.002219			
Total	0.459958	9				

**Untreated vs WT:KKAc-7d**

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.4361	0.08722	0.000584
WT:KKAc	5	5.187167	1.037433	0.004266

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
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Between Groups	2.257263	1	2.257263	930.6428	1.44778E-09	5.317655
Within Groups	0.019404	8	0.002425			
Total	2.276667	9				

**F. Statistical Analysis of LDH data:** Primary neuronal cells incubated with 2  $\mu$ M of 7 d aggregates. WT, acetylated and 1:1 mixtures of A $\beta$ 42 7 d data were compared with untreated cells which was used as control.  $p < 0.05$  was considered as significant and represented as \*,  $p < 0.005$  represented as \*\* and  $p < 0.0005$  represented as \*\*\* (Refer to figure 6 in main paper)

#### LDH data

Samples	Well 1	Well 2	Well 3	Well 4	Mean	S.D.	Normalized	% Cytotoxicity
Max LDH	2.190	2.250	2.147	2.046	2.165	0.074	1.000	100.000
Untreated	0.316	0.322	0.250	0.314	0.300	0.029	0.139	13.866
WT	0.915	0.898	0.817	0.910	0.885	0.040	0.409	40.866
K16Ac	1.456	1.615	1.530	1.588	1.547	0.061	0.715	71.458
K28Ac	1.203	1.170	1.198	1.210	1.195	0.015	0.552	55.213
KKAc	2.134	1.990	2.095	2.011	2.057	0.059	0.950	95.028
WT:K16Ac	1.595	1.623	1.524	1.480	1.555	0.057	0.718	71.839
WT:K28Ac	1.538	1.509	1.551	1.425	1.505	0.049	0.695	69.541
WT:KKAc	1.785	1.613	1.712	1.733	1.710	0.062	0.790	79.010

**Note:** All experiment values reported are blank subtracted; Normalized = Mean of Test/Mean of Untreated, % Cytotoxicity = Normalized X100

#### Untreated vs WT -7d

Anova: Single Factor

##### SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200667	0.300167	0.001145
WT	4	3.538667	0.884667	0.002106

##### ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.683281	1	0.683281	420.351	8.75603E-07	5.987378
Within Groups	0.009753	6	0.001626			
Total	0.693034	7				

### Untreated vs K16Ac-7d

Anova: Single Factor  
SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200667	0.300167	0.001145
K16Ac	4	6.187667	1.546917	0.004958

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.108771	1	3.108771	1018.726	6.28689E-08	5.987378
Within Groups	0.01831	6	0.003052			
Total	3.127081	7				

### Untreated vs K28Ac-7d

Anova: Single Factor  
SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200667	0.300166667	0.001145
K28Ac	4	4.781	1.19525	0.000308

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.602348	1	1.602348347	2206.205	6.24123E-09	5.987377607
Within Groups	0.004358	6	0.000726292			
Total	1.606706	7				

### Untreated vs KKAc-7d

Anova: Single Factor  
SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200667	0.300167	0.001145
KKAc	4	8.228667	2.057167	0.004659

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	6.174098	1	6.174098	2127.532047	6.95769E-09	5.987377607
Within Groups	0.017412	6	0.002902			
Total	6.19151	7				



**Untreated vs WT: K16Ac-7d**

Anova: Single Factor

**SUMMARY**

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200667	0.300167	0.001145
WT:K16Ac	4	6.220667	1.555167	0.004269667

**ANOVA**

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.15005	1	3.15005	1163.524994	4.22778E-08	5.987377607
Within Groups	0.016244	6	0.002707			
Total	3.166294	7				

**Untreated vs WT:K28Ac-7d**

Anova: Single Factor

**SUMMARY**

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200667	0.300167	0.001145
WT:K28Ac	4	6.021667	1.505417	0.003206

**ANOVA**

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2.905255	1	2.905255	1335.366	2.80151E-08	5.987378
Within Groups	0.013054	6	0.002176			
Total	2.918309	7				

**Untreated vs WT:KKAac-7d**

Anova: Single Factor

**SUMMARY**

Groups	Count	Sum	Mean	Variance
Untreated	4	1.200666667	0.300167	0.001145
WT:KKAac	4	6.841666667	1.710417	0.00518825

