# Supporting Information

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# Unveiling the metal-dependent aggregation properties of the C-terminal region of amyloidogenic intrinsically disordered protein isoforms DPF3b and DPF3a

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C-TERb:

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                  200         210         220         230         240         250         260         270
                    C  DICGKRYKNR  PGLSYHYAHT  HLASEEGDEA  QDQETRSPPN  HRNENHRPQK  GPDGTVIPNN  YCDFCLGGSN

         280         290         300         310         320         330         340         350         360
MNKKSGRPEE  LVSCADCGRS  GHPTCLQFTL  NMTEAVKTYK  WQCIECKSCI  LCGTSENDDQ  LLFCDDCDRG  YHMYCLNPPV  AEPPEGSWSC

         370
HLCWELLKEK  ASAFGCQA
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C-TERa:

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                  200         210         220         230         240         250         260         270
                    C  DICGKRYKNR  PGLSYHYAHT  HLASEEGDEA  QDQETRSPPN  HRNENHRPQK  GPDGTVIPNN  YCDFCLGGSN

         280         290         300         310         320         330         340         350
MNKKSGRPEE  LVSCADCGRS  AHLGGEGRKE  KEAAAAARTT  EDLFGSTSES  DTSTFHGFDE  DDLEEPRSCR  GRRSGRGSPT  ADKKGSC
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Figure S1 – Sequence composition of C-TERb (upper panel) and C-TERa (lower panel).

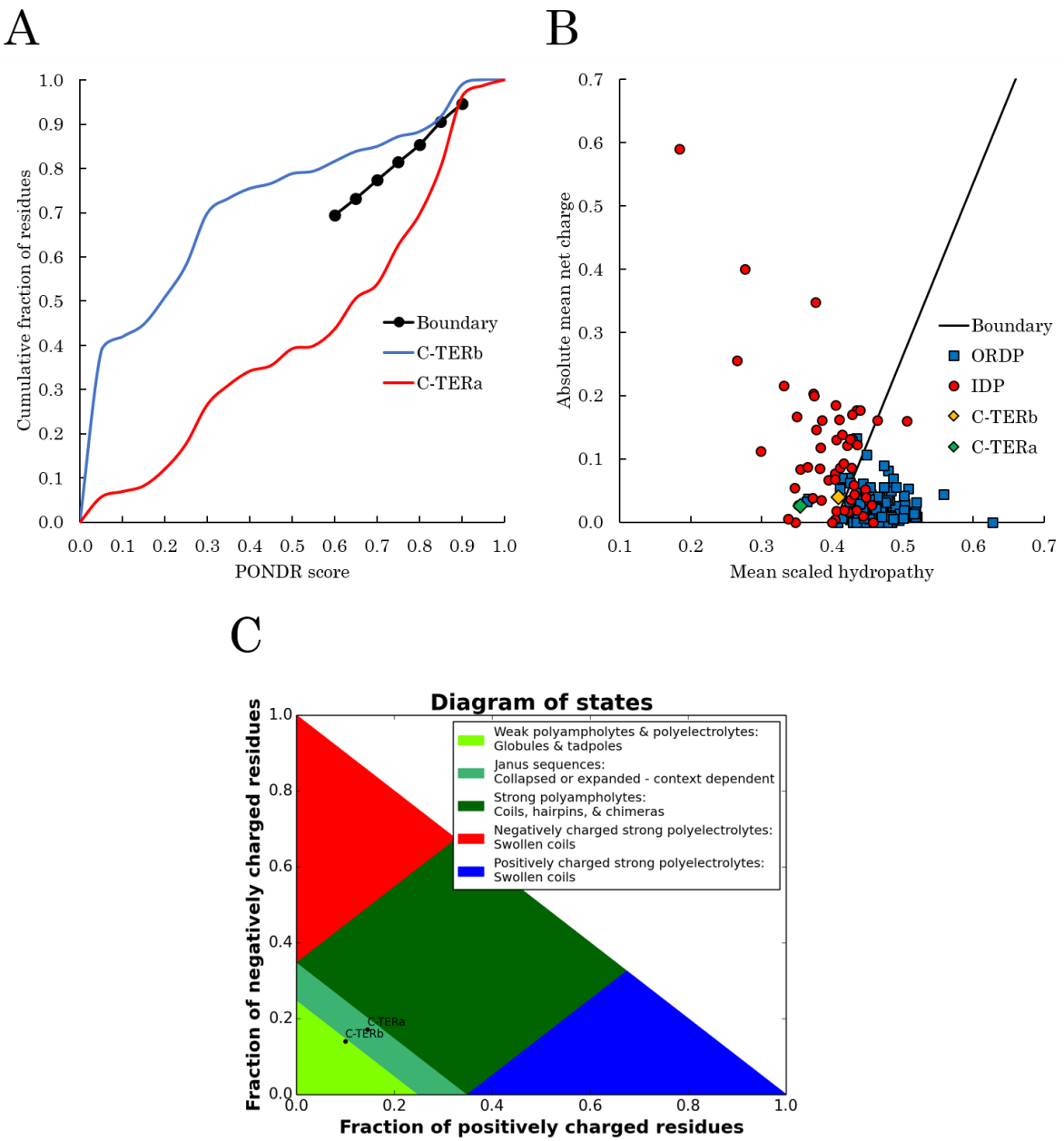


Figure S2 – Predicted disorder-associated properties of C-TERb and C-TERa. (A) CDF plot, (B) CH plot, and (C) Das-Pappu phase diagram.

