Supplementary Information

Protection against proteolysis of a cell targeting peptide on gold nanostructures

Francesca Biscaglia, Isabella Caligiuri, Giorgio Ripani, Flavio Rizzolio, Antonio Palleschi, Moreno Meneghetti and Marina Gobbo

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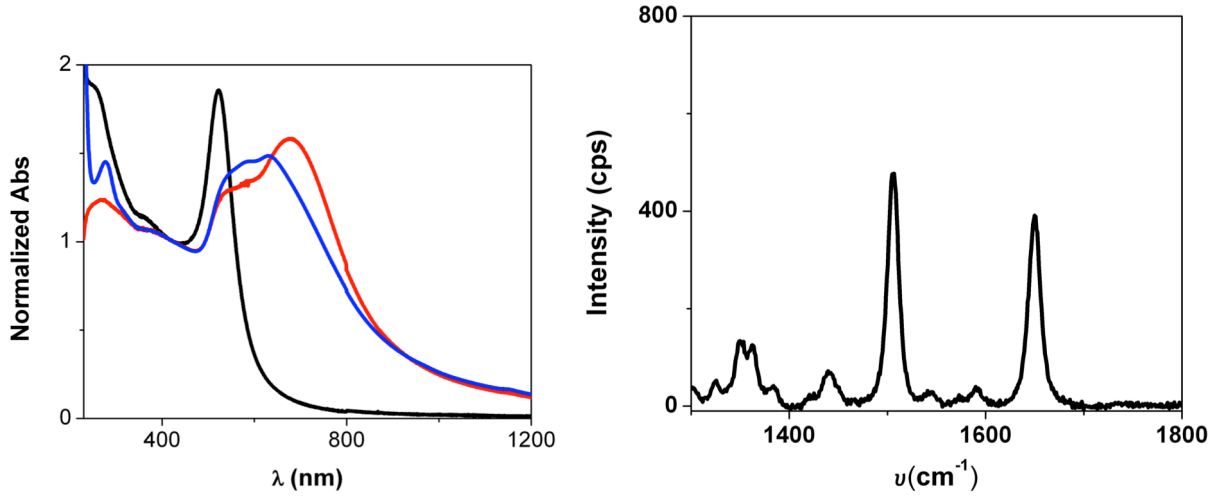
A : AuNP@C-GE11



B: AuNP@PEG-K_3G_2-GE11

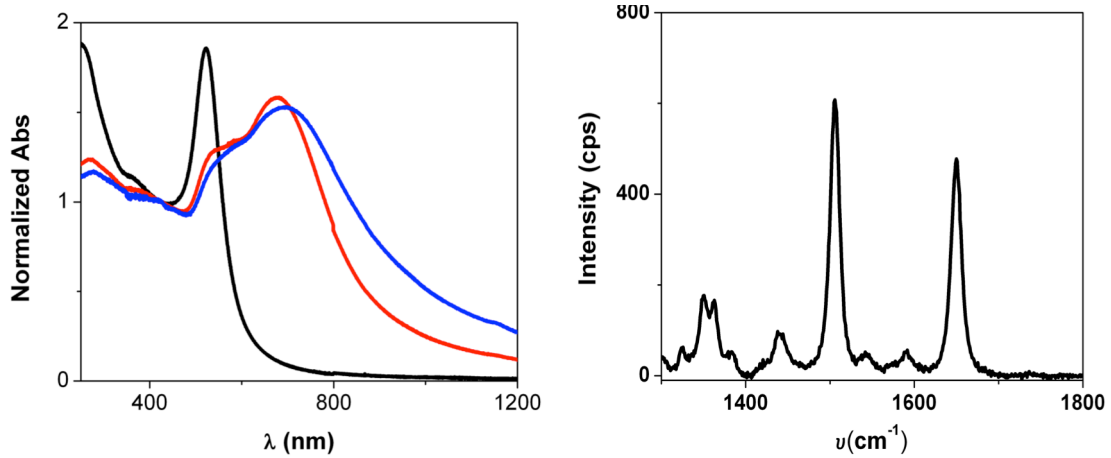


Figure S1. Characterization of nanostructures. Au@C-GE11 (A) and Au@PEG-K_3G_2-GE11 (B). On the left, evolution of the extinction spectra during the assembling steps of the nanostructures: naked gold nanoparticles (black line), after aggregation and labelling with the SERRS reporter (red line) and conjugation of peptide ligands (blue line). On the right, SERRS spectra of the final nanostructures.

