Supplementary Information

Human Plasma Protein Corona of Aβ Amyloid and Its Impact on IAPP Cross-Seeding

Aparna Nandakumar,[1] Yanting Xing,[2] Ritchlynn R. Aranha,[3] Ava Faridi,[1] Aleksandr Kakinen,[1] Ibrahim Javed,[1] Kairi Koppel,[1] Emily H. Pilkington,[1] Anthony Wayne Purcell,[3] Thomas P. Davis,[1,4] Pouya Faridi,[3] Feng Ding,[3] and Pu Chun Ke[1]*

[1]ARC Centre of Excellence in Convergent Bio-Nano Science and Technology,
Monash Institute of Pharmaceutical Sciences, Monash University, 381 Royal Parade,
Parkville, VIC 3052, Australia

[2]Department of Physics and Astronomy, Clemson University, Clemson, SC 29634, United States

[3]Infection and Immunity Program & Department of Biochemistry and Molecular Biology,
Biomedicine Discovery Institute, Monash University, Clayton, Victoria 3800, Australia

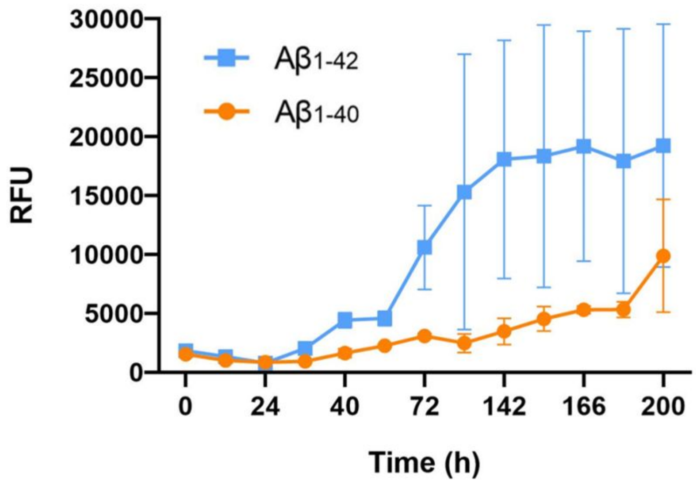
[4]Australian Institute for Bioengineering and Nanotechnology,
The University of Queensland, Brisbane Qld 4072, Australia

E-mail: pu-chun.ke@monash.edu

Table S1. Unique proteins identified in the Aβ fibrillar coronae.

Uniport accession	**$A\beta_{1-42}$ unique**	**Protein**
Q02413	Desmoglein-1	DSG1
Q8NHM4	Putative trypsin 6	TRY6
P01275	Glucagon	GLUC
P14923	Epiplakin	PLAK
A0A075B6S5	Immunoglobulin kappa variable 1-27	KV127
P11226	Mannose-binding protein C	MBL2
P08709	Coagulation factor VII	FA7
O60346	PH domain leucine-rich repeat-containing protein phosphatase 1	PHLP1
Q16820	Meprin A subunit beta	MEP1B

Uniport accession	**$A\beta_{1-40}$ unique**	**Protein**
P27918	Properdin	PROP
P01764	Immunoglobulin heavy variable 3	HV323
P0DJI8	Serum amyloid A-1	SAA1
P29475	Nitric oxide synthase brain	NOS1
P10645	Chromogranin	CMGA
Q7Z745	Maestro heat-like repeat-containing protein family member 2B	MRO2B
P81605	Dermcidin	DCD
P29120	Neuroendocrine convertase	NEC1
Q13106	Zinc finger protein 154	ZN154



Sample name	Lag time (h)	k (h^{-1})	$t_{1/2}$ (h)
Aβ_{1-42}	47+5	0.08+0.01	70.9
Aβ_{1-40}	72+40	0.02+0.01	178.2

Figure S1. ThT fibrillization kinetics of Aβ_{1-42} and Aβ_{1-40} (50 μM). Formation of amyloid fibrils was detected by the increase in the relative fluorescence unit (RFU) upon binding of the ThT dye to the hydrophobic grooves of the amyloids. Aβ_{1-42} has a significantly lower fibrillization half time and a 4-fold faster fibril growth rate than Aβ_{1-40}. k: fibrillization rate constant. $t_{1/2}$: reaction half-time.

