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Shekhter-Zahavi, T., Oron-Herman, M., Kostenich, G., Rub, E., Salitra, Y., Buzhansky, L., Orenstein, L., Gazit, E.*, Adler-Abramovich, L.*. Molecular Engineering of Somatostatin Analogue with Minimal Dipeptide Motif Induces the Formation of Functional Nanoparticles. *ChemNanoMat*; 2016: *Both Corresponding authors.

Abstract: Functionalized nanoparticles decorated with functional biological entities serve as preferred vehicles for numerous theranostic applications. Here we offer an alternative strategy in which the targeting moieties also act as building blocks for the formation of functional nanoassemblies. Diphenylalanine, a small, highly potent self-assembling module, was incorporated with a somatostatin analogue, a modified hormone which preferentially binds to cancer cells. The co-assembly of the engineered hormone together with the structurally diverse diphenylalanine derivative allowed the formation of bioactive homogenous spherical nanostructures. Significant internalization capacity of the loaded co-assembled nanospheres into cancer cells in vitro, as well as selective in vivo accumulation in tumors, were demonstrated. These findings present a new method for the molecular engineering of bioactive peptide molecules by minor modifications with a remarkably potent association motif.