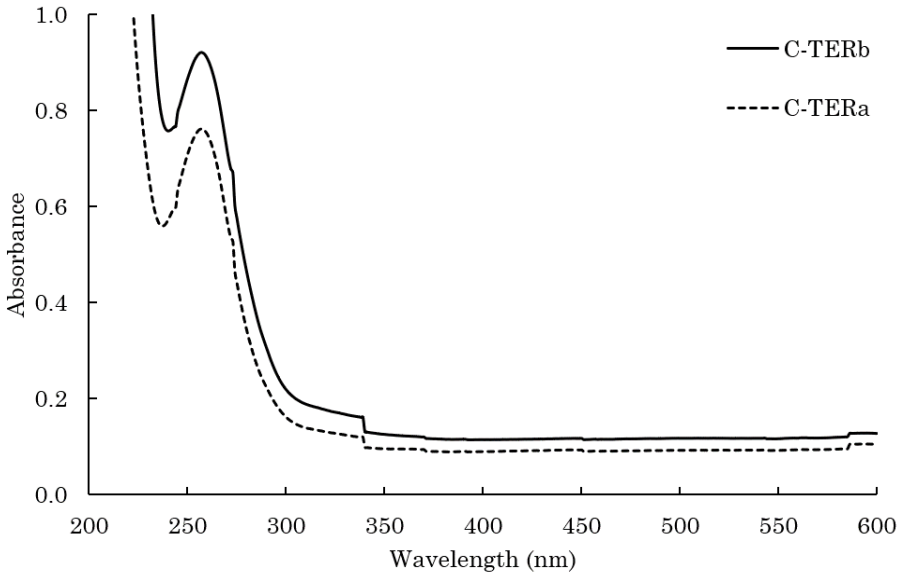


Figure S3 – UV-visible absorption spectra of C-TERb (solid line) and C-TERa (dashed line) in TBS at ~20 °C ($C_{C\text{-}TER}$ = 10 µM).

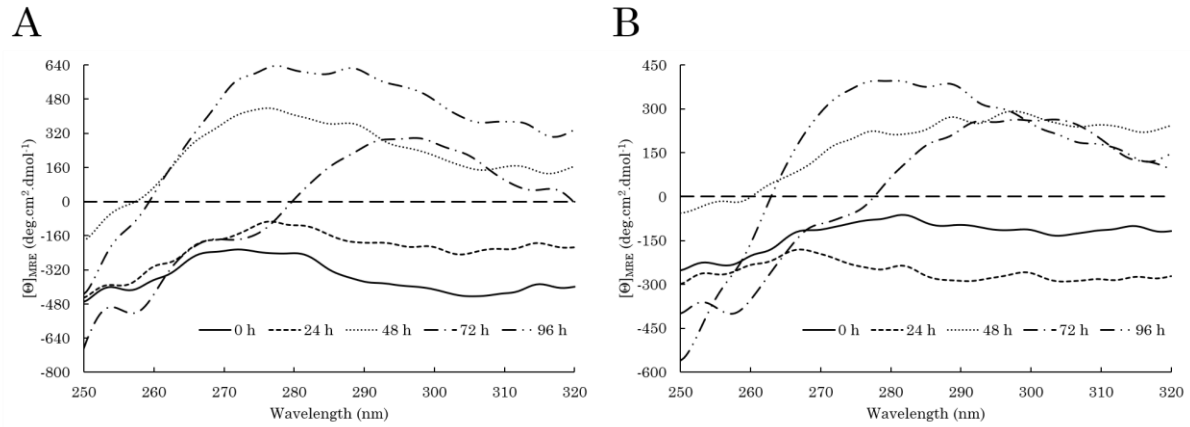


Figure S4 – Near-UV CD spectra of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 10 µM). after 0 h (solid line), 24 h (dashed line), 48 h (dotted line), 72 h (dash-dotted line), and 96 h (dash-double-dotted line) of incubation in TBS at ~20 °C.