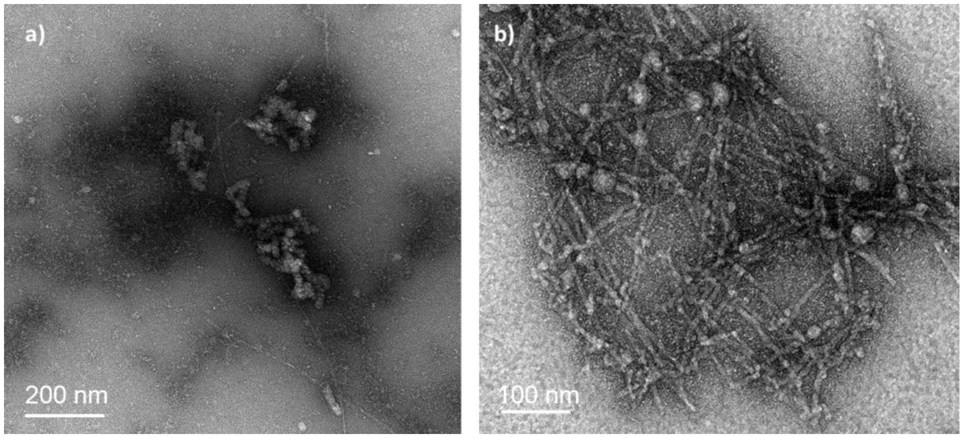


Figure S2. Distinct patterns observed on fibrillar-corona isolates for a) $A\beta_{1\text{-}42}$ and b) $A\beta_{1\text{-}40}$ fibrils.

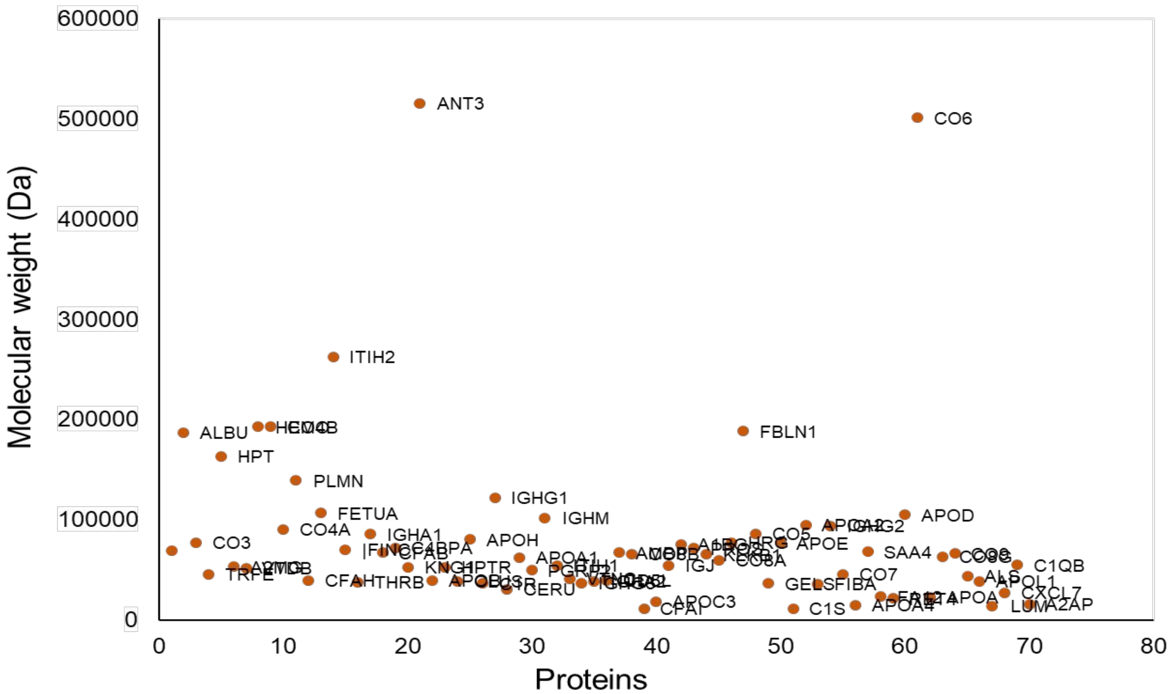


Figure S3. Most abundant coronal proteins as a function of molecular weight (in Da), with the point size indicating the ratio of coronal protein abundance of A$\beta_{1\text{-}40}$/A$\beta_{1\text{-}42}$. Most of the coronal proteins tend to have an average mass below 100 kDa.