**ANOVA**

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.97761	1	3.97761	1256.103936	3.36352E-08	5.987378
Within Groups	0.019	6	0.003167			
Total	3.99661	7				

**G. Statistical Analysis of DCFH-DA data:** Primary neuronal cells incubated with 2  $\mu$ M of 7 d aggregates. WT, acetylated and 1:1 mixtures of A $\beta$ 42 7d data were compared with untreated cells which was used as control.  $p < 0.05$  was considered as significant and represented as \*,  $p < 0.005$  represented as \*\* and  $p < 0.0005$  represented as \*\*\* (Refer to figure 6 in main paper)

**DCFHDA data**

Samples	Well 1	Well 2	Well 3	Well 4	Well 5	Mean	S.D.	Normalized	%Free Radical
tBHP	1.036	0.959	0.988	0.959	0.921	0.973	0.038	1.000	100.000
Untreated	0.058	0.047	0.057	0.103	0.114	0.076	0.027	0.078	7.787
WT	0.227	0.234	0.211	0.110	0.183	0.193	0.045	0.198	19.835
K16Ac	0.245	0.291	0.309	0.393	0.206	0.289	0.063	0.297	29.666
K28Ac	0.210	0.132	0.200	0.223	0.304	0.214	0.055	0.220	21.973
KKAc	0.400	0.463	0.342	0.463	0.523	0.438	0.062	0.451	45.078
WT:K16Ac	0.296	0.310	0.319	0.346	0.332	0.321	0.017	0.330	32.984
WT:K28Ac	0.342	0.311	0.275	0.291	0.302	0.304	0.022	0.313	31.278
WT:KKAc	0.497	0.421	0.397	0.409	0.551	0.455	0.059	0.468	46.813

**Note:** All experiment values reported are blank subtracted; Normalized = Mean of Test/Mean of Untreated, % Free Radical = Normalized X100

**Untreated vs WT- 7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	5	0.3787	0.07574	0.000917
WT	5	0.964567	0.192913	0.002527

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.034324	1	0.034324	19.93725	0.002097	5.317655
Within Groups	0.013773	8	0.001722			
Total	0.048097	9				

**Untreated vs K16Ac-7d**

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Mean	Variance
Untreated	5	0.3787	0.07574	0.000917
K16Ac	5	1.442633	0.288527	0.004999

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.113195	1	0.113195	38.26761	0.000263396	5.317655
Within Groups	0.023664	8	0.002958			
Total	0.136859	9				

**Untreated vs K28Ac-7d**

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.3787	0.07574	0.000917
K28AC	5	1.068567	0.213713	0.003781

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.047592	1	0.047592	20.26017	0.001999	5.317655
Within Groups	0.018792	8	0.002349			
Total	0.066384	9				

**Untreated vs KKAc -7d**

Anova: Single Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.3787	0.07574	0.000917
KKAc	5	2.192133	0.438427	0.004799

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.328854	1	0.328854	115.0654	5.01524E-06	5.317655
Within Groups	0.022864	8	0.002858			
Total	0.351718	9				

### Untreated vs WT: K16Ac -7d

Anova: Single Factor

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.3787	0.07574	0.000917
WT:K16Ac	5	1.604033	0.320807	0.000374

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.150144	1	0.150144	232.7355	3.37998E-07	5.317655
Within Groups	0.005161	8	0.000645			
Total	0.155305	9				

### Untreated vs K28Ac -7d

Anova: Single Factor

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.3787	0.07574	0.000917
WT:K28Ac	5	1.521067	0.304213	0.000622

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.1305	1	0.1305	169.6382	1.14564E-06	5.317655
Within Groups	0.006154	8	0.000769			
Total	0.136654	9				

### Untreated vs WT: KKAc -7d

Anova: Single Factor

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>
Untreated	5	0.3787	0.07574	0.000916608
WT: KKAc	5	2.2765	0.4553	0.004404

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.360164	1	0.360164	135.3847094	2.71104E-06	5.317655
Within Groups	0.021282	8	0.00266			
Total	0.381447	9				