

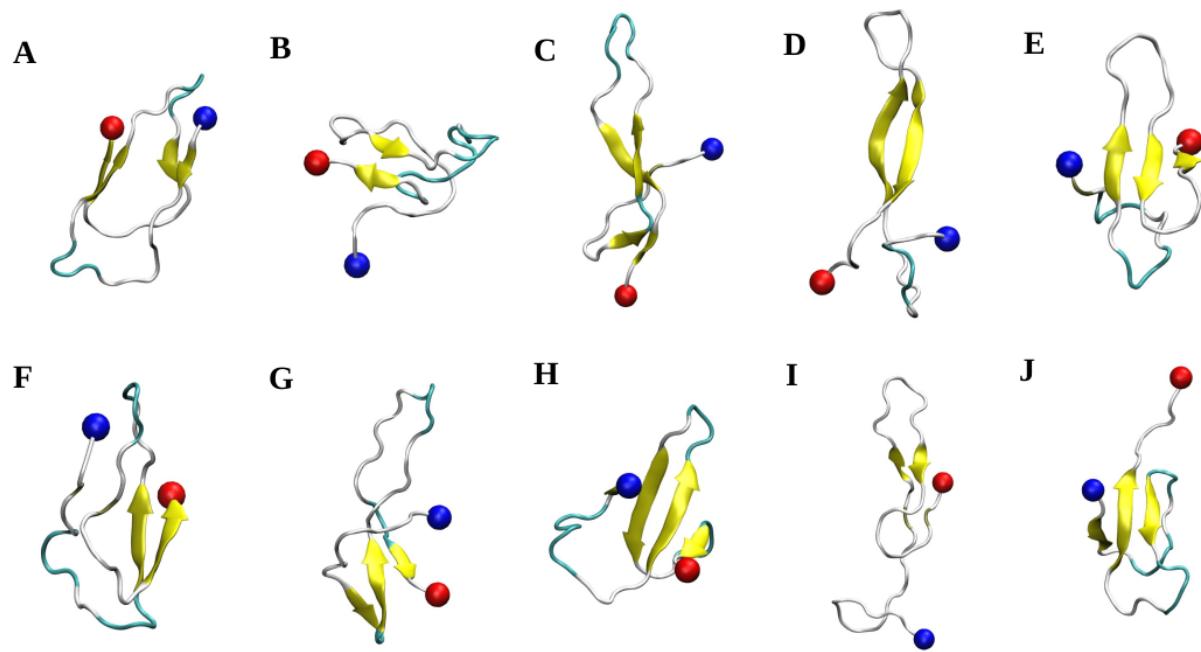
**Electronic Supplementary Information: Pyroglutamate-modified Amyloid  $\beta$ (3-42) Monomer has more  $\beta$ -sheet content than the Amyloid  $\beta$ (1-42) Monomer**

Soumav Nath,<sup>a,b</sup> Alexander K. Buell,<sup>c</sup> and Bogdan Barz<sup>\*a,b</sup>

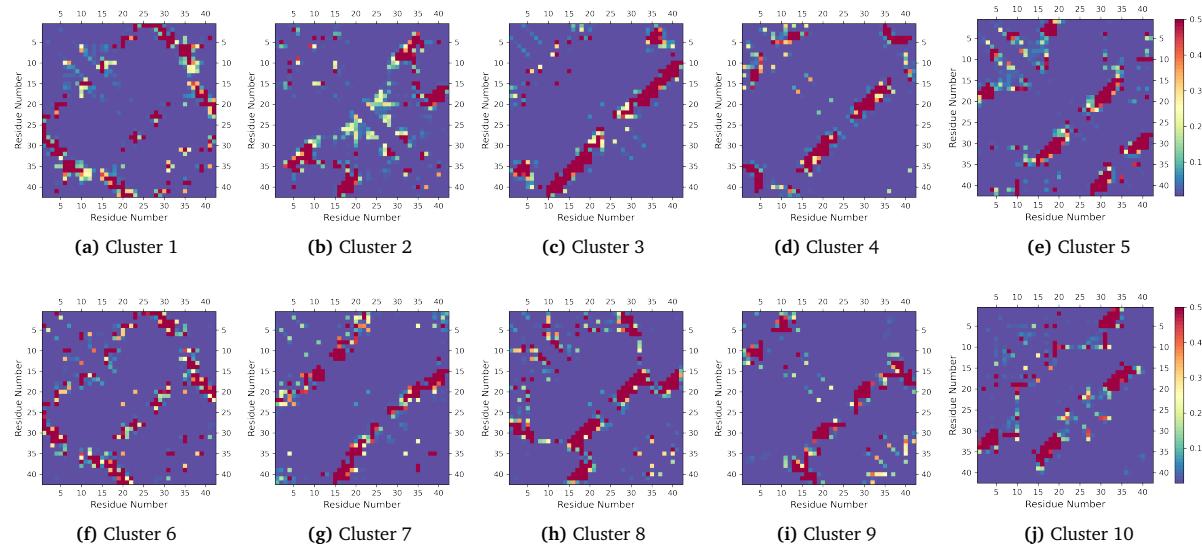
<sup>a</sup> Institut für Physikalische Biologie, Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany.

