

## Supplementary Information

### Peptide-derived gold nanoparticles as promising delivery system for Src targeting

#### siRNA in breast cancer cells

Uday Suryakanta<sup>a</sup>, Bijayananda Panigrahi<sup>a,b</sup>, Sumana Pal<sup>a</sup>, Swatilekha Das<sup>a</sup>, Soumyadeep Biswas<sup>a</sup>, Dindyal Mandal<sup>a\*</sup>

<sup>a</sup> School of Biotechnology, KIIT deemed to be University, Bhubaneswar, Odisha 751024, India

<sup>b</sup> International Centre for Genetic Engineering and Biotechnology (ICGEB), Aruna Asaf Ali Marg, Vasant Kunj, 110067, New Delhi, India

#### \*Corresponding Author

Dr. Dindyal Mandal

School of Biotechnology,

Kalinga Institute of Industrial Technology

Deemed to be University,

Campus 11, Patia,

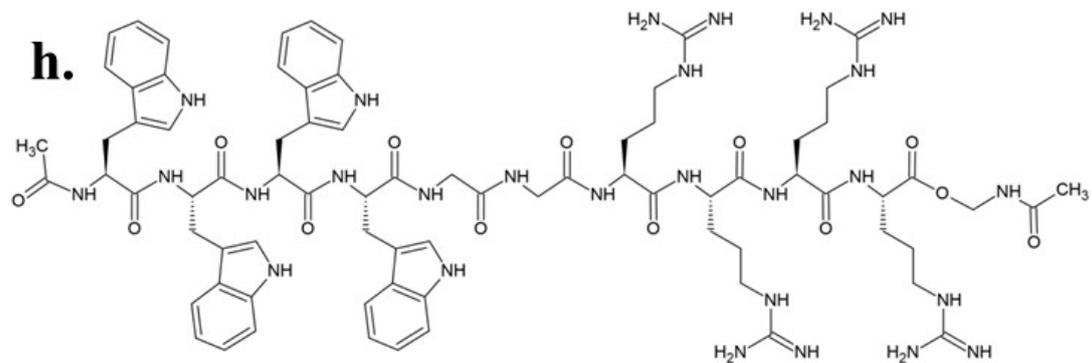
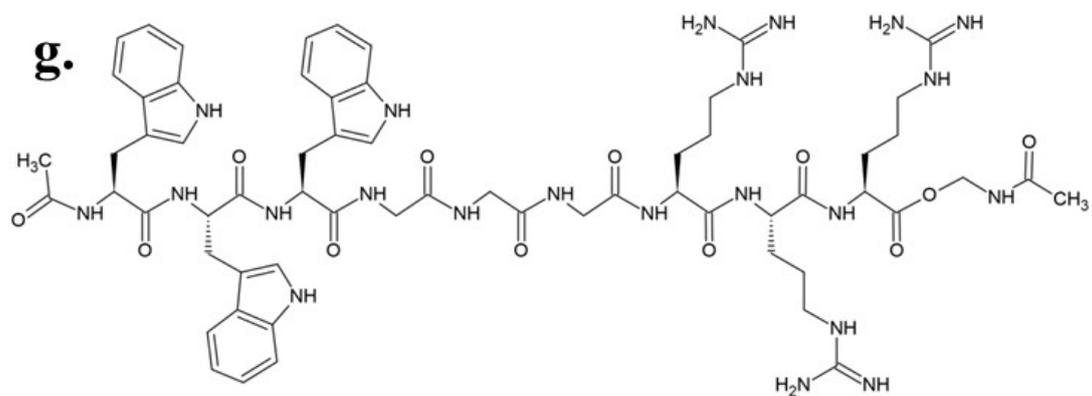
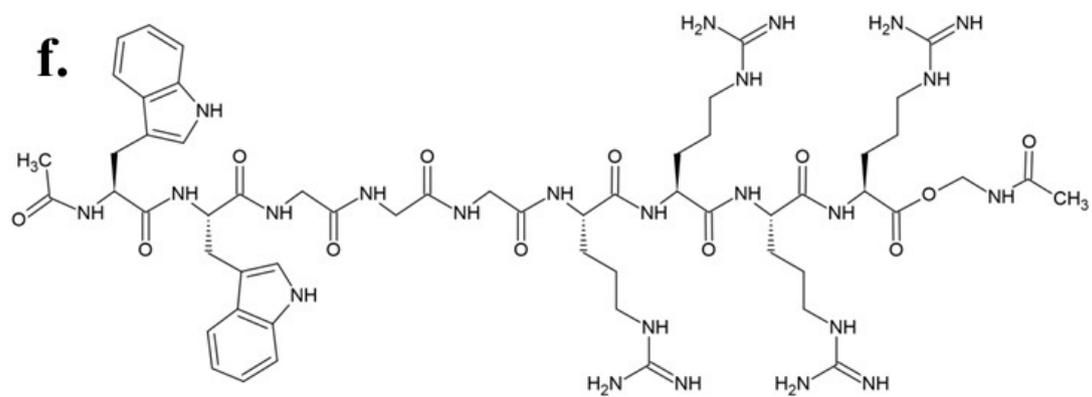
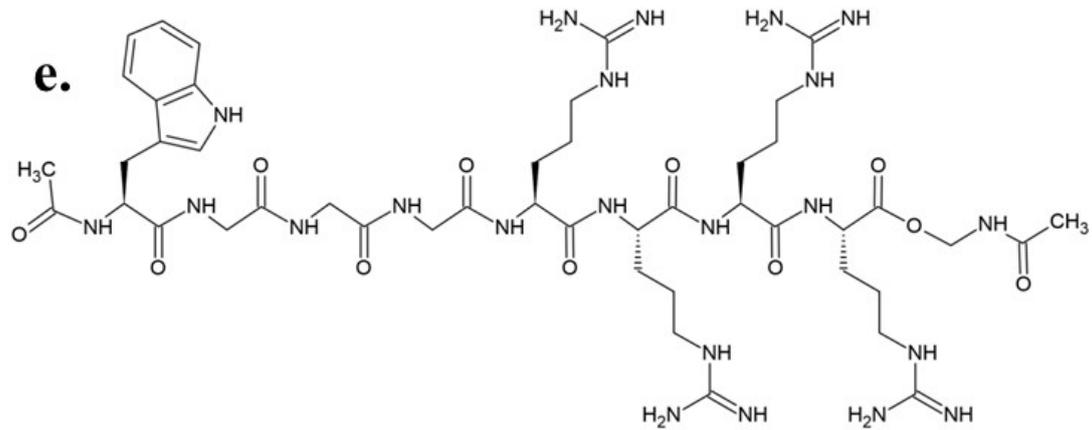
Bhubaneswar, Odisha, India 751024