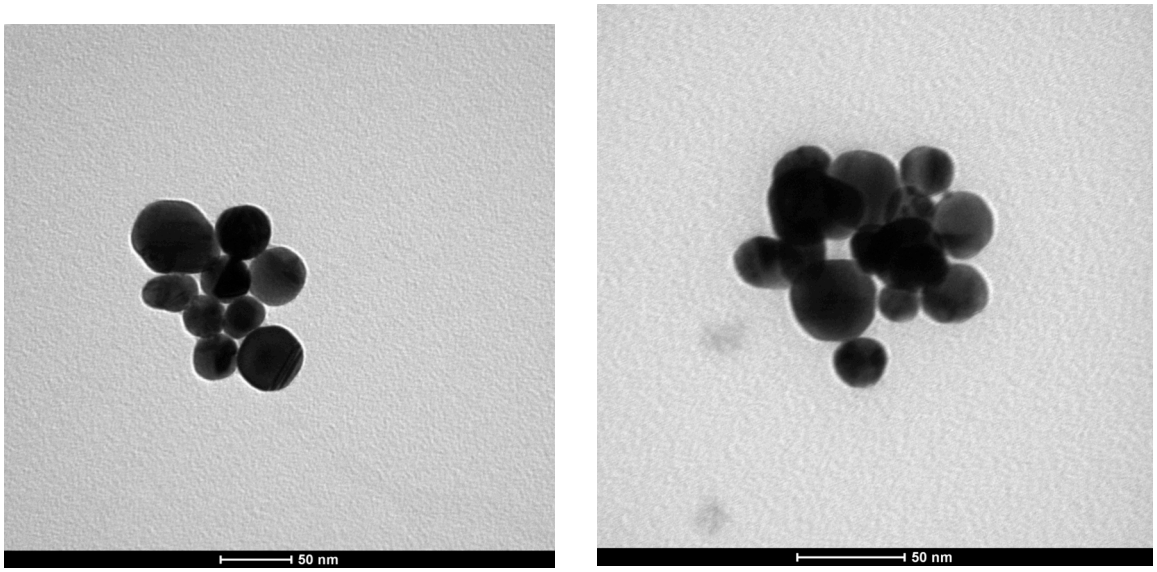


Figure S2. TEM images of Au@C-GE11 (left) and Au@PEG-K_3G_2-GE11 (right) nanostructures.

Table S1. Characterization of the targeted nanostructures.

Nanostructure	**Peptides per nanoparticle**	**Hydrodynamic diameter (nm)**	**ζ-potential (mV)**
AuNP@C-GE11	10000	70 ±8	-14 ±1
AuNP@PEG-K_3G_2-GE11	2200	100 ±6	14 ±2