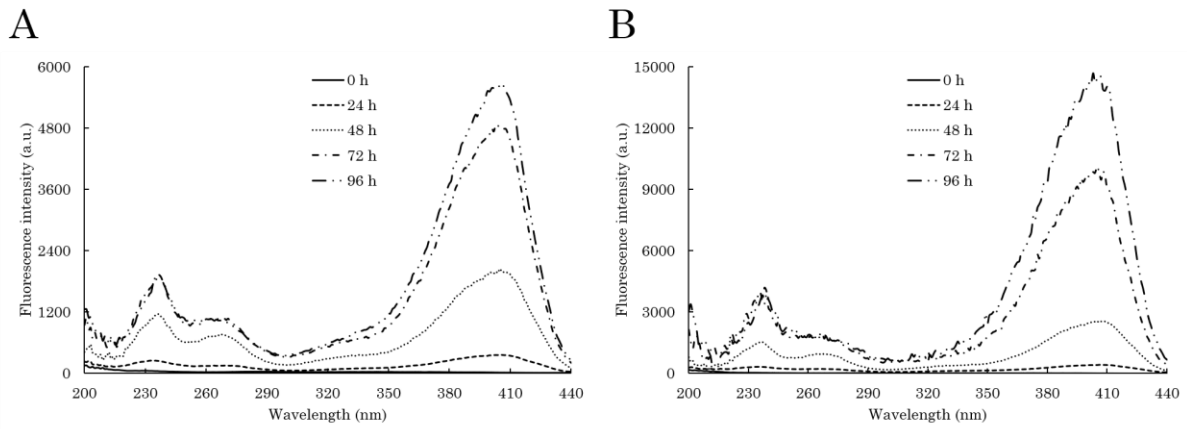


Figure S5 – dbAF excitation spectra ($\lambda_{em}$ = 456 nm, sw = 10 nm) of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 10 µM) after 0 h (solid line), 24 h (dashed line), 48 h (dotted line), 72 h (dash-dotted line), and 96 h (dash-double-dotted line) of incubation in TBS at ~20 °C.

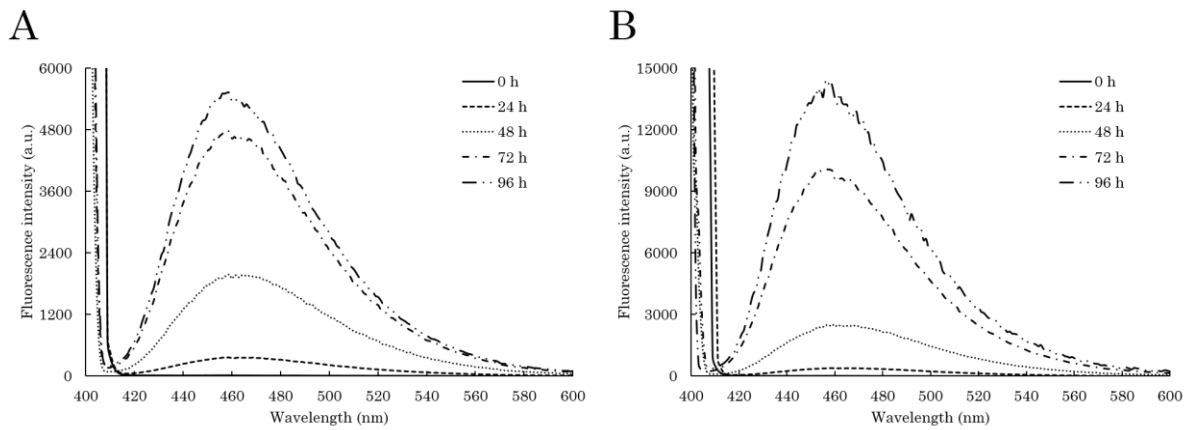


Figure S6 – dbAF spectra ($\lambda_{ex}$ = 400 nm, sw = 10 nm) of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 10 µM) after 0 h (solid line), 24 h (dashed line), 48 h (dotted line), 72 h (dash-dotted line), and 96 h (dash-double-dotted line) of incubation in TBS at ~20 °C.