<sup>b</sup> Institute of Biological Information Processing - Structural Biochemistry (IBI-7), Research Centre Jülich, Jülich, Germany.

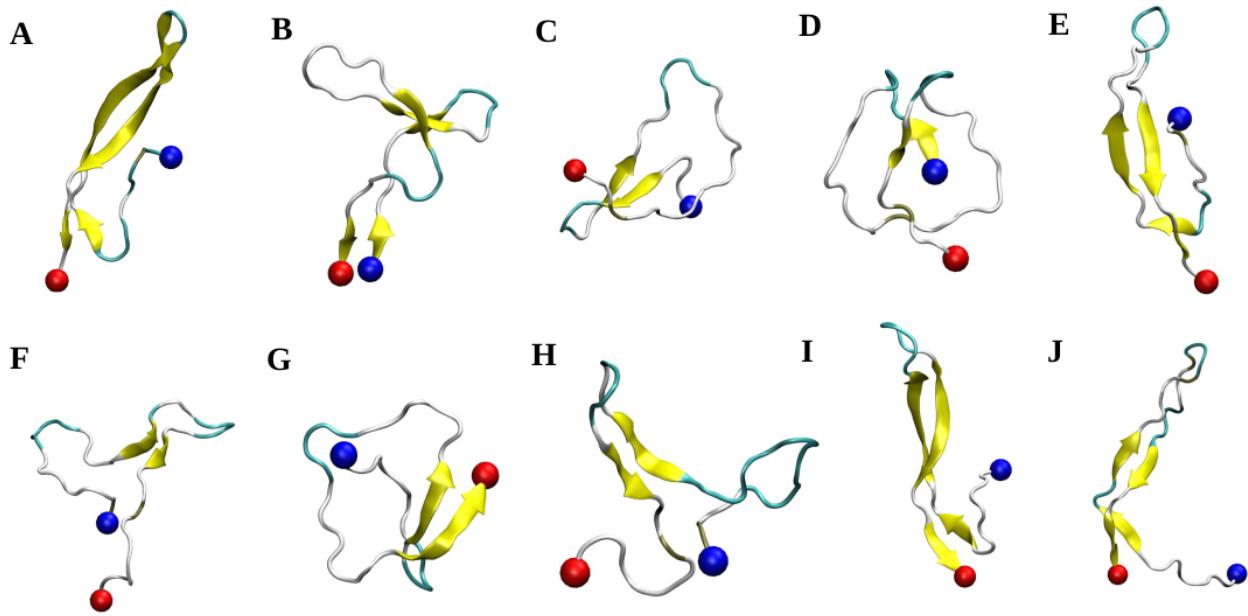
<sup>c</sup> Department of Biotechnology and Biomedicine, Technical University of Denmark, Lyngby, Denmark.