Email: dmandal@kiitbiotech.ac.in

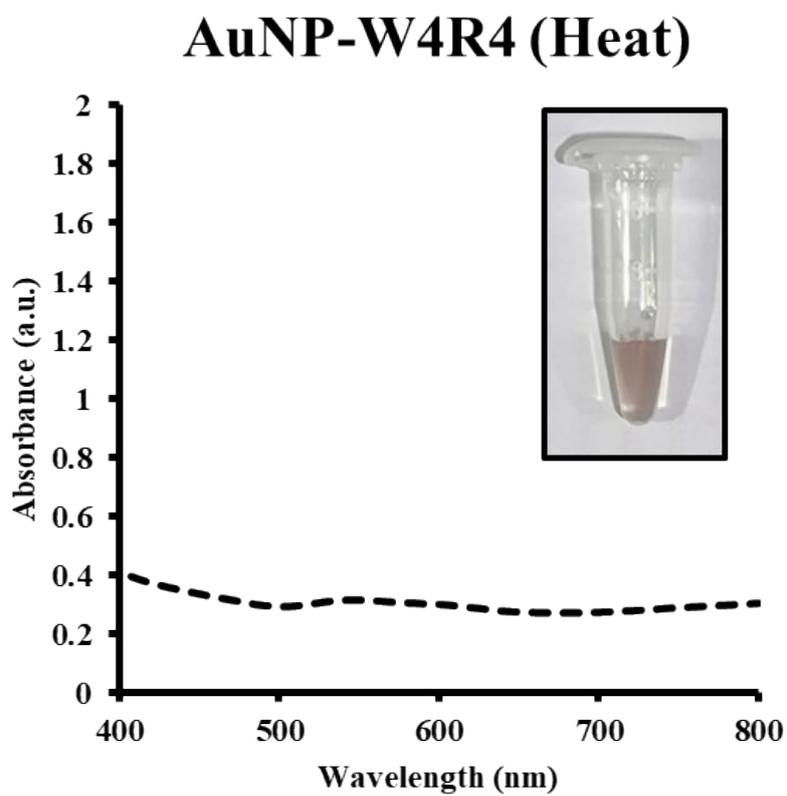
Ph: +91-674-2725466

Fax: +91-674-2725732

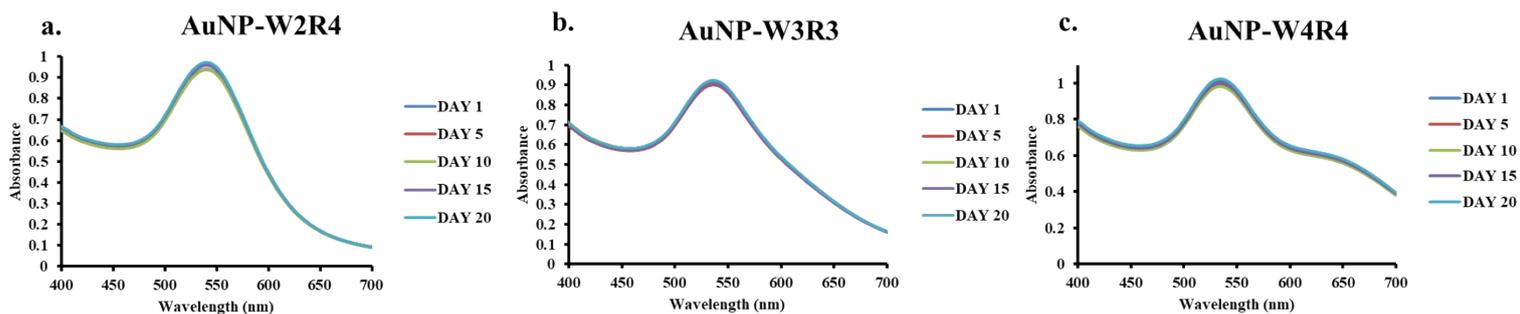




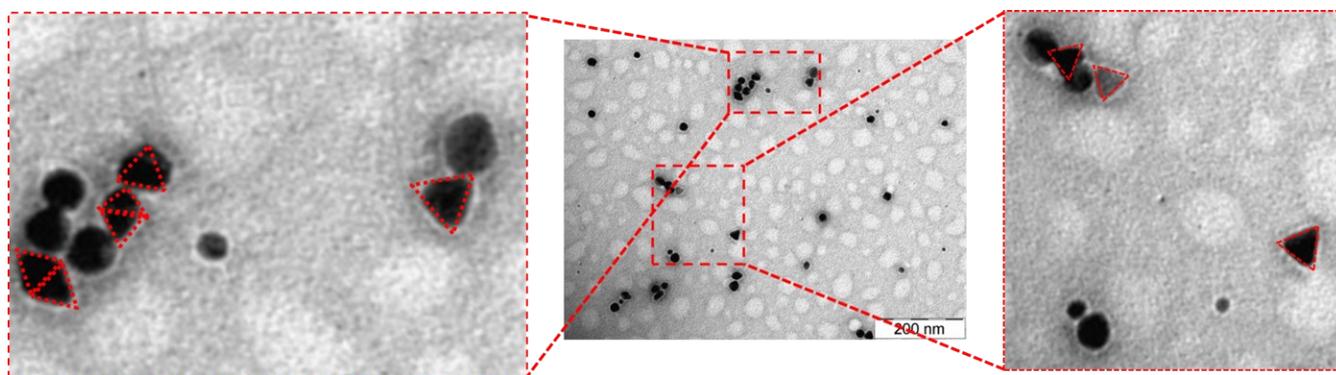
**Figure S 1: Structure of the synthesised peptides (a-d) WH series peptides, (e-h) WR series peptides**



**Figure S 2: UV-visible spectra of synthesized gold particles with peptide W4R4 (Conditions: Temperature: 80°C & Ambient light)**



**Figure S 3: Stability analysis of gold nanoparticles (a.AuNP-W2R4; b.AuNP-W3R3 and c.AuNP-W4R4) from day 1 to day 20.**