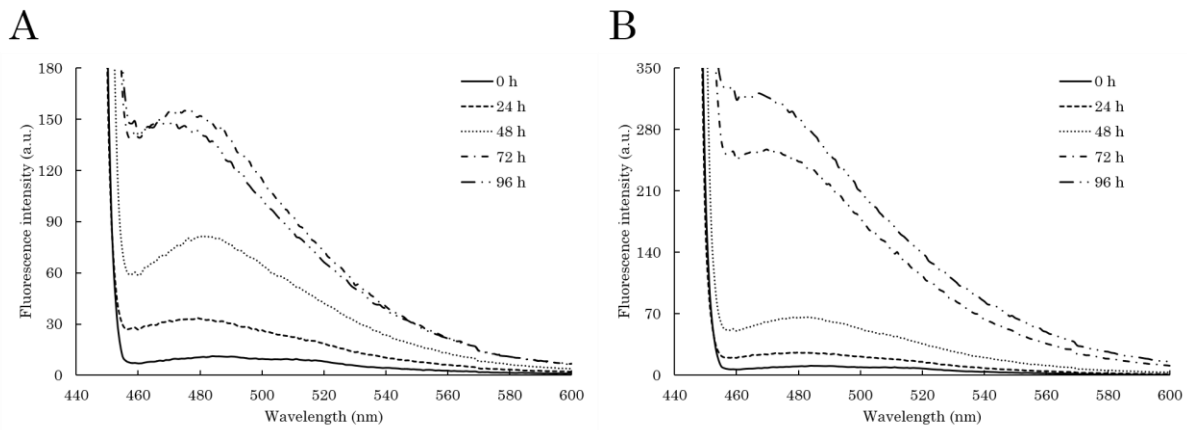


Figure S7 – ThT emission spectra ($\lambda_{ex}$ = 440 nm, sw = 10 nm, $C_{ThT}$ = 10 µM) of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 10 µM) after 0 h (solid line), 24 h (dashed line), 48 h (dotted line), 72 h (dash-dotted line), and 96 h (dash-double-dotted line) of incubation in TBS at ~20 °C.

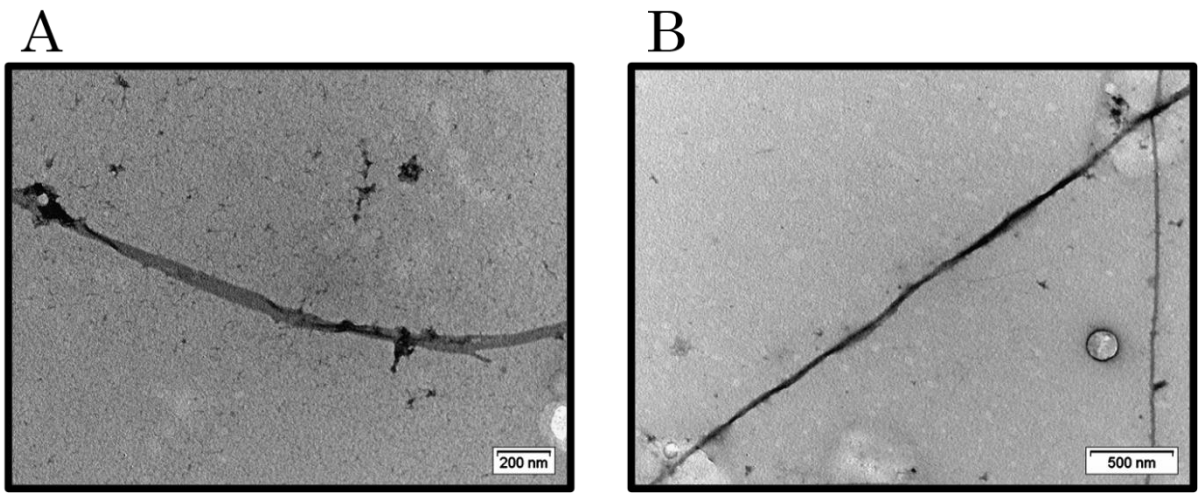


Figure S8 – Negatively stained TEM micrographs of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 10 µM) thin twisted fibrils (TTFs) after 144 h (6 days) of incubation in TBS at ~20 °C. On each micrograph, the scale bar is indicated at the bottom right.

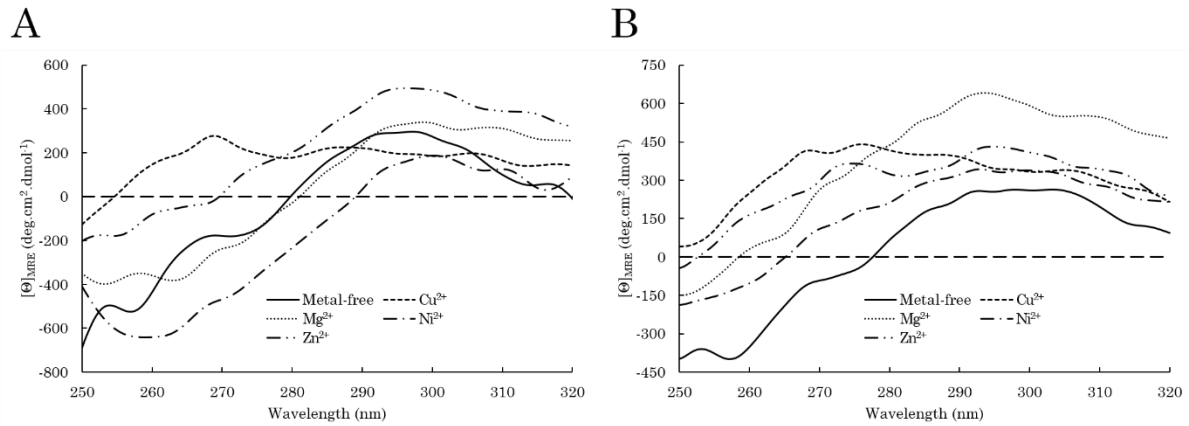


Figure S9 – Near-UV CD spectra of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 5 µM) incubated in TBS at ~20 °C for 72 h without metal (solid line) and in the presence of $Cu^{2+}$ (dashed line), $Mg^{2+}$ (dotted line), $Ni^{2+}$ (dash-dotted line), and $Zn^{2+}$ (dash-double-dotted line) cations ($C_M{}^{2+}$ = 100 µM).