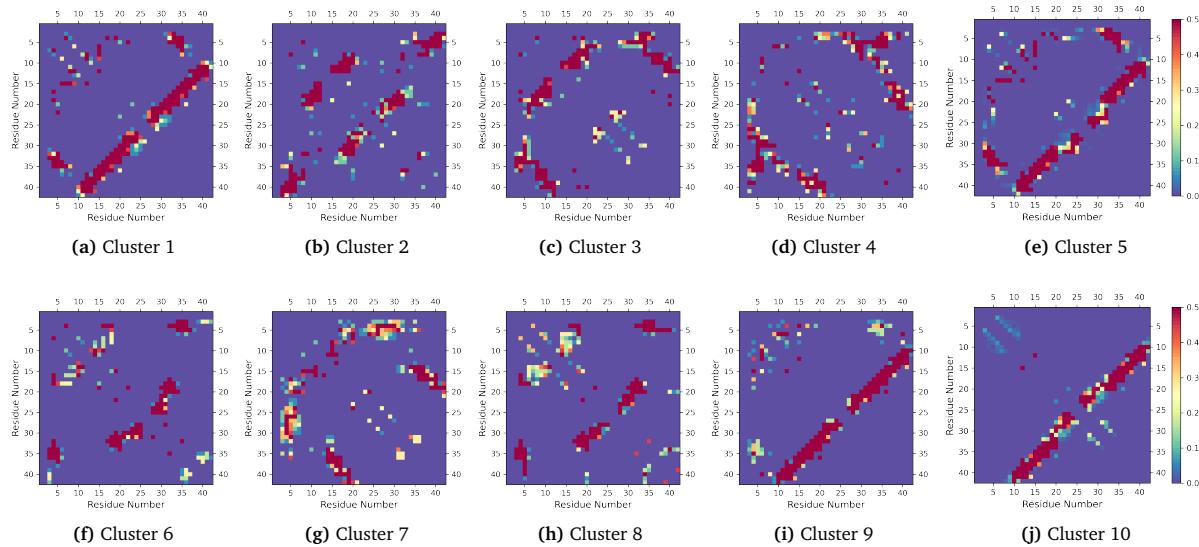
**Figure S1** Secondary Structures of Top-10 Clusters of A $\beta$ (1-42) peptide with N-terminus and C-terminus colored as Blue and Red respectively..



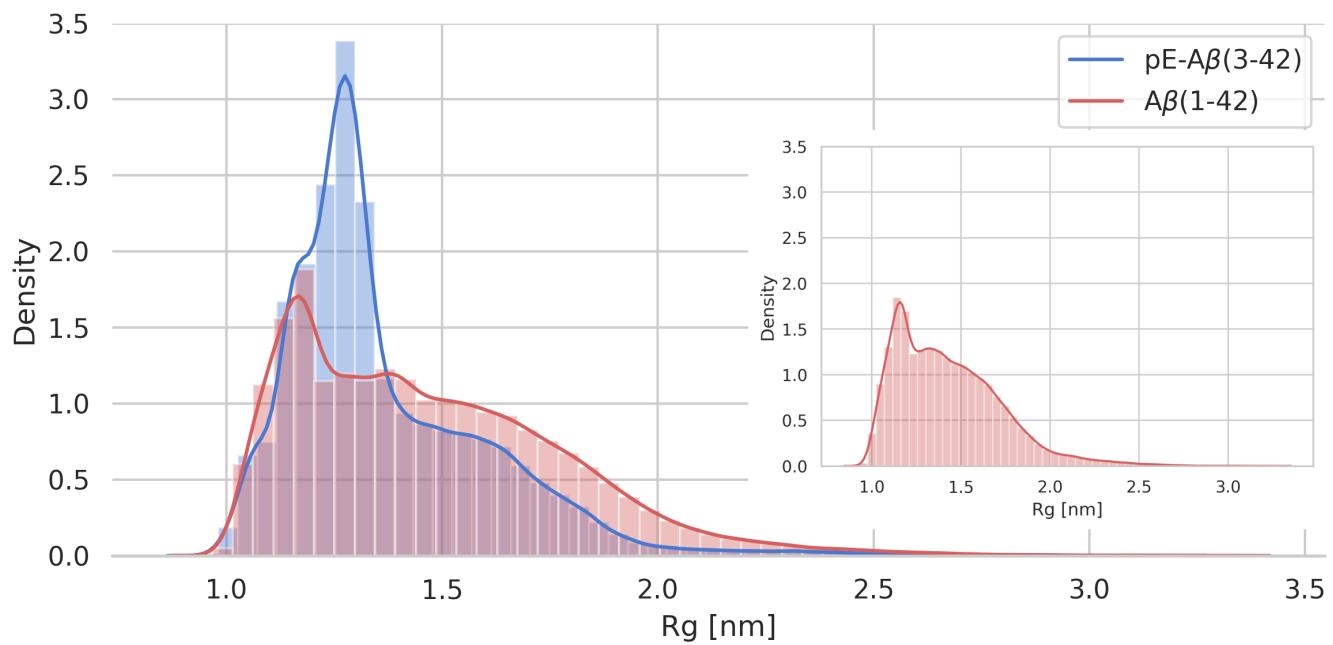
**Figure S2** Contact Maps for Top-10 Clusters of A $\beta$ 1-42 peptide.