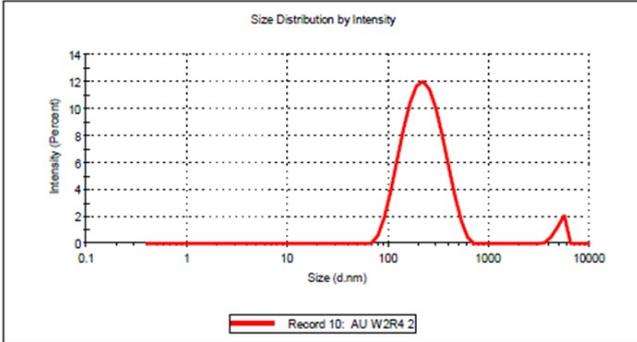
**Figure S 4: Enlarged image of TEM analysis for AuNP-W4R4 showcasing synthesised nanoparticles consist spherical and triangle shaped nanoparticles, Nano triangle justifying the UV-spectra result showing slight hump peak at 700 nm in case of AuNP-W4R4.**

**a.**

**Results**

	Size (d.nm)	% Intensity	St Dev (d.nm)
Z-Average (d.nm): 196.7	Peak 1: 237.4	96.0	102.8
Pdl: 0.410	Peak 2: 5091	4.0	554.8
Intercept: 0.845	Peak 3: 0.000	0.0	0.000

Result quality **Good**



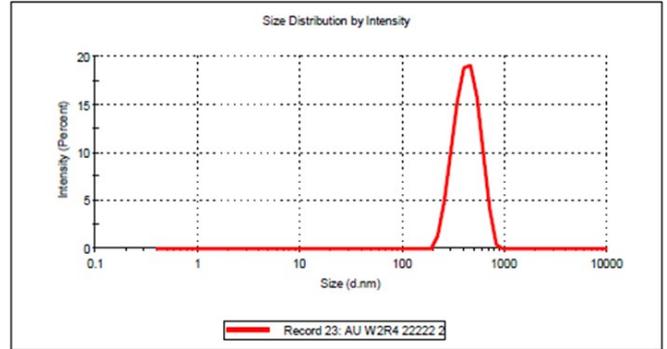
**AuNP-W2R4**

**b.**

**Results**

	Size (d.nm)	% Intensity	St Dev (d.nm)
Z-Average (d.nm): 521.2	Peak 1: 438.6	100.0	120.4
Pdl: 0.394	Peak 2: 0.000	0.0	0.000
Intercept: 0.962	Peak 3: 0.000	0.0	0.000

Result quality **Refer to quality report**



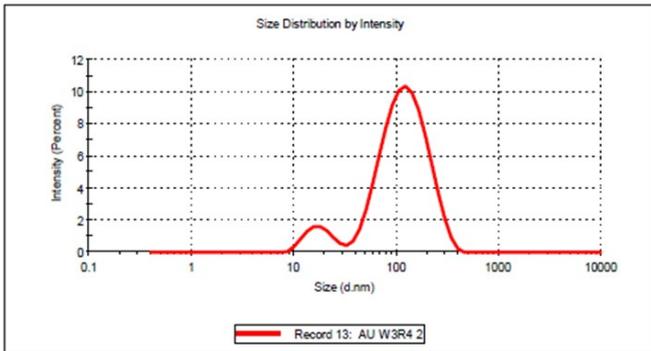
**AuNP-W2R4 + siRNA**

**c.**

**Results**

	Size (d.nm)	% Intensity	St Dev (d.nm)
Z-Average (d.nm): 76.72	Peak 1: 132.5	91.0	64.26
Pdl: 0.457	Peak 2: 18.46	9.0	5.709
Intercept: 0.823	Peak 3: 0.000	0.0	0.000

Result quality **Good**



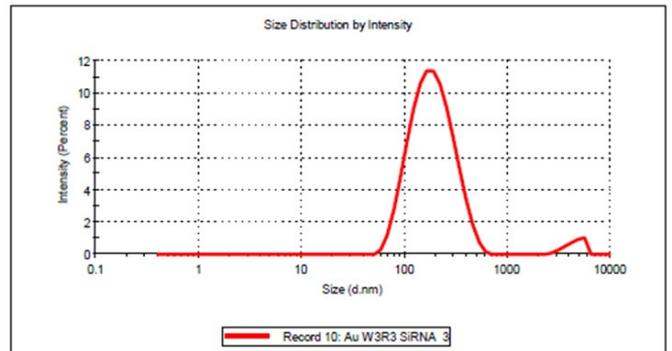
**AuNP-W3R3**

**d.**

**Results**

	Size (d.nm)	% Intensity	St Dev (d.nm)
Z-Average (d.nm): 151.0	Peak 1: 200.2	96.4	93.92
Pdl: 0.364	Peak 2: 4535	3.6	860.4
Intercept: 0.885	Peak 3: 0.000	0.0	0.000