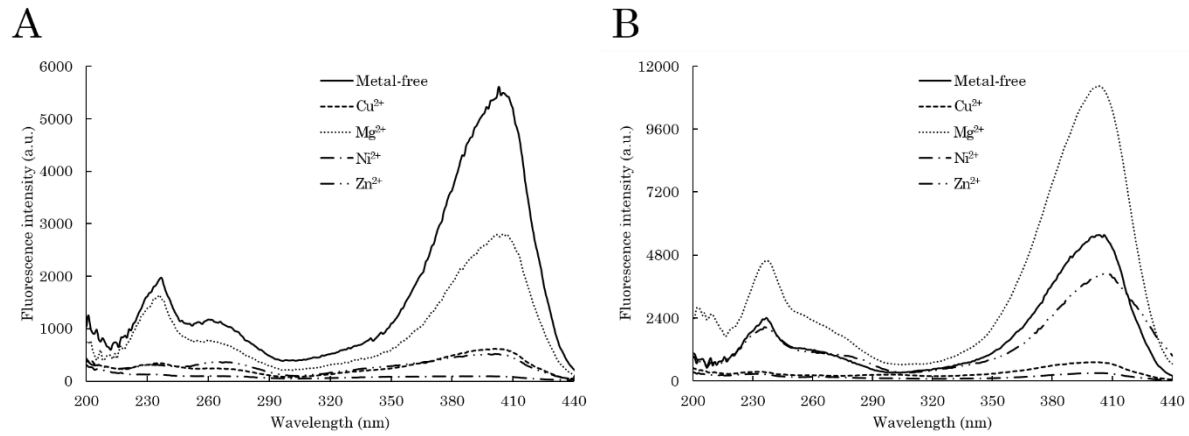


Figure S10 – dbAF excitation spectra ($\lambda_{em}$ = 456 nm, sw = 10 nm) of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 5 µM) incubated in TBS at ~20 °C for 72 h without metal (solid line) and in the presence of $Cu^{2+}$ (dashed line), $Mg^{2+}$ (dotted line), $Ni^{2+}$ (dash-dotted line), and $Zn^{2+}$ (dash-double-dotted line) cations ($C_M{}^{2+}$ = 100 µM).

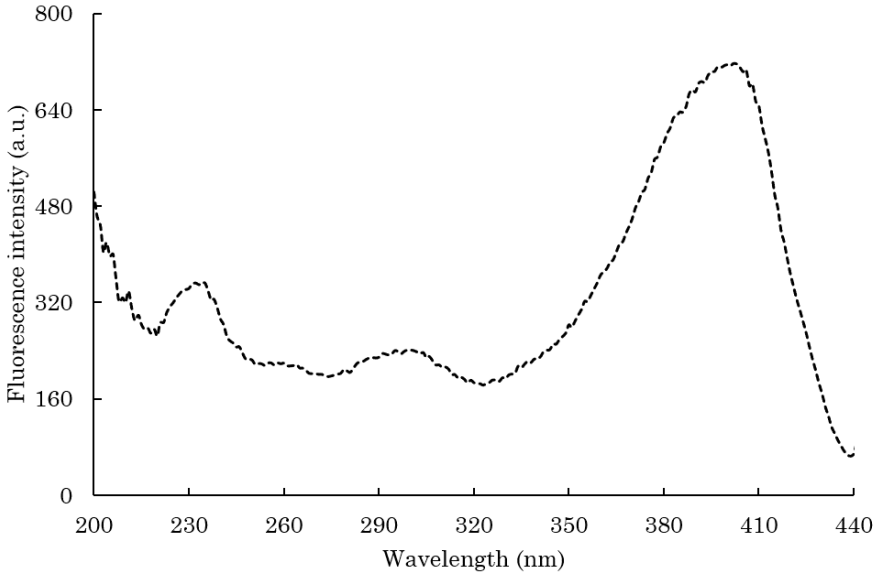


Figure S11 – dbAF excitation spectrum ($\lambda_{em}$ = 456 nm, sw = 10 nm) of C-TERa ($C_{C\text{-}TERa}$ = 5 µM) incubated in TBS at ~20 °C for 72 h in the presence of $Cu^{2+}$ ($C_{Cu}^{2+}$ = 100 µM).