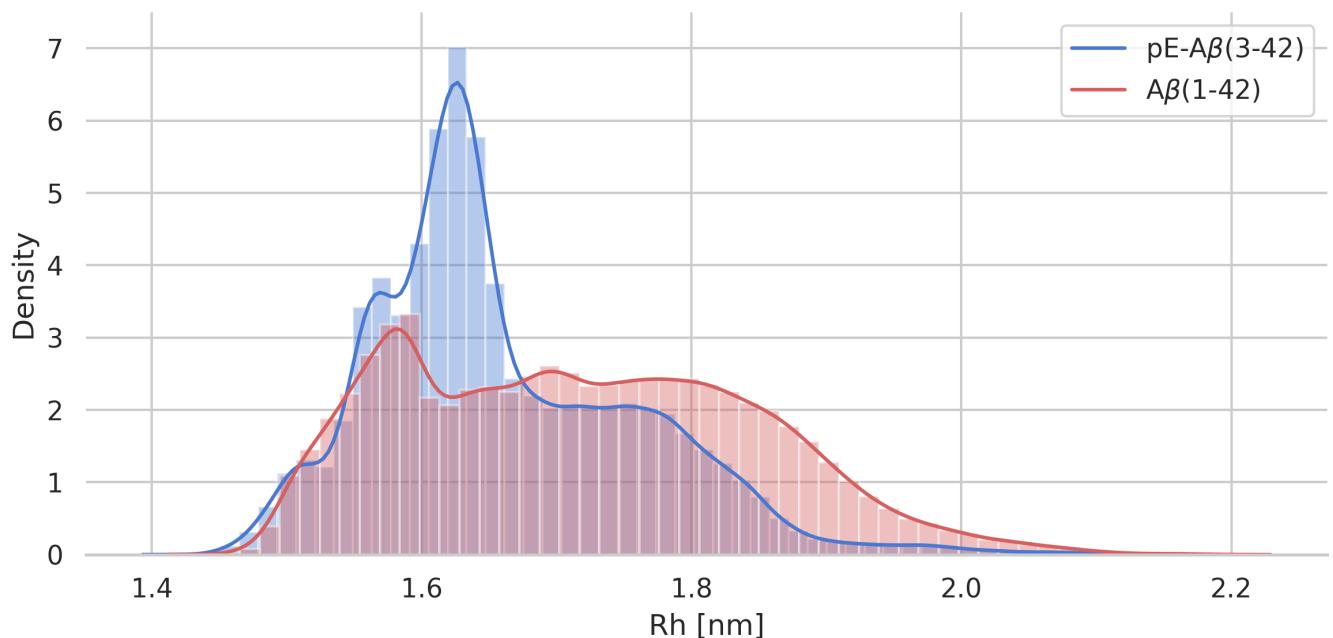
**Figure S3** Secondary Structures of Top-10 Clusters of pE-A $\beta$ (3-42) peptide with N-terminus and C-terminus colored as Blue and Red respectively.