Result quality **Good**



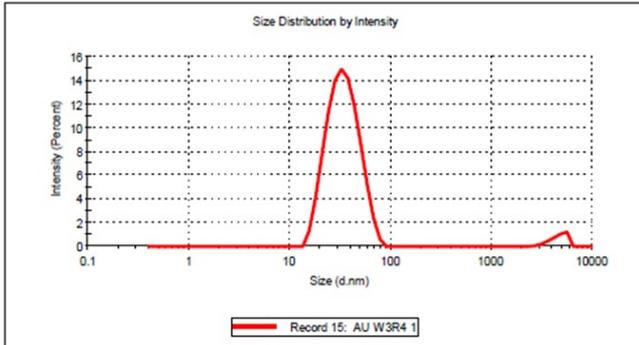
**AuNP-W3R3 + siRNA**

e.

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 28.33	Peak 1: 35.54	96.3	12.46
Pdl: 0.348	Peak 2: 4643	3.7	809.0
Intercept: 0.894	Peak 3: 0.000	0.0	0.000

Result quality Refer to quality report



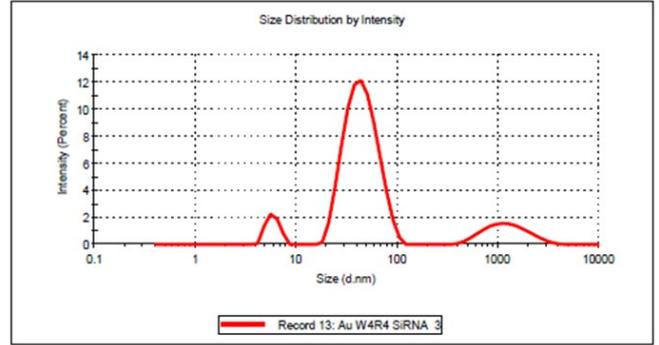
AuNP-W4R4

f.

