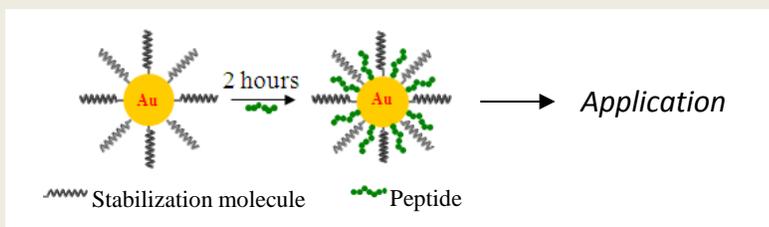


Directed Cellular Uptake of i-colloid™ Gold Nanoparticle-Peptide Conjugates

Directed intracellular delivery of nanoparticles

Gold nanoparticles are promising carriers of biomolecules for potential *in vitro* diagnostic and *in vivo* therapeutic applications. The efficacy of such nanocarriers can be significantly improved through directed cellular uptake where the nanoparticles are concentrated at specific intracellular organelles to exert their designed functions. Our pre-stabilized i-colloid™ gold nanoparticles and ready-to-use i-colloid™ gold-peptide conjugates can help accelerating your research in this rich frontier of biomedical innovations.

One-step conjugation of targeting peptides



Peptides have emerged as effective targeting moieties, enabling cellular uptake of nanoparticles via endocytosis. Conventionally, conjugation of such small biomolecules to nanoparticles proceeds through crosslinking chemistry to linker molecules. The process can be time consuming and challenging for quality control. i-colloid™ offers you an expedient way of conjugation, where peptides are loaded to pre-stabilized i-colloid™ gold nanoparticle surface (see Technical Note T04) in a single step of physical adsorption, saving you time and cost of development and improving your process robustness.

In-vitro cellular uptake

As a demonstration, pre-stabilized i-colloid gold nanoparticles are conjugated to different cell targeting peptides and *in vitro* cellular uptake tests of the conjugates are carried out. Pictures on the right column show concentration of gold nanoparticles in three different areas in the tested cells:

- **Cytoplasm** (upper right, cervical cancer cells, optical dark field image): The bright orange color in the cytoplasm is due to intense light scattering of the high concentration of gold nanoparticles internalized by the cells.
- **Perinuclear space** (middle right, brain cancer cells, optical dark field image): Gold nanoparticles predominantly accumulate in the perinuclear space.
- **Nucleus** (lower right, cervical cancer cells, TEM): Gold nanoparticles conjugated with a cell targeting peptide and a cell nuclear targeting peptide are found concentrated in the nucleus.

Custom conjugation available: Physical adsorption and covalent cross-linking

