Natural polyanions to tune the metal-modulated self-assembly of Aβ amyloid-forming peptides

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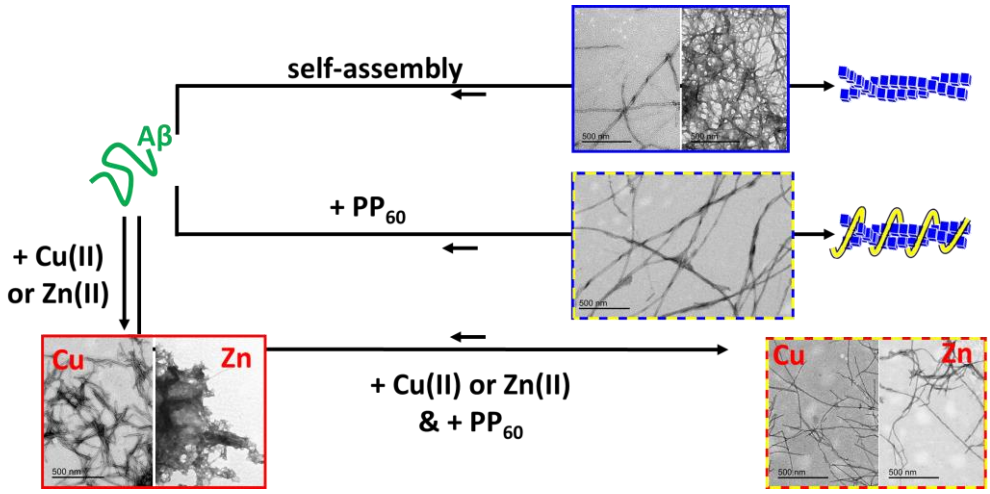
One key feature of Alzheimer's disease (AD) is the self-assembly of the amyloid-forming peptide Aβ, where amyloids are highly ordered β-sheets based structures. Formed from soluble and monomeric peptide found in healthy brains, self-assembled supramolecular structures of Aβ gathered into deposits in AD brains. Among the various self-assembled species that are at play during the self-assembly process, some are deeply toxic for the neighboring neurons. Currently, intermediate-size and weakly structured oligomeric species are regarded as highly toxic. In addition, the self-assembly process can be modulated by metal ions, mainly Cu and Zn ions.[1-4] This leads to the formation of different kinds of assemblies with, *a priori* and in case of Cu(II), higher toxicity.

Polyphosphate (PP) anions are natural polymers of phosphate involved in the regulation of several biological processes.[5] They have been recently shown to drive the self-assembly of many amyloid-forming peptides,[6] including Aβ, towards the formation of more structured (hence less toxic) species.

During the talk, the effects of PP on Aβ and metal-modulated Aβ self-assembly processes will be shown and discussed as a function of PP length and PP ratio versus peptide.



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