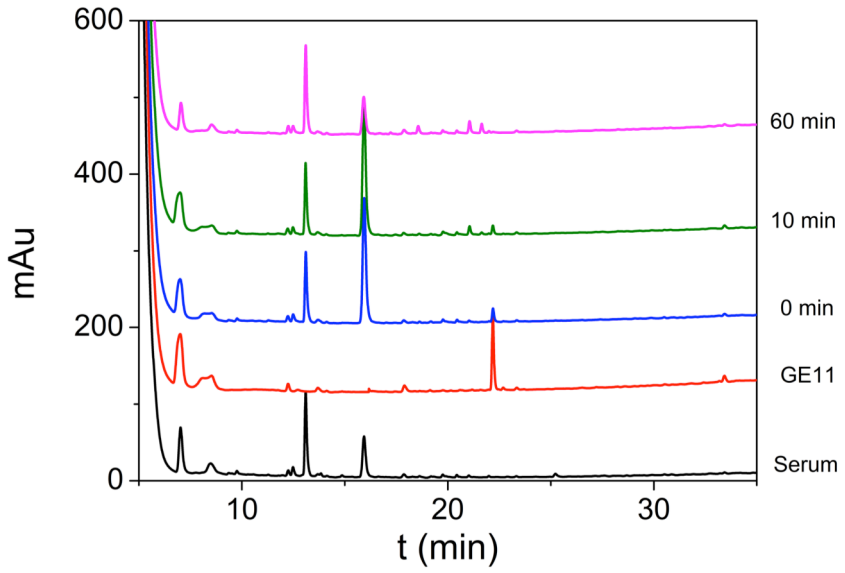
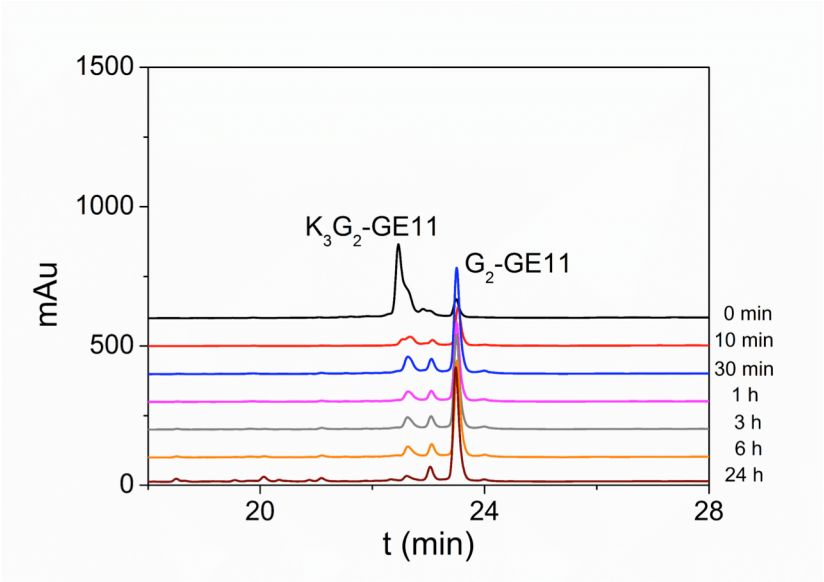


Figure S3. HPLC chromatograms of degradation products of GE11 in 20% human serum. All samples were treated with TCA and centrifuged before injection in HPLC. From the bottom: black line: 20% aq serum; red line: peptide without serum; other lines: aliquots (100 µL) withdrawn from the incubation solution at the indicated time.

Column: Vydac 218TP54 (250x4.6 mm, 5 µm, flow rate at 1 ml/min). The elution was carried out with binary gradients combining mobile phases A (aqueous 0.1% TFA) and B (acetonitrile 0.1%TFA). Elution conditions: isocratic 5 % B in 5 min; linear gradient 5-50 % B in 30 min.

