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Università degli Studi di Napoli Federico II

Università degli Studi della Campania *Luigi Vanvitelli*

73° CONGRESSO NAZIONALE

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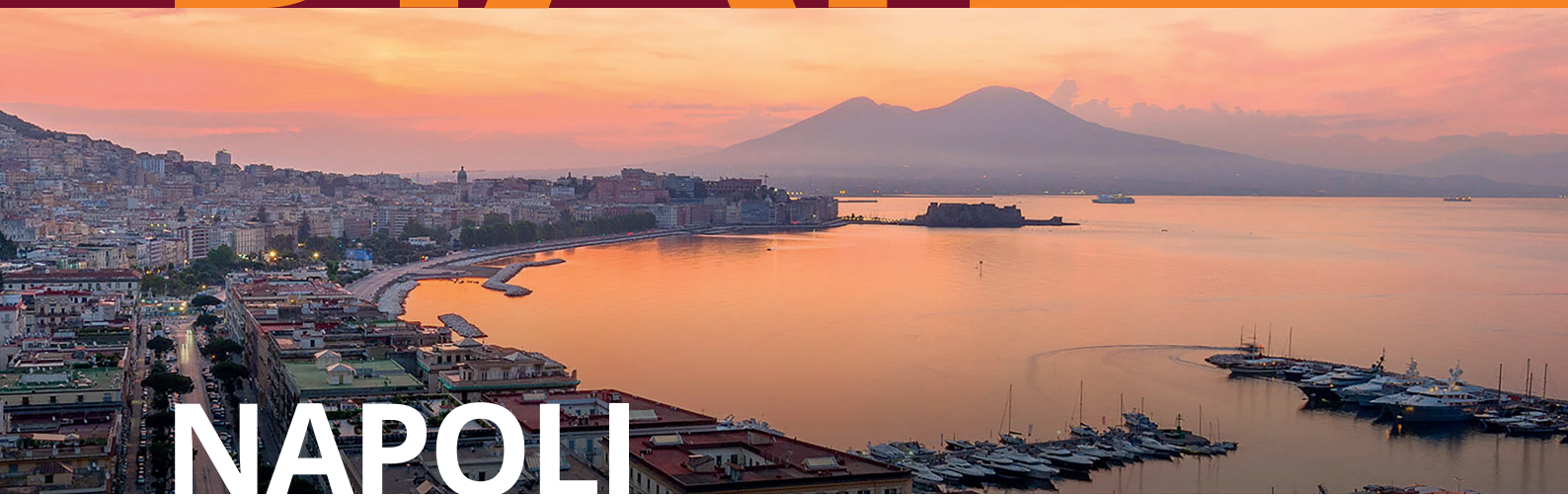

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The molecular anatomy of human Hsp60 and its effects on Amyloid-β peptide

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Heat Shock Protein 60 (HSP60) is ubiquitous and highly conserved, being present in eukaryotes and prokaryotes, including pathogens. This chaperonin is typically considered a mitochondrial protein but it is also found in other intracellular sites, extracellularly and in circulation. HSP60 is an indispensable component of the Chaperoning System and plays a key role in protein quality control, preventing off-pathway folding events and refolding misfolded proteins. This makes HSP60 a putative therapeutic agent for neurodegenerative diseases associated with aggregation of misfolded proteins, for example Alzheimer's Disease.

We produced and purified recombinant human HSP60 and investigated the effects of its monomeric and tetradecameric forms on Amyloid-β aggregation. In addition, we induced oligomerization of HSP60 monomers by means of ATP. We measured HSP60 stability in relation to degree of oligomerization. The structural stability of the HSP60 forms were also investigated by differential scanning calorimetry and isothermal titration calorimetry.

The protein purified mainly appears in multimeric forms with a large fraction in dimers and monomers. We observed that Hsp60 is less stable in its monomeric form, but is more active in inhibiting the fibrillogenesis of beta amyloid peptide.