Results

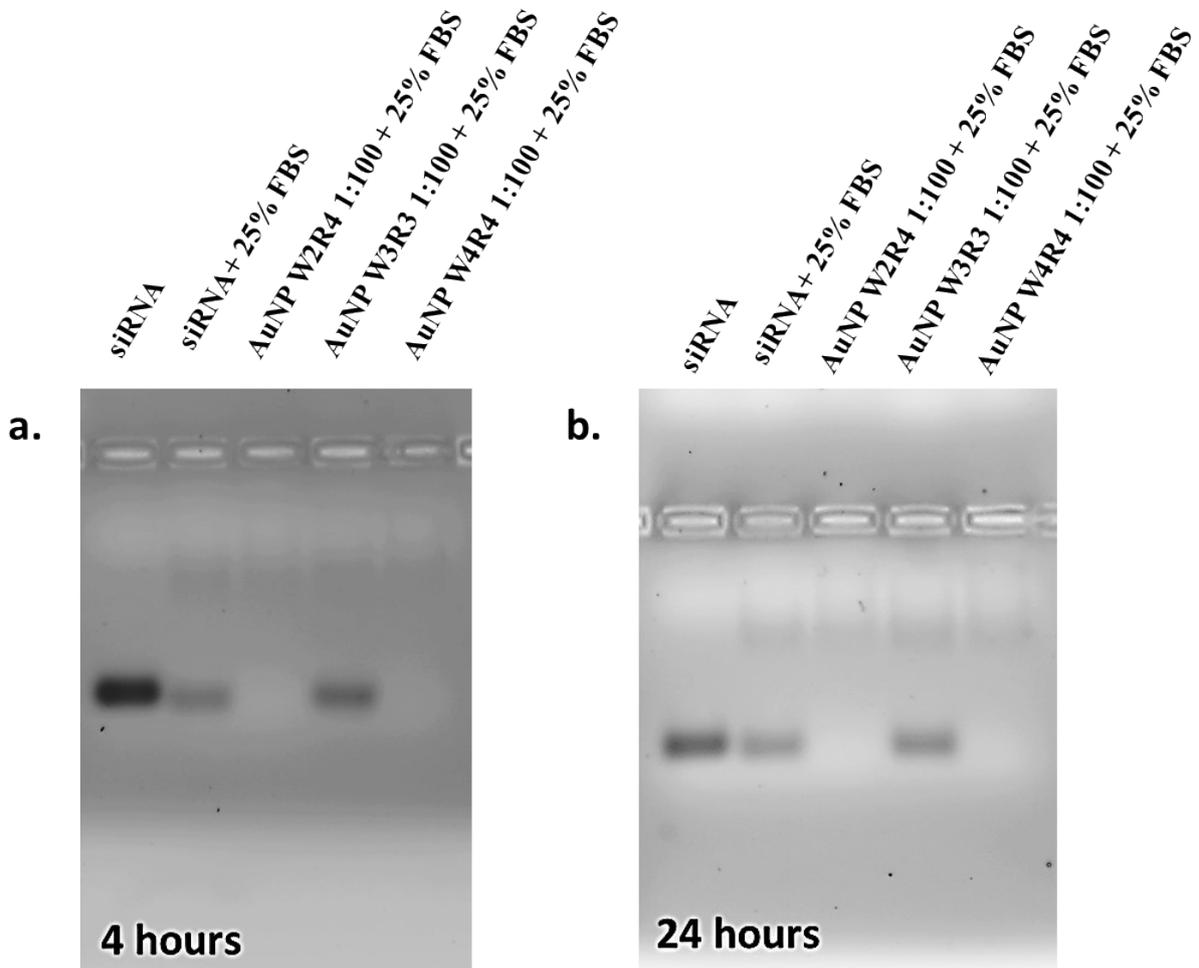
	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 36.64	Peak 1: 46.27	80.1	16.78
Pdl: 0.430	Peak 2: 1303	13.6	632.8
Intercept: 0.914	Peak 3: 5.940	6.3	0.8602