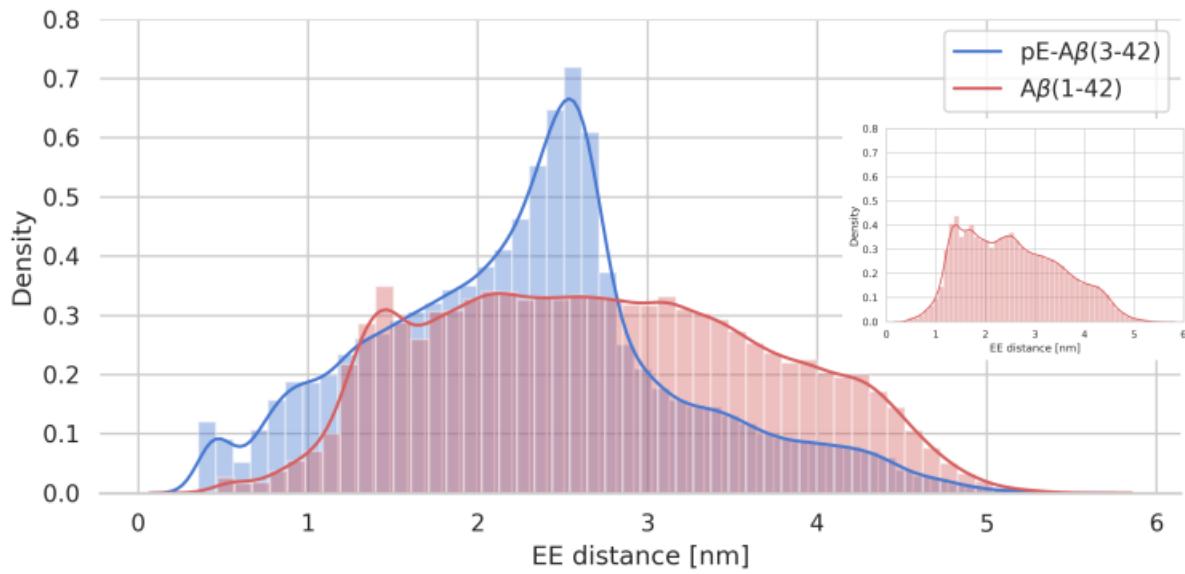
**Figure S4** Contact Maps for Top-10 Clusters of pE-A $\beta$ (3-42) peptide.



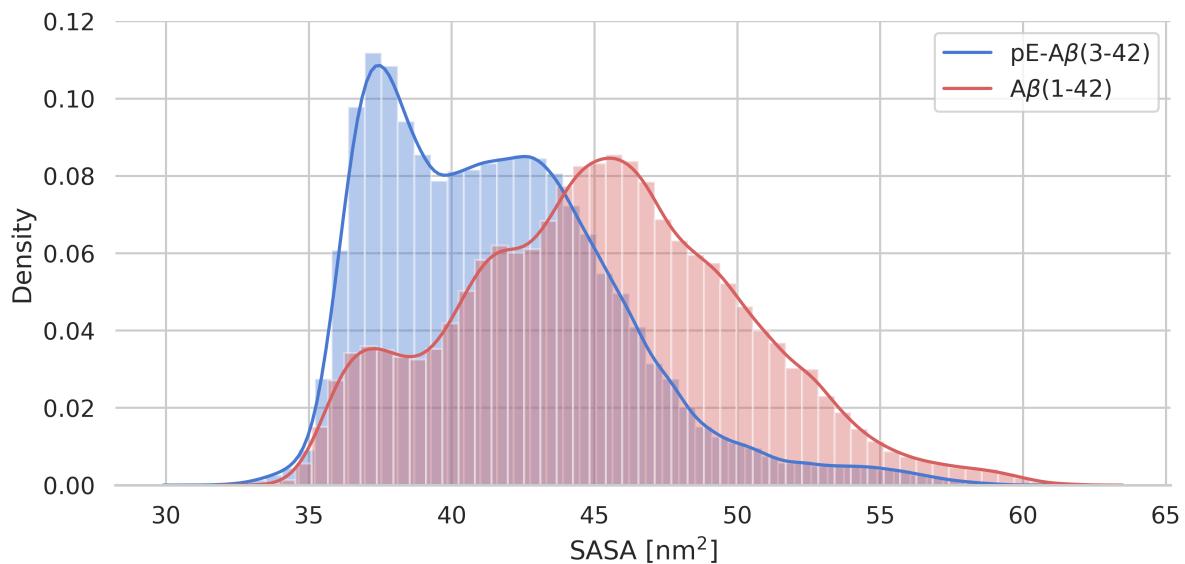
**Figure S5** Radius of Gyration ( $R_g$ ) distribution for pE-A $\beta$ (3-42) and A $\beta$ (1-42). The inset shows the distribution for A $\beta$ (1-42) considering only amino acids 3-42.



