



Intracellular fate of peptide-coated nanoclusters containing 102 gold atoms after transduction in living HeLa cells

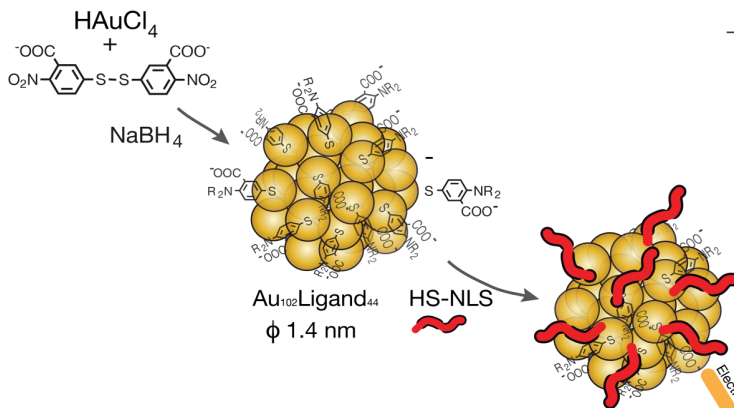
Guy Zuber

UMR 7242 Biotechnologie et Signalisation Cellulaire, | zuber@unistra.fr

Highlights

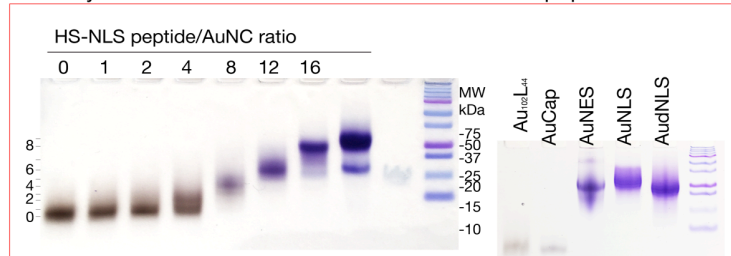
1. One-step synthesis of water-soluble 102 gold atoms nanocluster (AuNC)
2. Controlled and thiol-selective biofunctionalization of the AuNC in water
3. An electroporation protocol allows robust cytosolic delivery of < 2 nm particle without cell toxicity
4. Peptide-decorated AuNC diffuses inside living cells after transduction
5. Peptide to nanoparticle Au-S bond is stable inside the thiol-rich cytosol and nucleus

1.

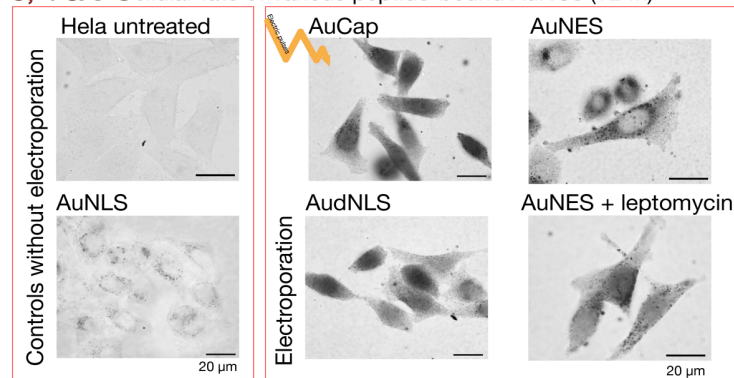


Abbreviation	Sequence	Intracellular activity
HS-NLS	CALNNGAGPKKKRKVED	Nuclear Import
HS-dNLS	CALNNGAGPKTKRKVED	Inactive
HS-NES	CALNNGALALKLAGLDINKTa	Nuclear Export
HS-Cap	CALNNG	Capping & Shielding

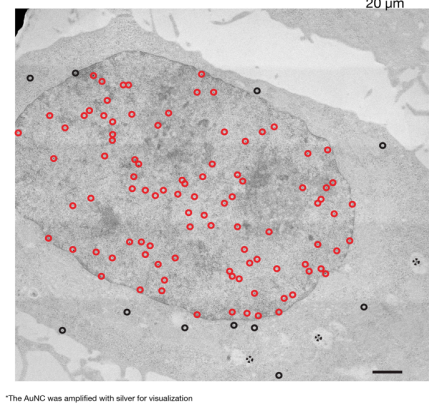
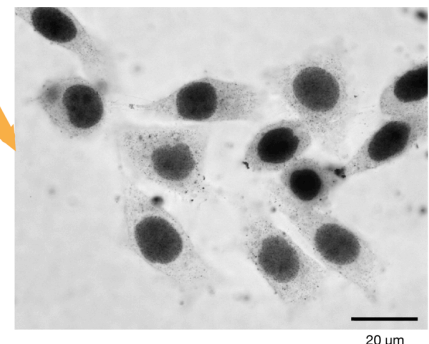
2. Analysis of reaction between the AuNC and thiol-peptides



3, 4 & 5 Cellular fate of various peptide-bound AuNCs (+24h)



3. Electroporation in HeLa cells



4 & 5. NLS-assisted Nuclear Import of the AuNC

Perspective

- innovative probes for high resolution electron microscopy imaging
- Novel usages of organic bioactive molecule-gold nanocluster inside the cell