Result quality Refer to quality report

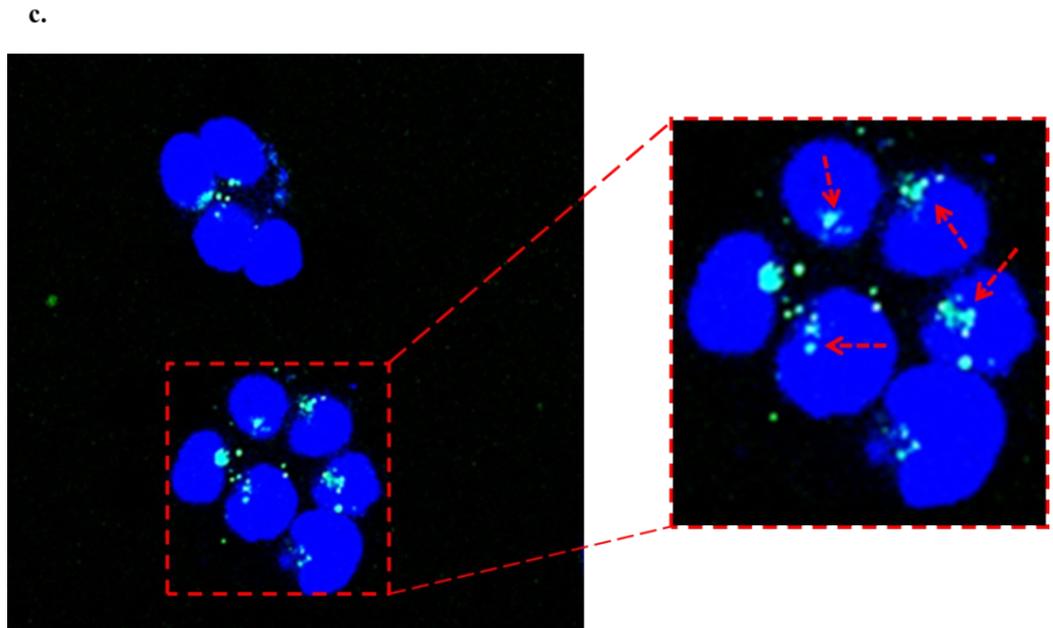
