

# Cellular Interactions of DARTRIX Particles

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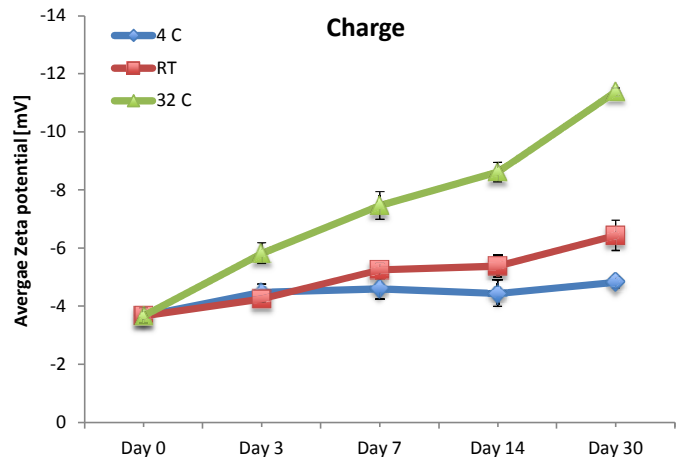
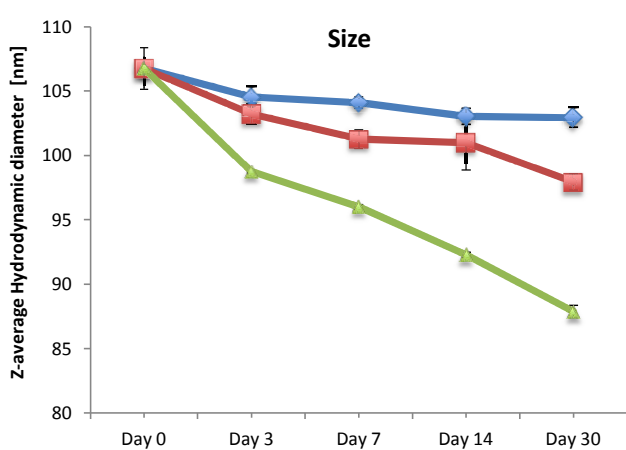
UCL Cancer Institute



## Zetasizer Nano ZS

- The Zetasizer Nano ZS is a high performance analyzer for the enhanced detection of aggregates and measurement of small or dilute samples.
- Can be used to measure the size and zeta potential (charge) of the nanoparticles.
- Was added to our QC lab to be used for the characterisation and long-term stability studies of the nanoparticles and proteins.
- 21 CFR Part 11 Zetasizer Nano series feature key. Enables the Electronic Records and Signatures(ER/ES) features of the Zetasizer series software to meet the requirements of FDA 21 CFR Part 11.
- Full training on the machine by Malvern.
- PQ and method validation was done using:
  - Size measurement validation: NIST traceable latex beads of 60 nm and 200 nm in diameter from Thermo Scientific.
  - Zeta potential measurement validation: zeta potential transfer standard from Malvern.

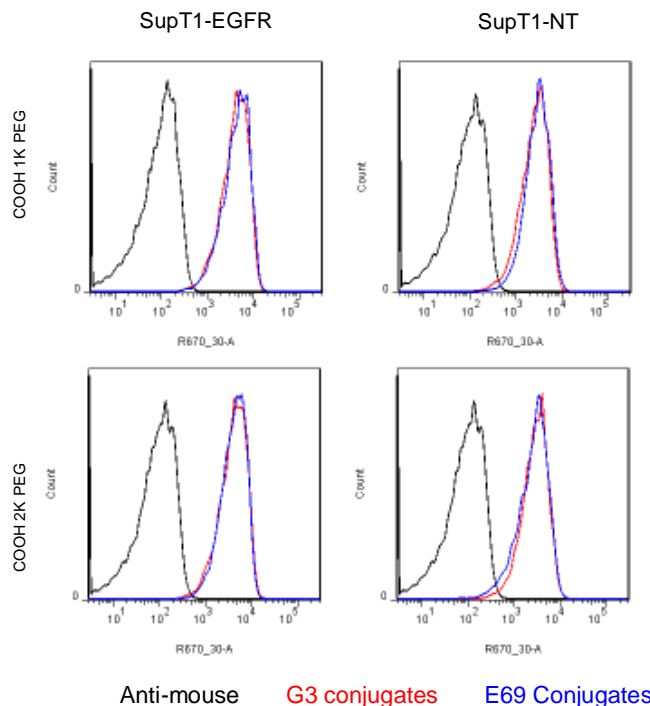
- Perimag-COOH SPIONs were supplied by Micromod
- Upon arrival SPIONs were aliquoted and stored at:
  - 4° C: recommended storage conditions
  - RT: alternative storage condition
  - 32° C: accelerated degradation
- SPIONs size and charge were/will be characterized using DLS on Day 0, 3, 7, 14, 30, 90, 180 days



