

## Supplementary information

### **Role of PTA in the prevention of Cu(Amyloid- $\beta$ ) induced ROS formation and Amyloid- $\beta$ oligomerisation in the presence of Zn**

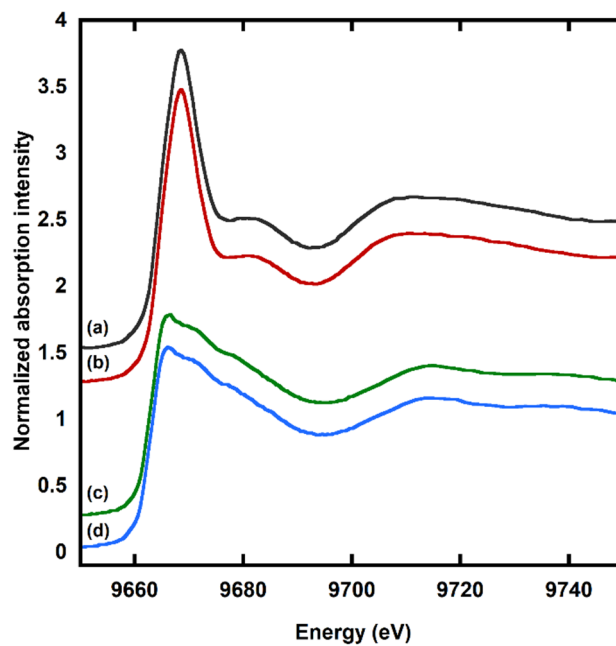
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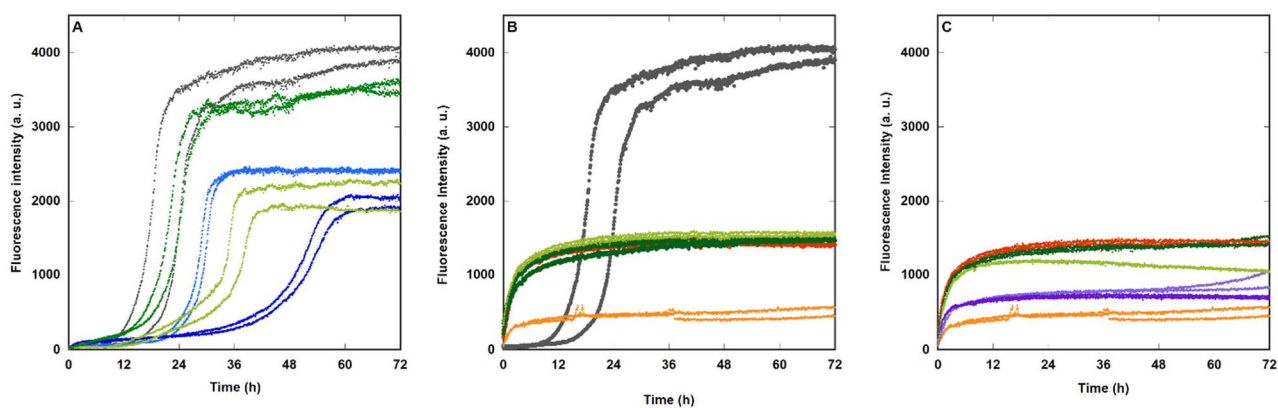
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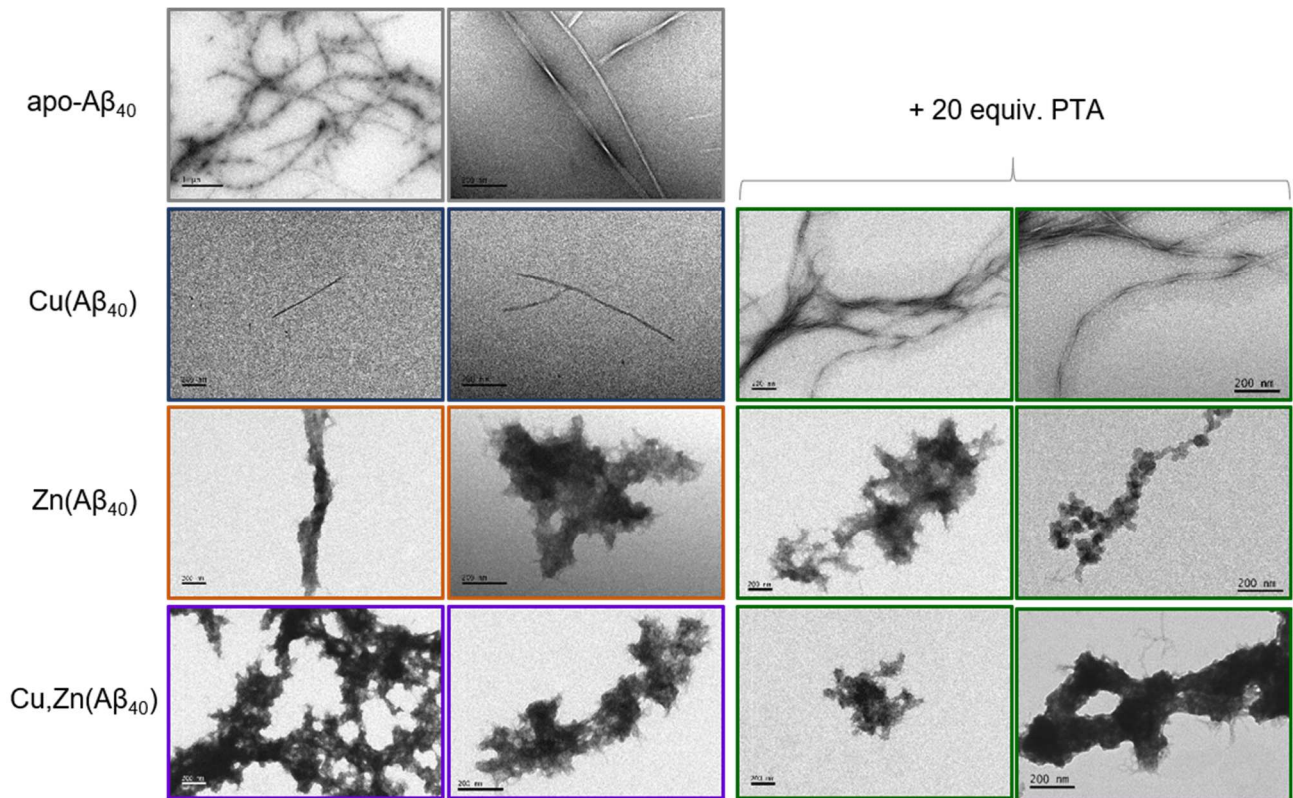
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**Figure S1.** Zn K-edge XANES spectra of a mixture of (a) Zn in buffer, (b) Zn + 5 equiv. of PTA, (c) Zn(A $\beta$ <sub>16</sub>) + 5 equiv. of PTA, d) Zn(A $\beta$ <sub>16</sub>). Conditions: [Zn(II)] = 0.9 mM, [A $\beta$ <sub>16</sub>] = 1 mM, [PTA] = 5 mM, [HEPES] = 50 mM, pH 7.4, glycerol 10% v/v was used as a cryoprotectant. T = 20 K.