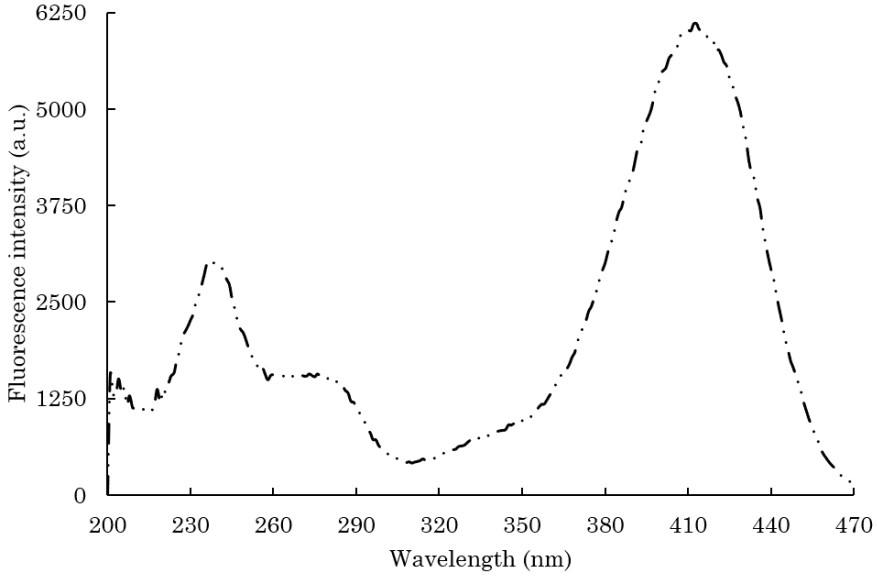


Figure S12 – dbAF excitation spectrum ($\lambda_{em}$ = 490 nm, sw = 10 nm) of C-TERa ($C_{C\text{-}TERa}$ = 5 µM) incubated in TBS at ~20 °C for 72 h in the presence of $Zn^{2+}$ ($C_{Zn}^{2+}$ = 100 µM).

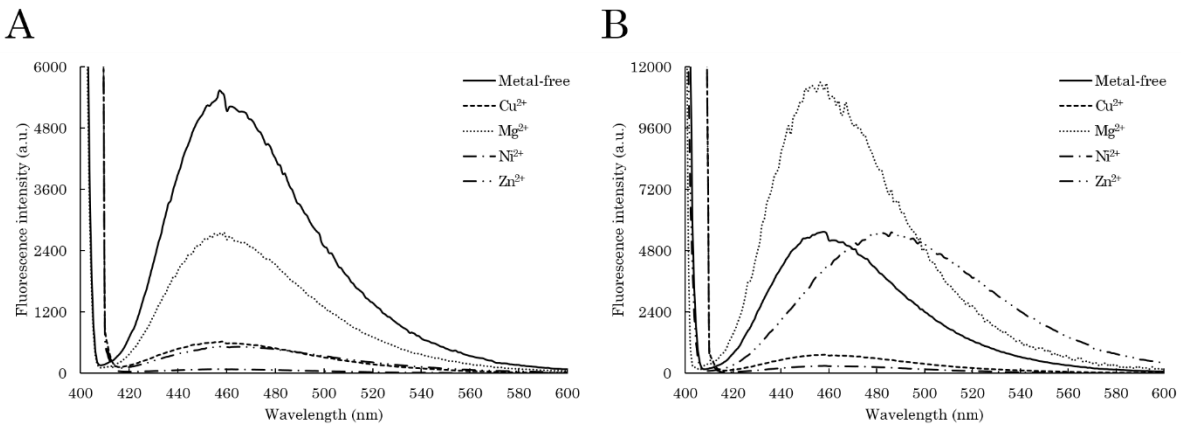


Figure S13 – dbAF spectra ($\lambda_{ex}$ = 400 nm, sw = 10 nm) of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 5 µM) incubated in TBS at ~20 °C for 72 h without metal (solid line) and in the presence of $Cu^{2+}$ (dashed line), $Mg^{2+}$ (dotted line), $Ni^{2+}$ (dash-dotted line), and $Zn^{2+}$ (dash-double-dotted line) cations ($C_M{}^{2+}$ = 100 µM).