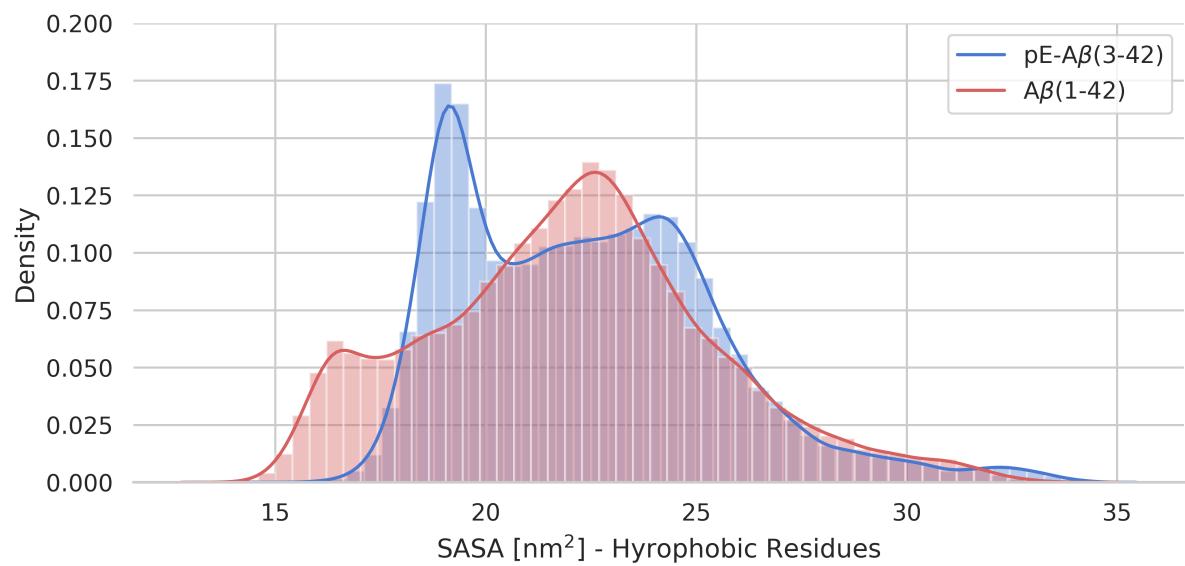
**Figure S6** Hydrodynamic Radius ( $R_h$ ) distribution for A $\beta$ (1-42) and pE-A $\beta$ (3-42).



**Figure S7** End-to-End (EE) distribution for pE-A $\beta$ (3-42) and A $\beta$ (1-42). The inset shows the distribution for A $\beta$ (1-42) considering only amino acids 3-42.



**Figure S8** Solvent Accessible Surface Area (SASA) distribution for pE-A $\beta$ (3-42) and A $\beta$ (1-42).



**Figure S9** Solvent Accessible Surface Area (SASA) distribution for hydrophobic residues of pE- $\text{A}\beta(3-42)$  and  $\text{A}\beta(1-42)$ .

**Table S1** Cluster Occurance Probability for A $\beta$ (1-42) and pE-A $\beta$ (3-42)

Cluster#	A $\beta$ (1-42)	pE-A $\beta$ (3-42)
Cluster 1	6.08 %	18.38 %
Cluster 2	3.38 %	3.86 %
Cluster 3	0.95 %	2.14 %
Cluster 4	0.92 %	1.79 %
Cluster 5	0.91 %	1.36 %
Cluster 6	0.87 %	1.22 %
Cluster 7	0.66 %	1.00 %
Cluster 8	0.56 %	0.96 %
Cluster 9	0.55 %	0.75 %
Cluster 10	0.52 %	0.62 %