**Figure S2.** ThT- fluorescence spectra as a function of time of the aggregation of  $A\beta_{40}$ , in presence of **(A)** Cu(II), **(B)** Zn(II) and **(C)** Cu(II) + Zn(II); and the effect of adding 5 or 20 equivalents of PTA. [Cu(II)] = 10 or 18  $\mu$ M, [ $A\beta_{40}$ ] = 20  $\mu$ M, [Zn(II)] = 10 or 18  $\mu$ M, [PTA] = 100 or 400  $\mu$ M, [ThT] = 10  $\mu$ M, [NaCl] = 100 mM, [EDTA] = 0.1  $\mu$ M, [HEPES] = 50 mM, pH 7.4, T = 37  $^{\circ}$ C. Colour code of curves: **(A)** a) grey, apo- $A\beta$ ; b) light blue, Cu( $A\beta$ ) at ratio 0.5:1; c) blue, Cu( $A\beta$ ) at ratio 0.9:1; d) light green, Cu( $A\beta$ ) at ratio 0.9:1 + 5 equiv. of PTA; e) green, Cu( $A\beta$ ) at ratio 0.9:1 + 20 equiv. of PTA; **(B)** a) grey, apo- $A\beta$ ; f) light orange, Zn( $A\beta$ ) at ratio 0.5:1; g) orange, Zn( $A\beta$ ) at ratio 0.9:1; h) light green, Zn( $A\beta$ ) at ratio 0.9:1 + 5 equiv. PTA; i) green, Zn( $A\beta$ ) at ratio 0.9:1 + 20 equiv. PTA; **(C)** f) light orange, Zn( $A\beta$ ) at ratio 0.5:1; g) orange, Zn( $A\beta$ ) at ratio 0.9:1; j) violet, Cu,Zn( $A\beta$ ) at ratio 0.5:0.5:1; k) purple, Cu,Zn( $A\beta$ ) at ratio 0.9:0.9:1; l) light green, Cu,Zn( $A\beta$ ) at ratio 0.9:0.9:1 + 5 equiv. PTA; m) green, Cu,Zn( $A\beta$ ) at ratio 0.9:0.9:1 + 20 equiv. PTA.



**Figure S3.** TEM images corresponding to curves (a) apo-Aβ<sub>40</sub>, (c) Cu(Aβ<sub>40</sub>) formed at 0.9 equivalents of Cu(II), (e) Cu(Aβ<sub>40</sub>) + 20 equiv. of PTA, (g) Zn(Aβ<sub>40</sub>) formed at 0.9 equivalents of Zn(II), (i) Zn(Aβ<sub>40</sub>) + 0.9 equiv. of PTA, (k) Cu,Zn(Aβ<sub>40</sub>) formed at 0.9 equivalents of Cu(II) and Zn(II), (m) Cu,Zn(Aβ<sub>40</sub>) + 20 equiv. of PTA. Samples were taken at t = 72 h, at two different zoom: 4k and 12 k (scale bar = 200 nm).