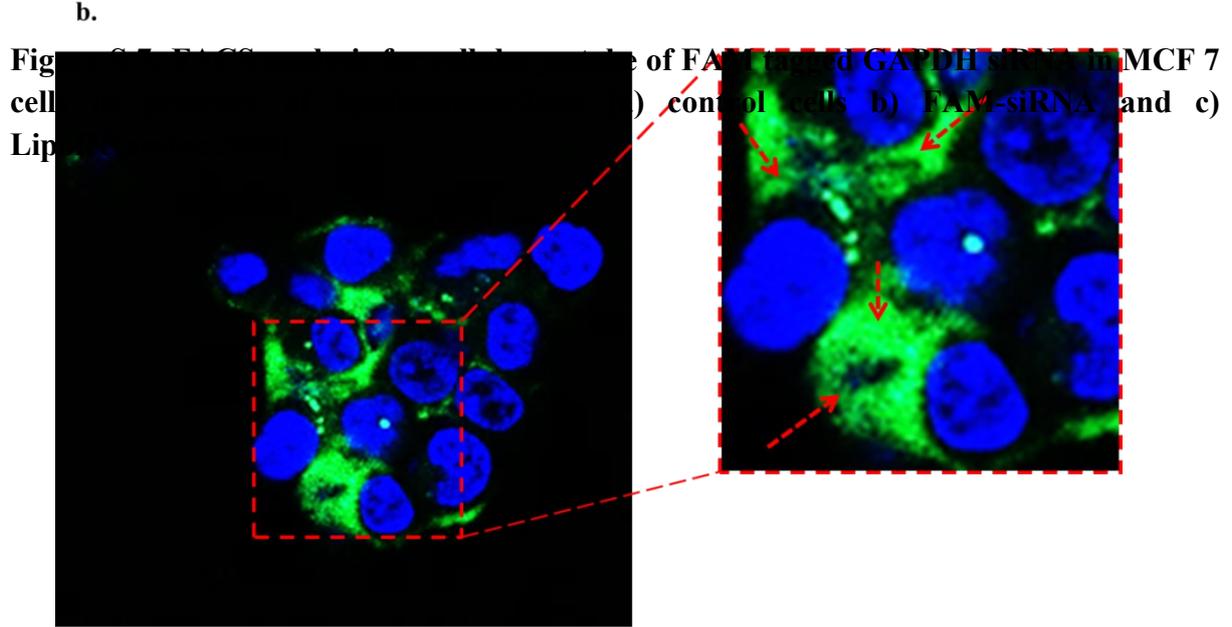
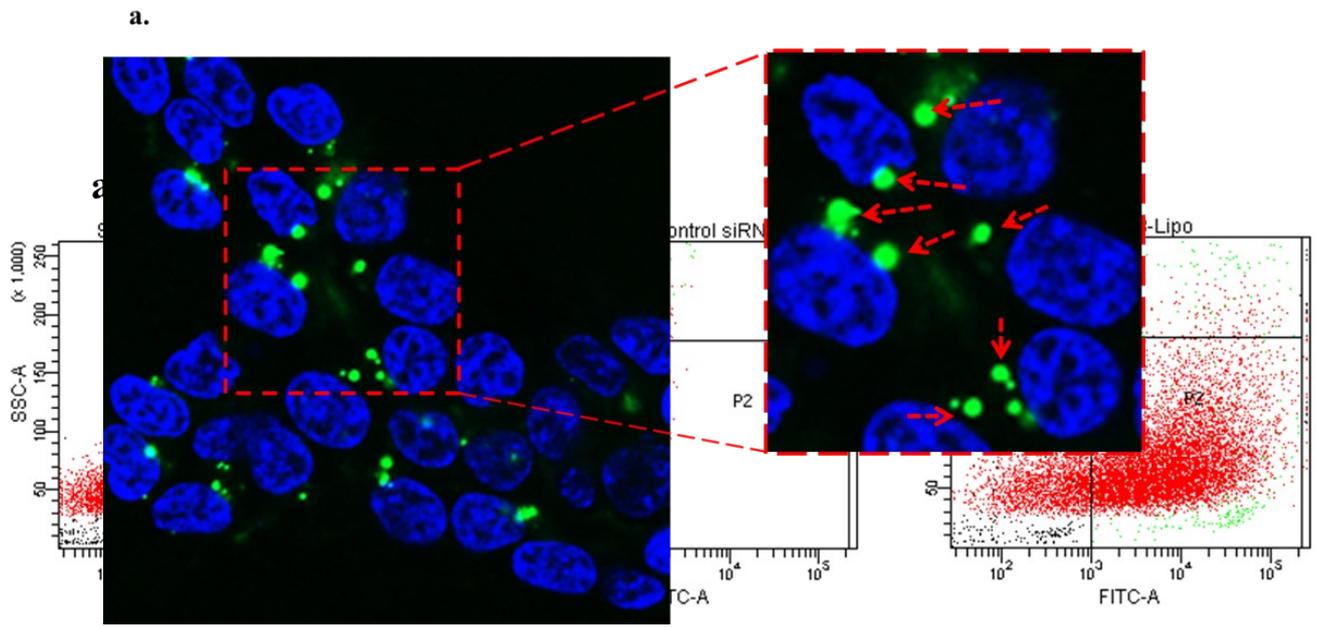


