

















































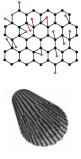












Table 1. Functionalized carbon nanotubes and graphene on Lymphocytes

Material	Funzionalizations	Species	Model	Lymphocyte type and other cells	Year	Reference
	Oxidized and conjugate with FITC and amphotericin B		In vitro (Jurkat)	L. T	2005	Wu W et al. (Angew. Chem.)
	Oxidized		Ex vivo, in vitro (Jurkat)	L. T	2006	Bottini M et al. (Toxicology Letters)
	1,3-dipolar cycloaddition and oxidation/amidation		Ex vivo	L. B and T, Macrophages and Polynuclear cells	2006	Dumortier H et al. (Nano Letters)
	Streptavidin-conjugated Quantum Dots		In vitro (Jurkat)	L.T	2006	Bottini M et al. (Biomacromolecules)
	PL-PEG and conjugated with RNAi of CXCR4 and CD4 receptors		Ex vivo, in vitro (MAGI)	L. T, PBMCs	2007	Liu Z et al. (Angew. Chem)
	PEGylated and fluorochrome-coupled neutravidin, and subsequently with anti-CD3epsilon and anti-CD28		In vivo, in vitro (Jurkat)	L. T	2008	Cato MH et al. (J Nanosci Nanotechnol.)
	Acid treated and conjugate with antibody (anti-CD3)		In vitro [Hybridoma T cells (B3Z)]	L. T	2008	Fadel TR et al. (Nano Letters)
	Nylon-6		Ex vivo	PBMCs	2009	Ochoa-Olmos et al. (J Nanosci Nanotechnol)

	PEGylated conjugated with anti-PTPN22 20-mer antisense oligonucleotides		In vitro (Jurkat)	L. T	2009	Delogu LG et al. (Bioconjugate Chem.)
	Carboxylated and conjugated with tuberculin purified protein derivative (PDD)		Ex vivo, in vivo	L. T, Macrophages	2009	Zeinali M et al. (Immunology Letters)
	Amidated		Ex vivo	PBMCs	2010	Cveticanin J et al. (Nanotechnology)
	Treated with Tween 80		In vitro (A3 L.)	L. T	2010	Hu X et al. (Science of the Total Environment)
	Acid treated and conjugate with antibody (CD3 and CD28)		Ex vivo	L. T	2010	Fadel TR et al. (Langmuir)
	Oxidized		In vitro (Jurkat)	L. T	2010	Sabuncu AC et al. (Colloids and Surfaces B: Biointerfaces)
	PEGylated/TEGylated and conjugate with Amphotericin B		In vitro (Jurkat)	L. T	2010	Benincasa M et al. (ACS Nano)
	Acid treated		In vivo	L. T, Macrophages	2010	Kim JE et al. (J Toxicol Environ Health)
	PEGylated		In vitro (Jurkat)	L. T	2010	Delogu LG et al. (J Nanosci Nanotechnol)

	Oxidized		Ex vivo	PBMCs	2011	Sun Z et al. (Plos One)
	Oxidized, amidated and conjugated with FITC		Ex vivo	PBMCs	2012	Delogu LG et al. (Nanomedicine (Lond).)
	Carboxylated		Ex vivo, in vivo	L. T, DCs	2011	Tkach AV et al. (ACS Nano)
	Primary amines conjugate with WT1Pep427		Ex vivo	L. T, DCs	2011	Villa CH (ACS Nano)
	None		In vivo, ex vivo	L. T	2012	Ni G et al. (Immunology letters)
	None		Ex vivo, in vitro (RAW 264.7)	PBMCs, Macrophages	2012	Sasidharan A et al. (Small)
	Negatively charged		Ex vivo, in vitro [Hybridoma T cells (B3Z)]	L. T, DCs	2012	Tkach AV et al. (Small)
	Carboxylated and conjugate with MHC-I/SIIN		Ex vivo	L. T	2013	Fadel TR (Small)
	Oxidized and 1,3-dipolar cycloaddition		In vitro (Jurkat, THP1)	L. T, Monocytes	2013	Pescatori M et al. (Biomaterials)

	Coated with <i>polyvinylpyrrolidone (PVP)</i>		<i>Ex vivo</i>	<i>L. T, DCs, Macrophages</i>	2013	<i>Zhi X et al. (Biomaterials)</i>
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Legend	
	MWCNTs
	DWCNTs
	SWCNTs
	Carbon Nanohorns
	Graphene
	Graphene Oxide
	Mouse
	Human
<i>Italics</i>	<i>Articles that considered more than one type of cells</i>