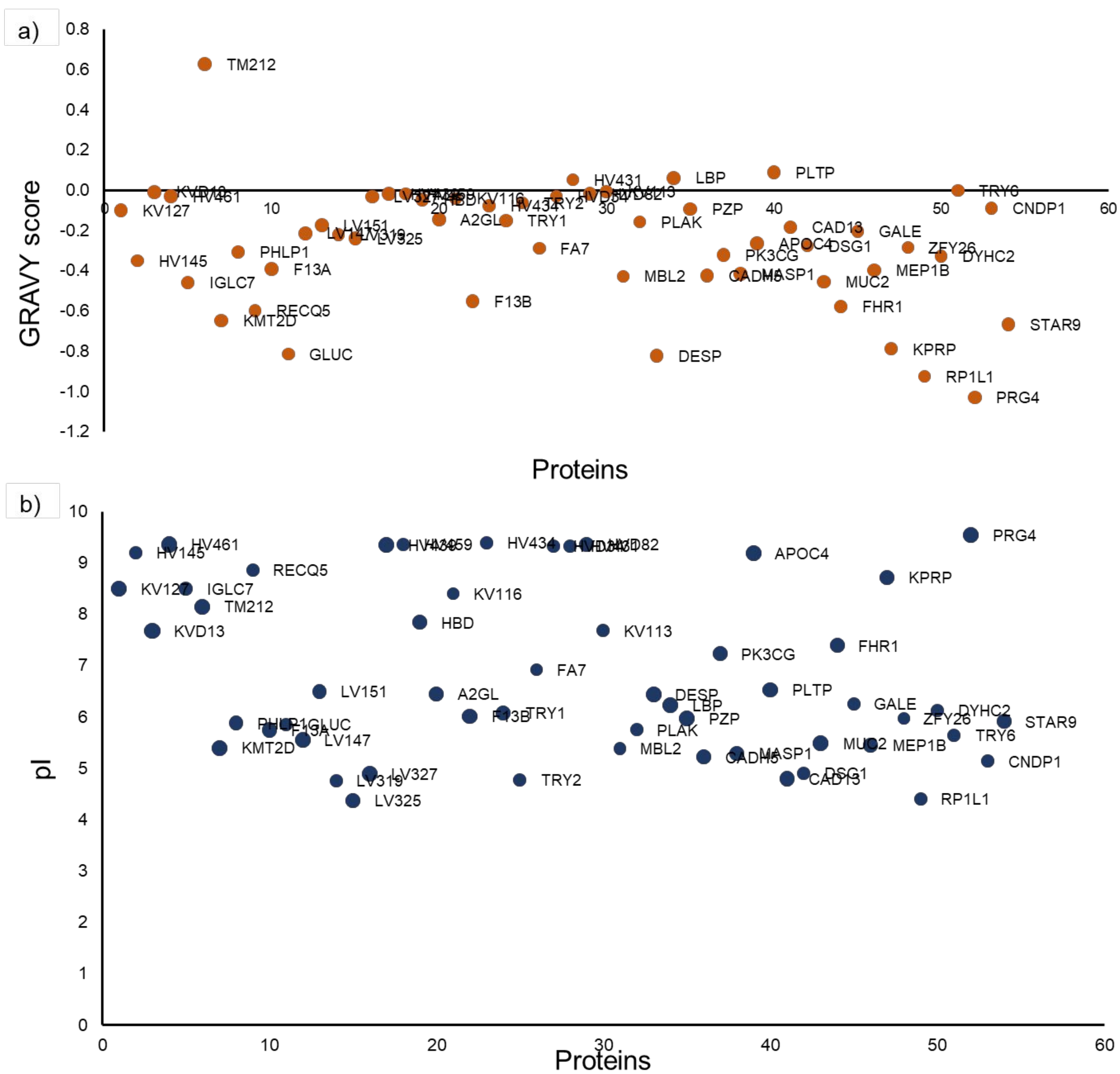


Figure S4. Physicochemical properties of the unique proteins identified in the Aβ_{1-42} corona, showing a) GRAVY Score and b) pI values of the coronal proteins.

