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Selective Cell Growth on Fibronectin-Carbon Nanotube Hybrid Nanostructures SEON NAMGUNG, SUNG YOUNG PARK, BYUNG YANG LEE, MINBAEK LEE, Department of Physics and NANO Systems Institute, Seoul National Univ., Korea, JWA-MIN NAM, Department of Chemistry, Seoul National Univ., Korea, SEUNGHUN HONG, Department of Physics and NANO Systems Institute, Seoul National Univ., Korea — Carbon nanotubes (CNT) have been considered a promising material for biological applications including biosensors, therapeutic application, and nano-structured scaffolds. However, there are still controversies associated with toxicity and biocompatibility of CNTs on live cells. Here, we report general strategy to functionalize CNTs with cell adhesion molecules (fibronectins) for selective and stable adhesion of cells on CNTs. Interestingly, more fibronectins were adsorbed and activated on CNTs rather than on hydrophobic self assembled monolayers (SAMs) or bare substrates (SiO_2). We demonstrate the functionality of fibronectins on CNTs with immunofluorescence and molecule-level force measurement study using atomic force microscopy (AFM). These fibronectin-CNT hybrid nanostructures were successfully applied to attract cells selectively onto predefined regions on the substrate. Our strategy was generally available on various cell types including mesenchymal stem cells, KB cells, and NIH3T3 fibroblast cells (*Advanced Materials* **19,** 2530-2534 (2007)). We will also discuss about its impacts on cell biology combined with CNTs.

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