A



B

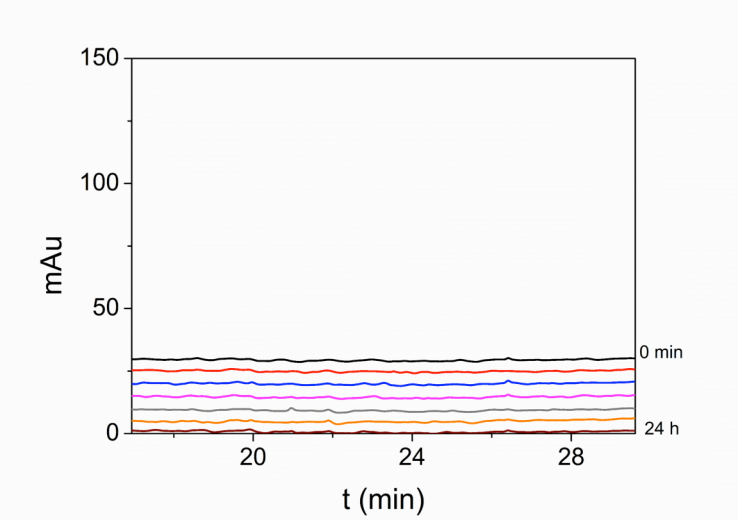
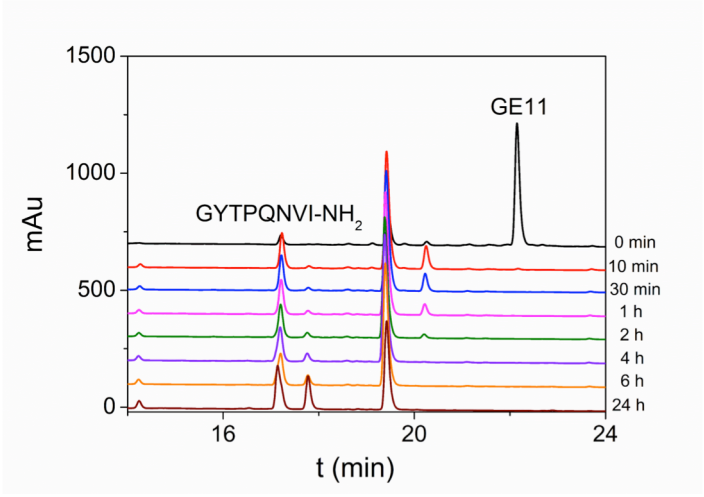
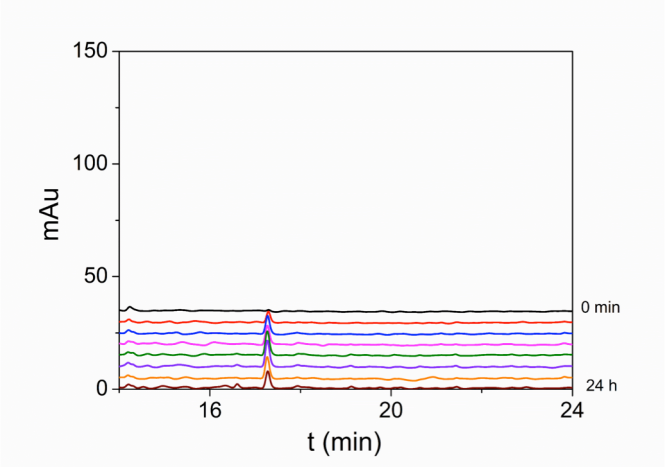


Figure S4. HPLC chromatograms of aliquots withdrawn from the digestion of the peptide or the nanostructures with trypsin: K_3G_2-GE11 (**A**); AuNP@PEG-K_3G_2-GE11 (**B**). Elution conditions as in Figure S3.

A



B



C

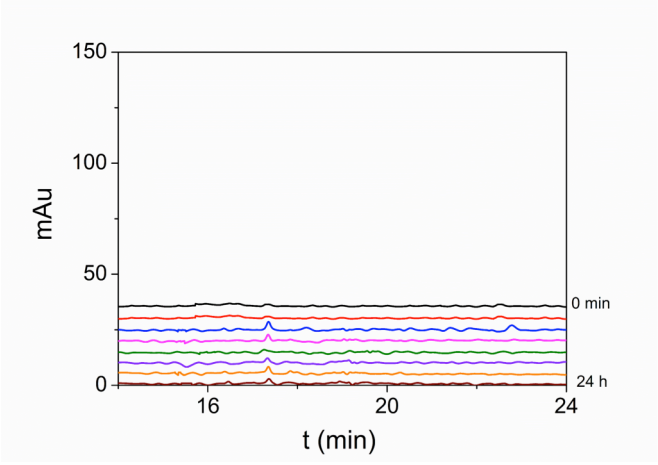
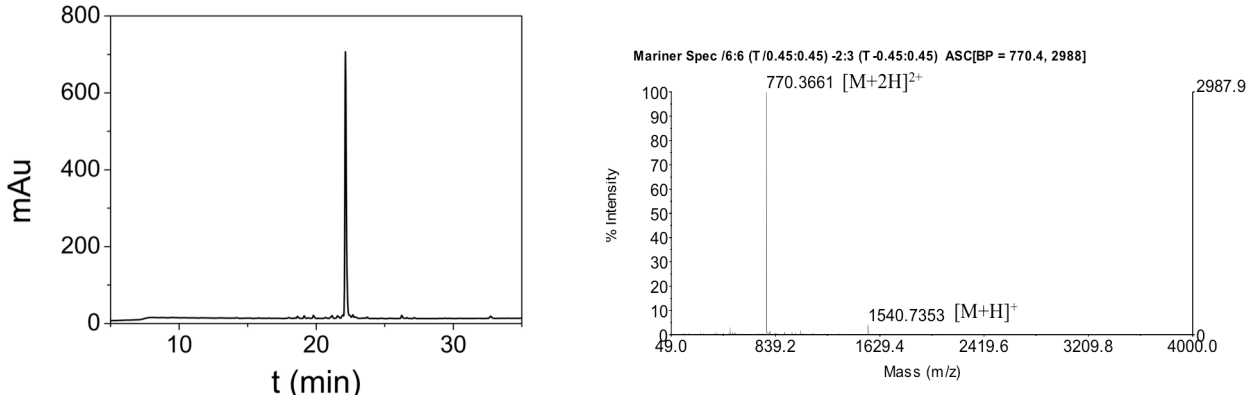