AuNP-W4R4+siRNA

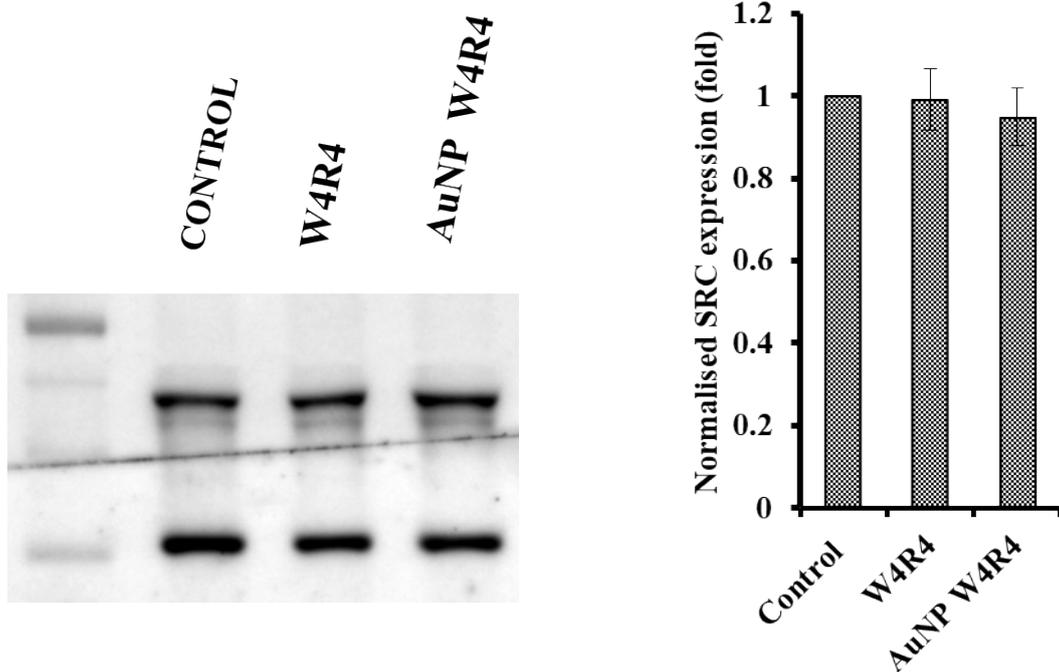
Figure S 5: DLS (Dynamic light scattering) analysis: hydrodynamic size (d.nm) for synthesised materials Pep-AuNP (a,c,e) and complex (b,d,f).



**Figure S 6: Gel retardation assay: serum stability of the complex in presence of 25% FBS (a) 4 hours incubation (b) 24 hours incubation was observed, siRNA band intensity indicated the instability of the complex in presence of serum.**



**Figure S 8: Magnified images confocal microscopy results for cellular uptake of FAM-GAPDH siRNA using (a) AuNP-W2R4, (b) AuNP-W3R3 and (c) AuNP-W4R4 in MCF 7 cell line.**



**Figure S 9: Western blotting analysis of src protein expression upon MCF 7 cells being treated with peptide W4R4 and AuNP-W4R4 for 48 hours, bar graphs represents the mean normalised intensity of src protein normalised against GAPDH protein using image j.**