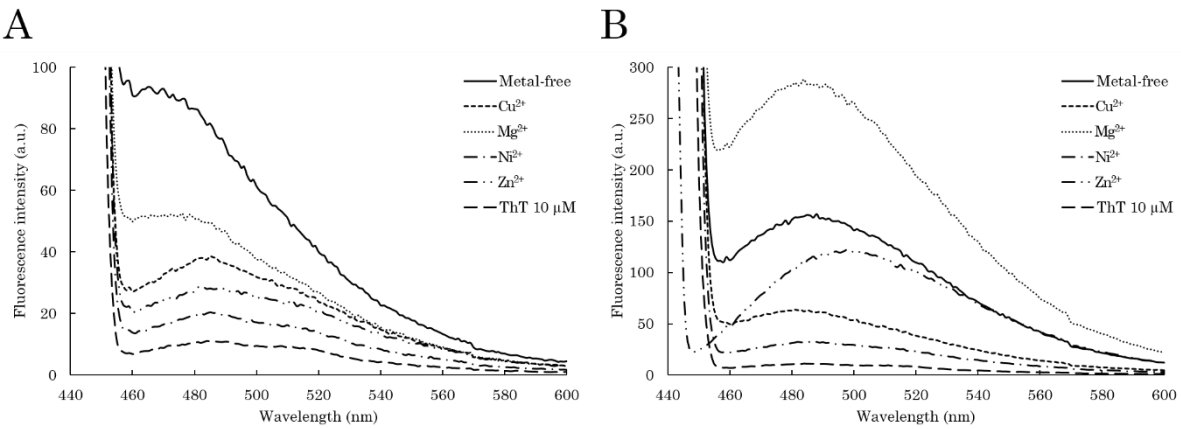


Figure S14 – ThT emission spectra ($\lambda_{ex}$ = 440 nm, sw = 10 nm, $C_{ThT}$ = 10 µM) of (A) C-TERb and (B) C-TERa ($C_{C\text{-}TER}$ = 5 µM) incubated in TBS at ~20 °C for 72 h without metal (solid line) and in the presence of $Cu^{2+}$ (dashed line), $Mg^{2+}$ (dotted line), $Ni^{2+}$ (dash-dotted line), and $Zn^{2+}$ (dash-double-dotted line) cations ($C_M{}^{2+}$ = 100 µM). The spectrum of ThT 10 µM alone in TBS is represented by the long-dashed line.

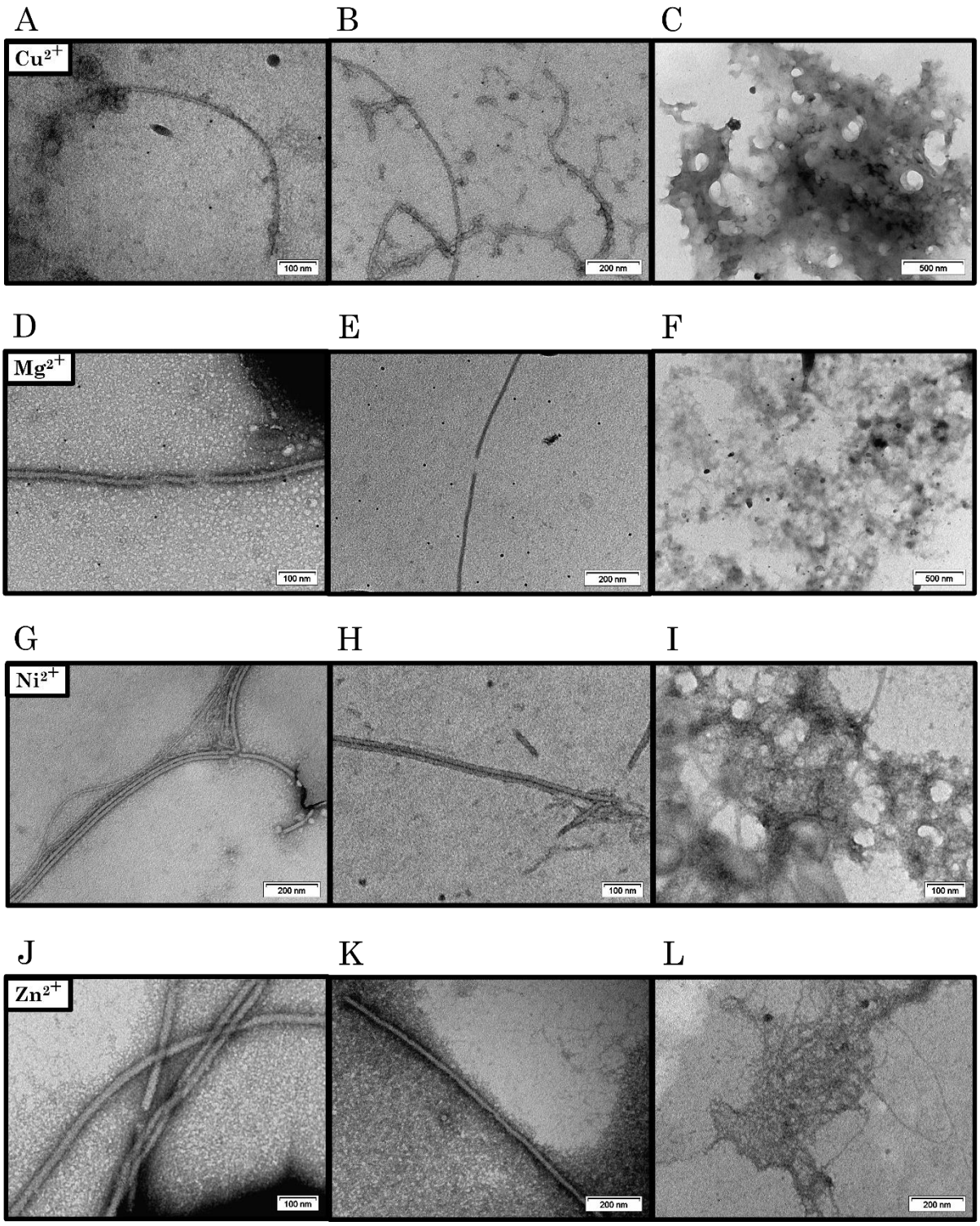


Figure S15 – Negatively stained TEM micrographs of C-TERb ($C_{C\text{-}TERb}$ = 5 µM) incubated for 144 h (6 days) in TBS at ~20 °C in the presence of (A, B, C) $Cu^{2+}$, (D, E, F) $Mg^{2+}$, (G, H, I) $Ni^{2+}$, and (J, K, L) $Zn^{2+}$ cations ($C_M{}^{2+}$ = 100 µM). Amorphous phases are observed in each condition (C, F, I, L). On each micrograph, the scale bar is indicated at the bottom right.