a)

b)

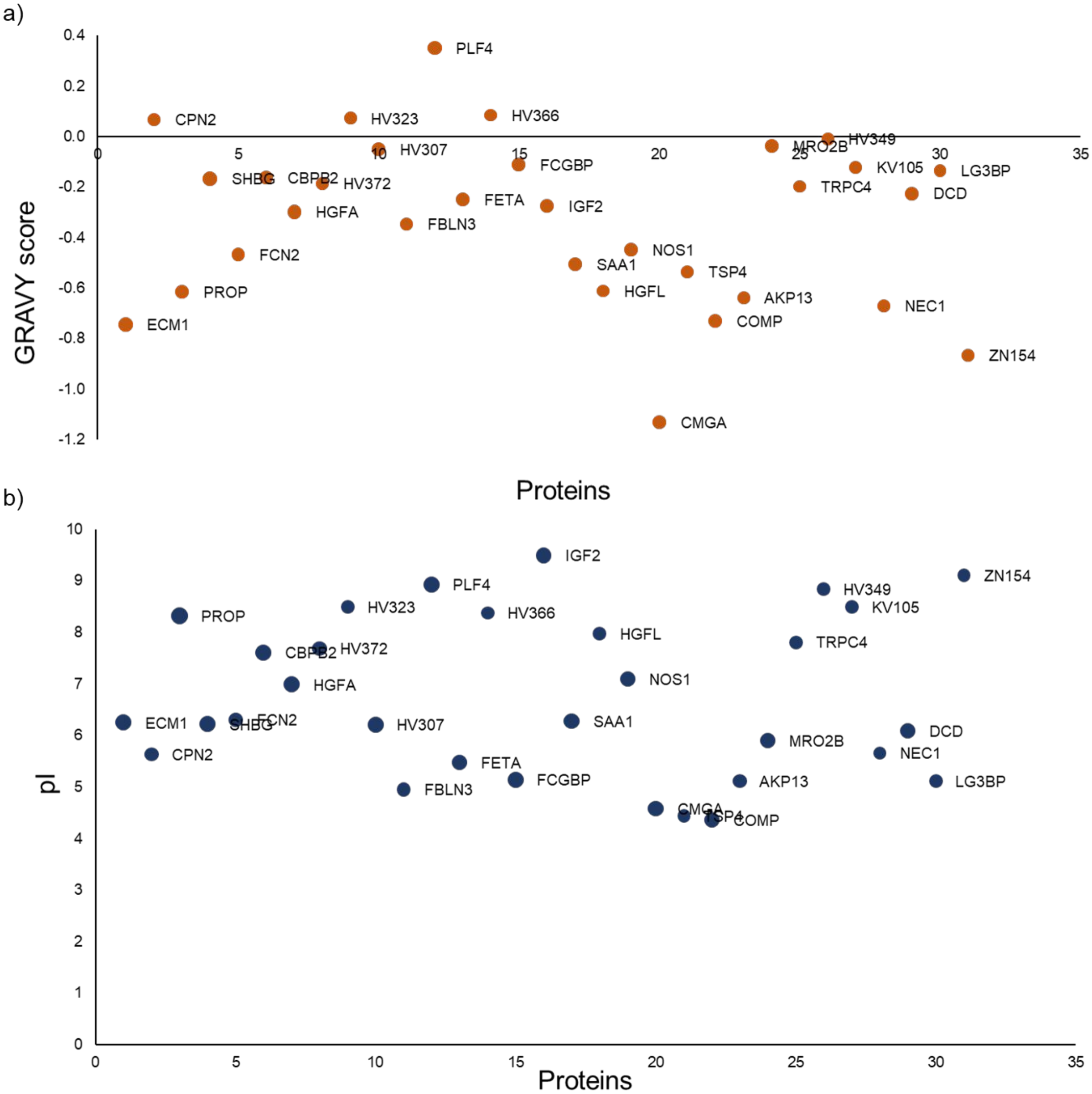


Figure S5. Physicochemical properties of the unique proteins identified in the A$\beta_{1\text{-}40}$ corona, showing a) GRAVY Score and b) pI values of the coronal proteins.