Figure S5. HPLC chromatograms of aliquots withdrawn from the digestion of the peptide or the nanostructures with chymotrypsin: GE11 peptide (**A**); AuNP@C-GE11 (**B**); AuNP@PEG-K_3G_2-GE11 (**C**). Elution conditions as in Figure S3.

A : GE11



B: K_3G_2-GE11

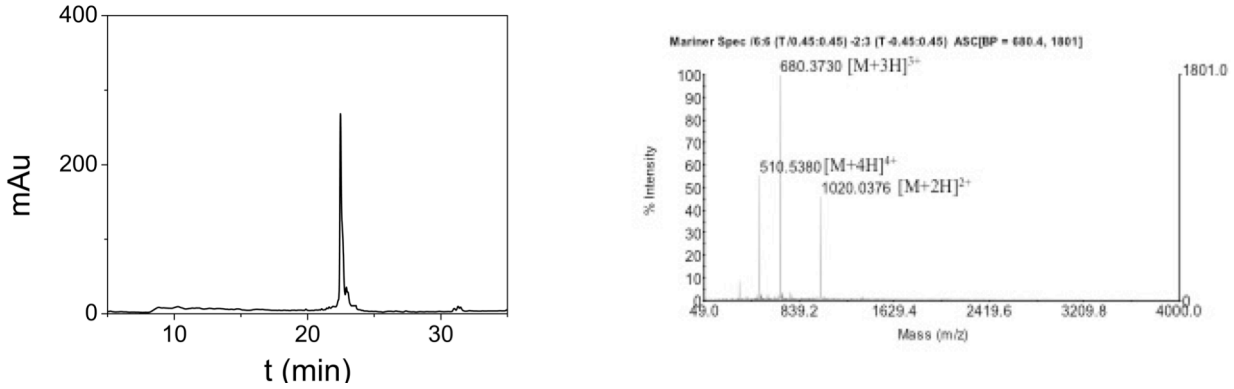


Figure S6. HPLC and ESI-MS spectra of synthesized peptides: GE11 (A) and K_3G_2-GE11 (B). Analytical HPLC separations were performed on a Vydac 218TP54 column (250 x 4.6 mm, 5 μm, flow rate at 1 ml/min). Elution conditions as in Figure S3.

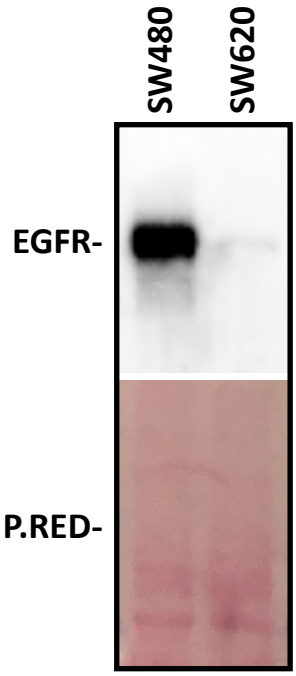


Figure S7: Western blot analysis of EGFR expression in SW480 and SW620 cell lines. The amount of loaded proteins was detected with the ponceau red staining (p.red).