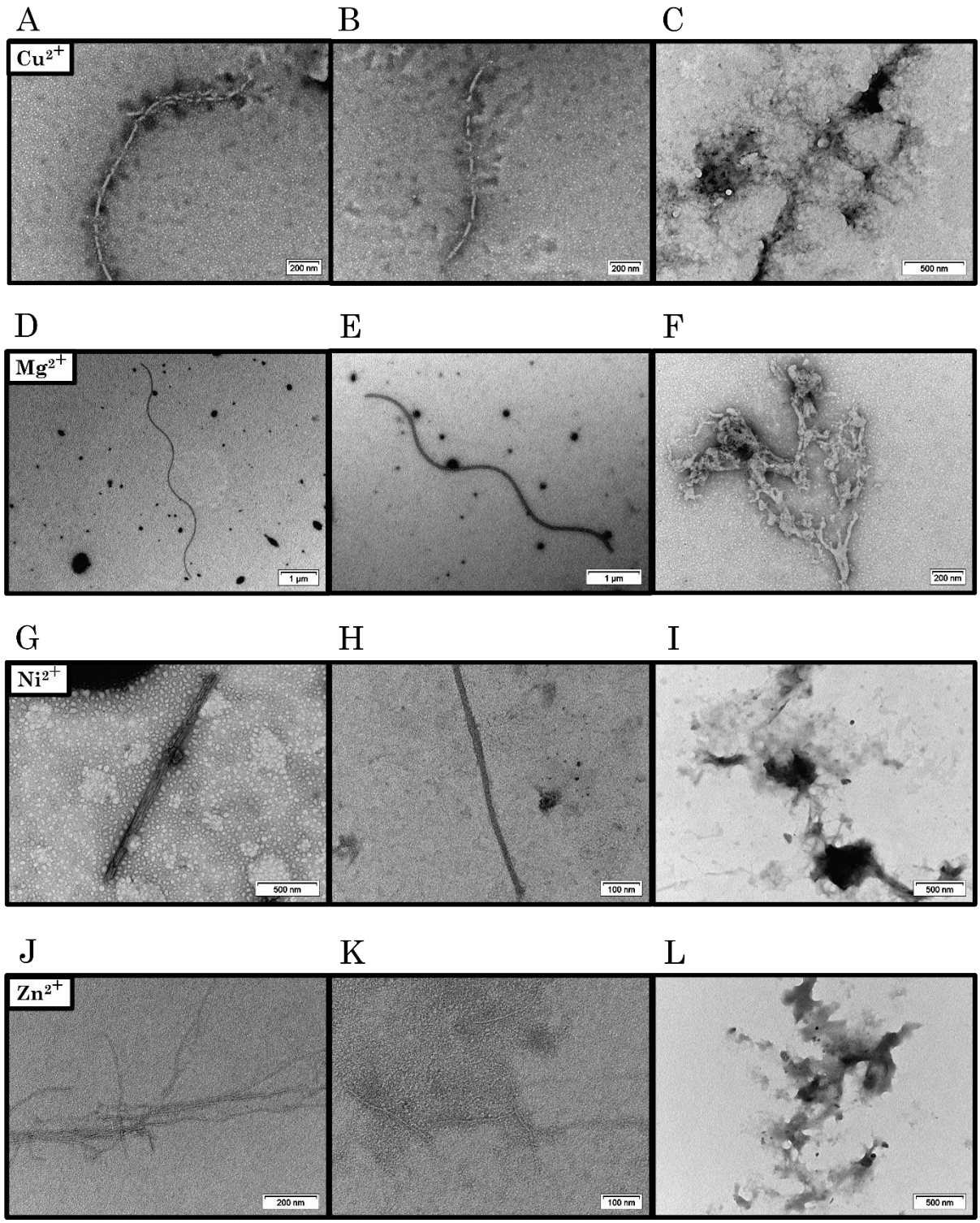


Figure S16 – Negatively stained TEM micrographs of C-TERa ($C_{C\text{-}TERa}$ = 5 µM) incubated for 144 h (6 days) in TBS at ~20 °C in the presence of (A, B, C) $Cu^{2+}$, (D, E, F) $Mg^{2+}$, (G, H, I) $Ni^{2+}$, and (J, K, L) $Zn^{2+}$ cations ($C_M{}^{2+}$ = 100 µM). Amorphous phases are observed in each condition (C, F, I, L). On each micrograph, the scale bar is indicated at the bottom right.