

Electronic Supplementary Information (ESI)

Quantum dot conjugated *S. cerevisiae* as smart nanotoxicity indicators for screening toxicity of nanomaterials†

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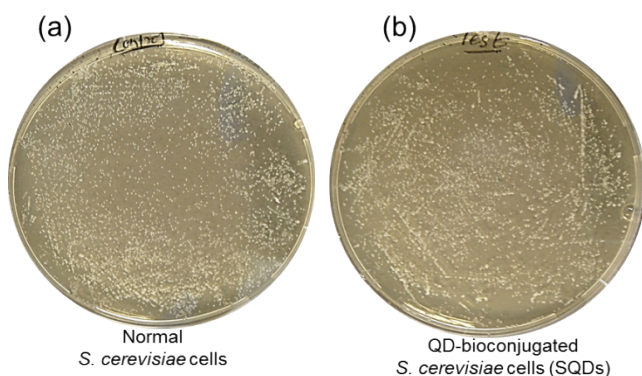


Fig. S1. YPD-agar plates showing colonies of (a) normal *S. cerevisiae* cells (control) and (b) quantum dots bioconjugated *S. cerevisiae* cells (SQDs, test). The cell numbers in both control and test samples were approximated by identical dilutions and spread plated on YPD-agar plates. Each colony was originated from single cell.

Table S1. Reaction conditions for preparation of bioconjugates. It was estimated that, 8 nM QDs was required for $\sim 2 \times 10^9$ *S. cerevisiae* cells mL^{-1} for stable bioconjugation of QDs that yield reproducible fluorescence signals (final RFU at 625 nm = 6048).

QDs (nM)	EDC (mM)	NHS (mM)	Cyteamine (nM)	TCEP (nM)	<i>S. cerevisiae</i> (CFU)	Total Volume	Avg. RFU	RSD %
2	50	5	80	50	2×10^5	$1000 \mu\text{L mL}^{-1}$	19.25	15.6
2	50	5	80	50	2×10^7	$1000 \mu\text{L mL}^{-1}$	78.5	9
2	50	5	80	50	2×10^9	$1000 \mu\text{L mL}^{-1}$	167.9	9
4	50	5	80	50	2×10^5	$1000 \mu\text{L mL}^{-1}$	266	6.6
4	50	5	80	50	2×10^7	$1000 \mu\text{L mL}^{-1}$	761.9	1.4
4	50	5	80	50	2×10^9	$1000 \mu\text{L mL}^{-1}$	1837.4	1.6
8	50	5	80	50	2×10^5	$1000 \mu\text{L mL}^{-1}$	2719.1	0.3
8	50	5	80	50	2×10^7	$1000 \mu\text{L mL}^{-1}$	4022.9	0.2
8	50	5	80	50	2×10^9	$1000 \mu\text{L mL}^{-1}$	6048.3	0.1
16	50	5	80	50	2×10^5	$1000 \mu\text{L mL}^{-1}$	6269.2	0.3
16	50	5	80	50	2×10^7	$1000 \mu\text{L mL}^{-1}$	6550.7	0.2
16	50	5	80	50	2×10^9	$1000 \mu\text{L mL}^{-1}$	6588	0.1

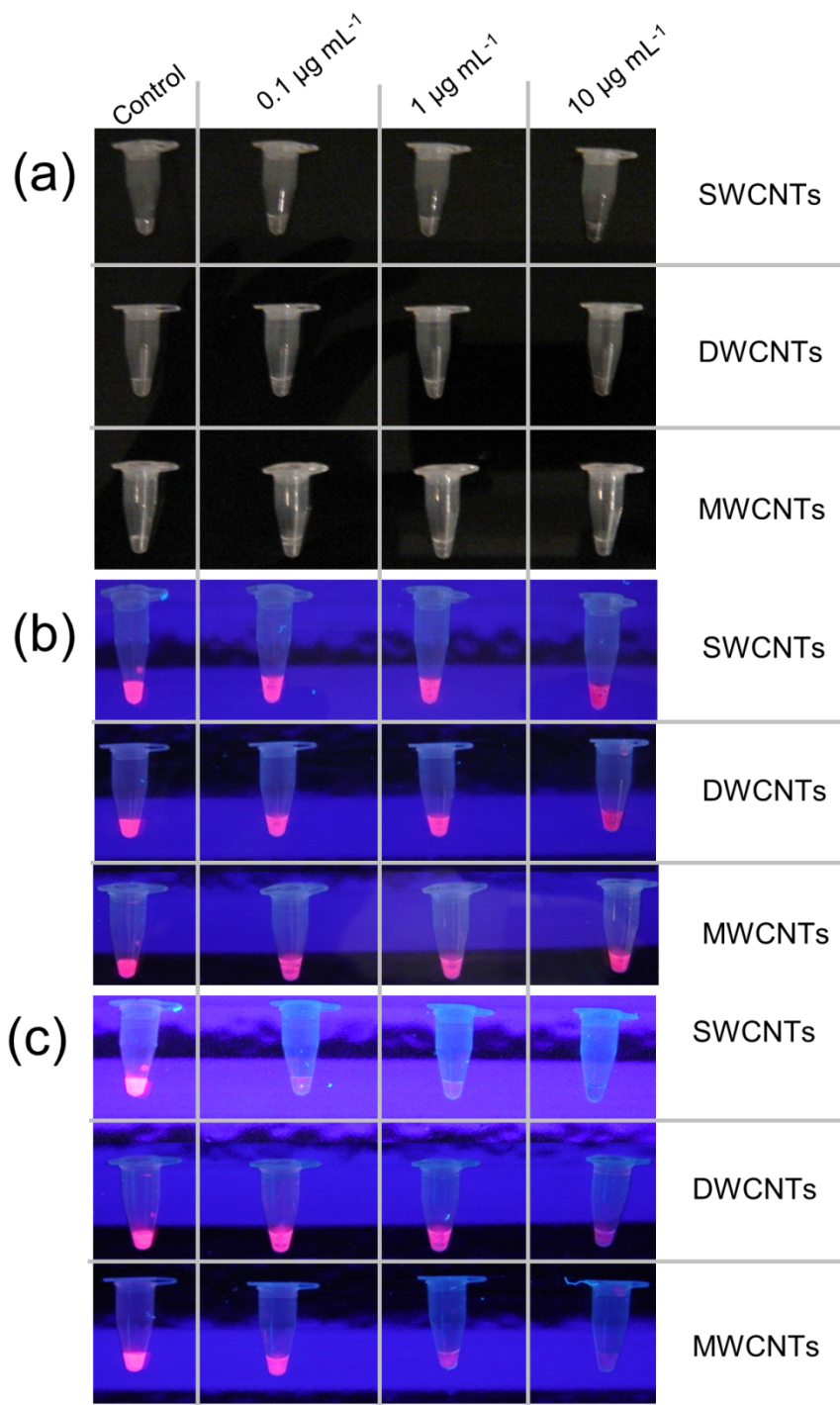


Fig. S2. UV illuminated Images of SQD bioconjugates treated with different concentrations of CNTs. SQD bioconjugates under (a) normal light (b) UV illumination at 0 h (negative control) and (c) SQD bioconjugates treated with different types of CNTs for 1 h.