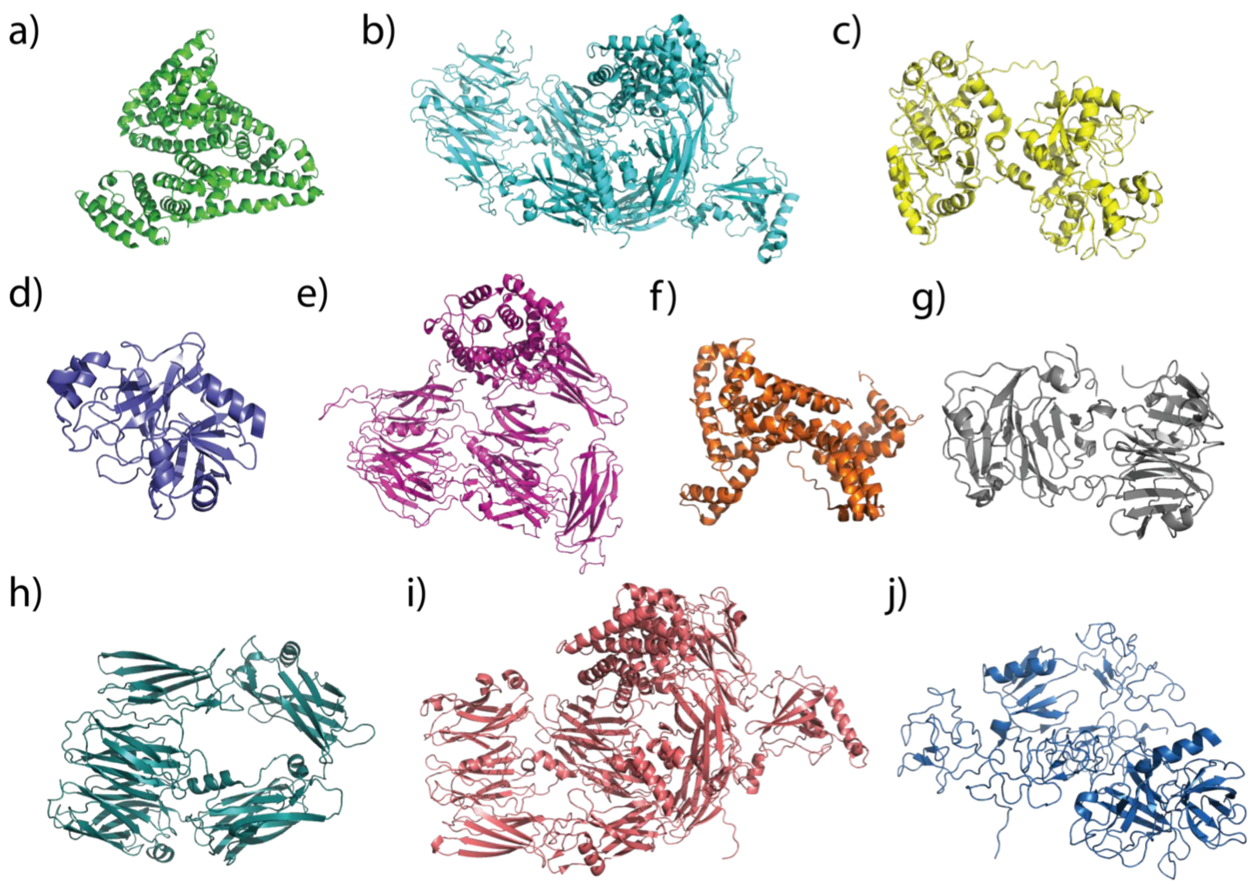


Figure S6. Structures of top-10 abundant coronal proteins of a) serum albumin, b) complement C3, c) serotransferrin, d) haptoglobin, e) alpha-2-macroglobulin, f) vitamin D-binding protein, g) hemopexin, h) complement C4-B, i) complement C4-A, and j) plasminogen, shown in cartoon representations.