## Previous results

### Binding of COOH-DARPin conjugates

- No specific binding was detected on the SupT1-EGFR cells

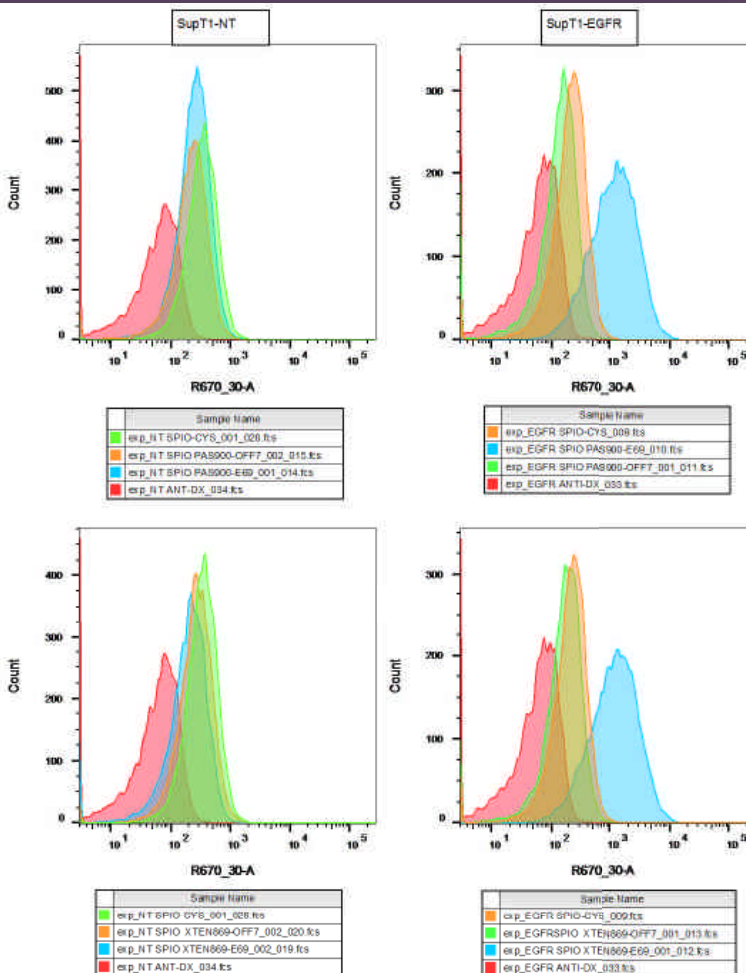


## Samples of DARPin conjugated perimag®

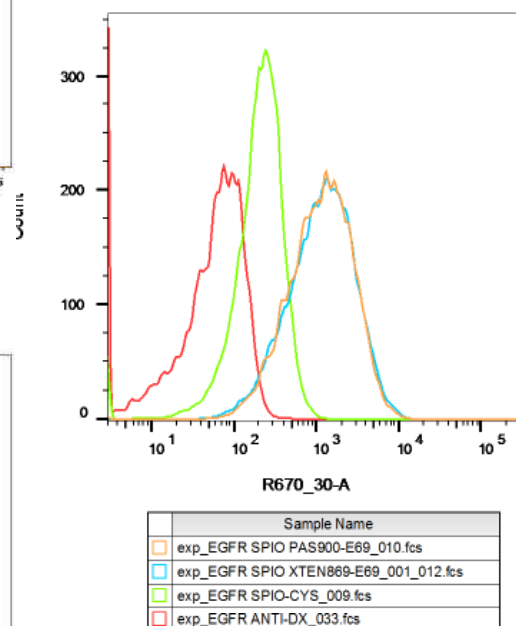
Product-code	Lot-Number	Surface	c (Fe) [mg/ml]	PCS Diameter Z <sub>AVE</sub> [nm]	PDI	ZP [mV]	c (DARPin) [µg/mg Fe]
102-38-132 S08616	08616102	c-PAS300-E69	4,6	142	0.24	-13,4	18
102-38-132 S08716	08716102	c-PAS300-Off7	4,7	144	0.21	-13,5	16
102-38-132 S08816	08816102	c-PAS900-E69	4,4	139	0,22	-11,9	18
102-38-132 S08916	08916102	c-PAS900-Off7	5,8	142	0,21	-12,8	16
102-38-132 S09016	09016102	c-XTEN288-E69	4,8	140	0,22	-20,4	21
102-38-132 S09116	09116102	c-XTEN288-Off7	5,1	146	0,22	-20,4	21
102-38-132 S09216	09216102	c-XTEN864-E69	5,6	146	0,23	-20,0	17
102-38-132 S09316	09316102	c-XTEN864-Off7	5,5	143	0,20	-22,6	19
102-38-132 S09416	09416102	Cysteine (reference)	4,8	137	0,21	-15,0	12
102-01-132 (precursor)	07316102	NH2 (reference)	(not sent)	142	0,24	+0,02	0

Suspensions in PBS buffer (pH=7.4).  
Storage at 2 – 8°C for 3 months.

## Selective binding of new PAS/XTEN Conjugates



Comparing the 2 binders



## Future Directions

- GLP toxicity testing will shortly begin
- Invitation to the final round of applications for The Brain Tumour Charity's 'Quest for Cures' funding call
- UCL CCTU have approved the DARTRIX trial for development and will work with the study team to develop the clinical trial protocol

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