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DNA-Associated Single-walled Carbon Nanotubes as a Platform for Drug Delivery

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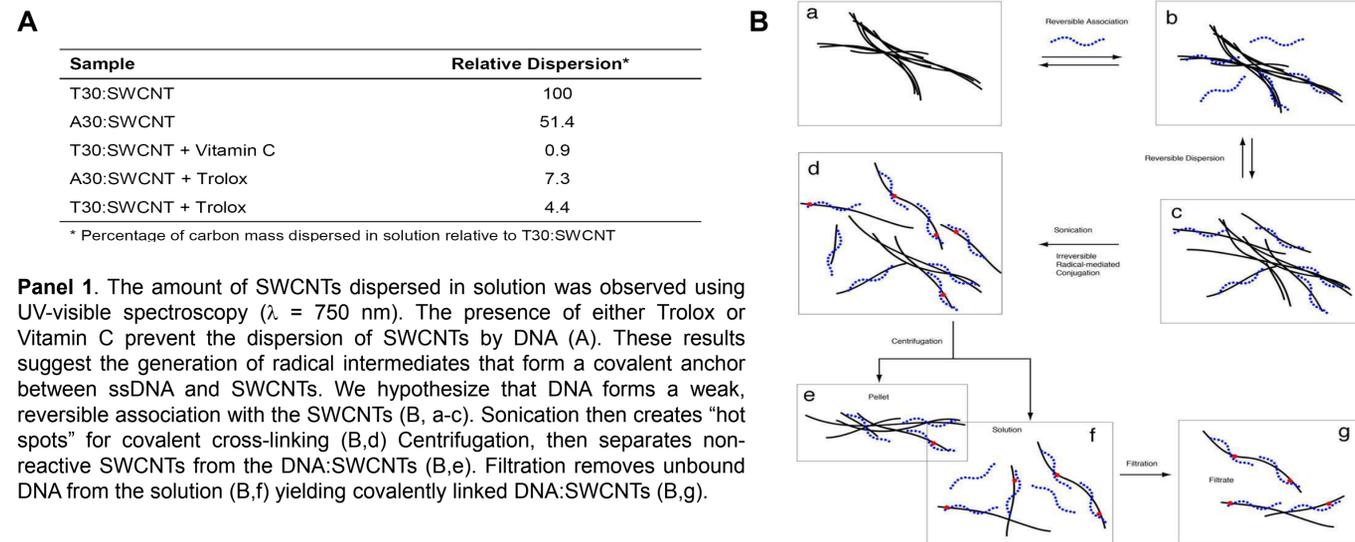
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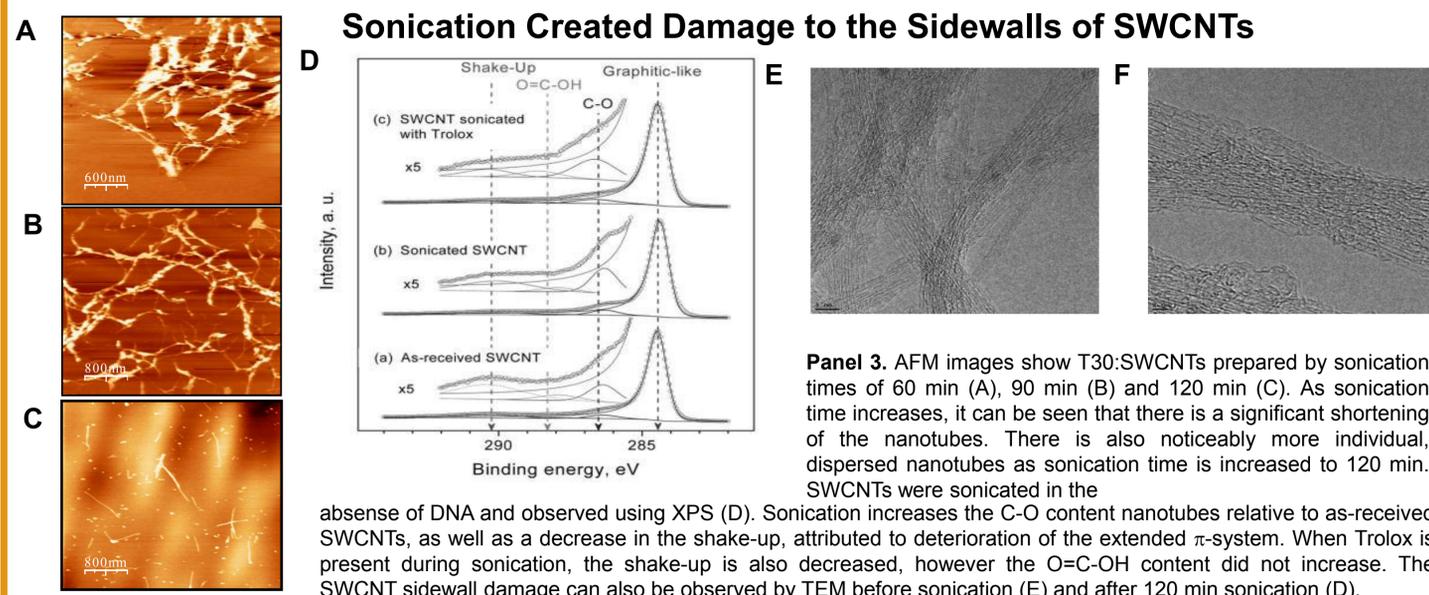
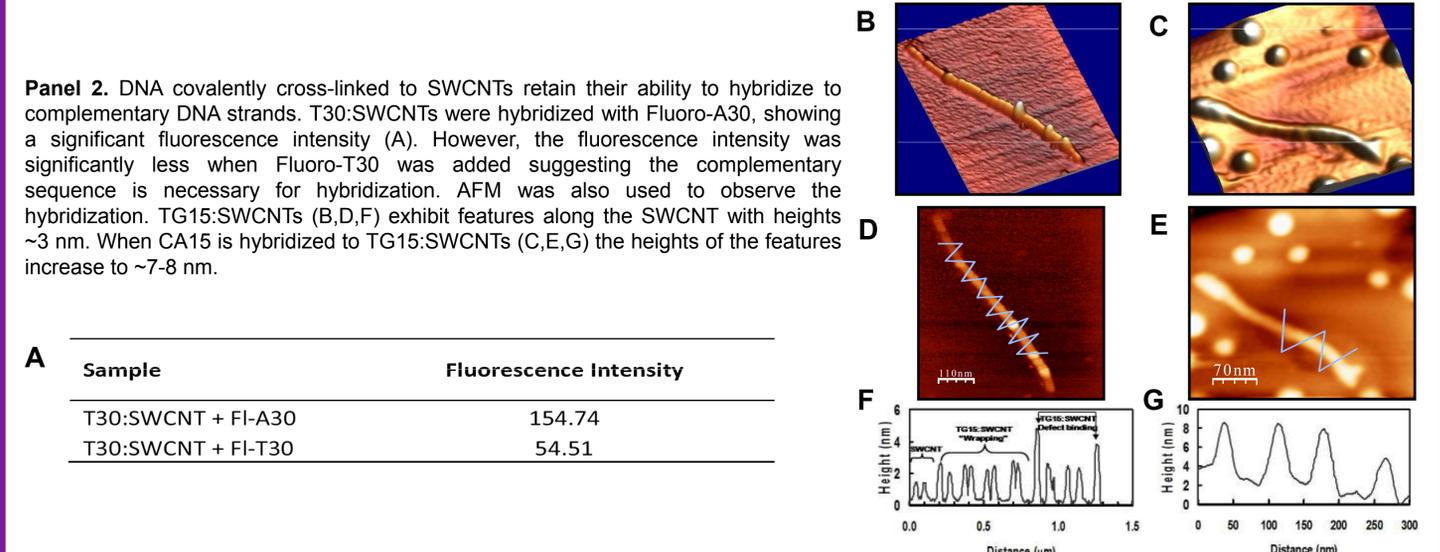
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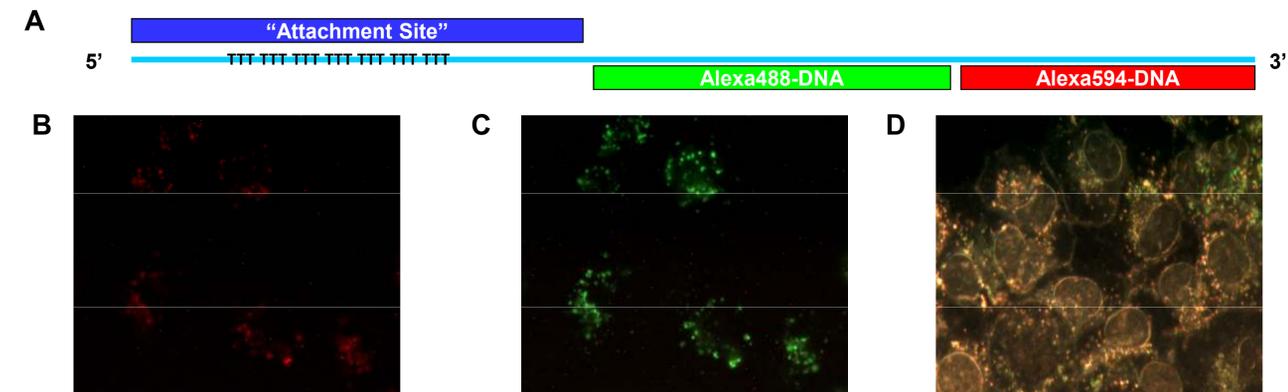
Sonication-Mediated Covalent Cross-linking of ssDNA to SWCNTs



DNA:SWCNTs Hybridize to Complementary ssDNA



Cellular Translocation of Dual-labeled DNA:SWCNTs



Panel 4. A longer ssDNA "Attachment Sequence" was designed (A) to contain a poly T tail for optimal attachment to the carbon nanotube, as well as a combination of two sequences that were hybridized to two short DNA sequences, one conjugated to Alexa594 dye and the other to Alexa488 dye. The dual-labeled DNA:SWCNT were used to treat MCF-7 cells for 24 hr (B and C) and 6 hr (D) and visualized using CytoViva imaging with dark-field microscopy as well as a dual-mode fluorescence (DMF) module. Microscopy suggests colocalization by excitation filters for Texas Red (B), FITC (C), and the triple mode (D) which allows for visualization of dark-field simultaneously with the (DMF). This can be seen by the presence of both red and green dyes within the cells.