

**OLIGODEOXYNUCLEOTIDES
HUMAN AND MOUSE CpG-B DNA
Prototype ODN 2006**



Catalog nr	HC4039 (lot number and expiry date are indicated on the label)
Description	<p>ODN 2006 is a prototype of the class of CpG-B oligodeoxynucleotides (ODN), also known as 'K'-type ODN, with a full phosphorothioate (PS) backbone. It is particularly effective for activating B cells. The vertebrate immune system has evolved innate immune defense pattern recognition receptors (PRRs) that detect unmethylated cytosine-phosphate-guanine (CpG) motifs within bacterial DNA. Cellular activation by CpG motifs occurs via the Toll signal pathway. The Toll-like receptor-9 (TLR9, CD289) appears to be a major component of the CpG-DNA receptor, acting by direct binding to CpG-DNA, which triggers the induction of cell signaling pathways including the mitogen activated protein kinase (MAPKs) and NFκB, leading to stimulation of various cells of the immune system. The human TLR9 is expressed in B cells and plasmacytoid dendritic cells (PDC). Mice also express TLR9 in the myeloid compartment. Optimal sequences for activating TLR9 vary among species. Synthetic ODN contain CpG-DNA motifs mimicking the immunostimulatory effects of bacterial DNA and can, therefore, be used as immunoprotective agents, vaccine adjuvants and anti-allergic agents. CpG ODN also affects immune tolerance and autoimmunity. Different classes of CpG ODN are characterized each with distinct effects on the immune response: CpG-A ('D'-type), CpG-B ('K'-type), and CpG-C.</p> <p>CpG-B ODN are characterized by a full phosphorothioate backbone with one or more CpG motifs without poly -G motifs. CpG-B ODN are weak inducers of IFN-alpha but are very potent Th1 adjuvants and strong B cell response stimulators. CpG-B ODN promote survival, activation, and maturation of both monocyte derived dendritic cells and PDC.</p> <p>The prototype sequence of CpG-B is the 24-mer ODN 2006 that is able to modulate the immune response in both human and mice. It has the following sequence: 5'-tcgtcgtttgcgtttcgtt-3'. Regular letters represent PS linkage and bold letters represent CpG dinucleotides.</p>
Formulation	Approximately 200 nmol lyophilized, purified 24-mer CpG ODN. The exact amount is indicated on the label. Endotoxin levels are undetectable. Reconstitute the vial by injection of distilled or deionized water, volume depending on the concentration to be used.
Application	CpG-B DNA can be used in biological assays in vitro to activate cells. Furthermore, CpG-B DNA can be used as an immune modulating agent.
Use	For in vitro stimulation, 0.05 to 3 μM can be used. It is recommended that users test the reagent and determine their own optimal concentrations.
Storage and stability	Lyophilized product should be stored at 4°C. Store stock solution in aliquots at -20°C. Repeated freeze and thaw cycles will cause loss of activity. Under recommended storage conditions, product is stable for one year.
Precautions	For research use only. Not for use in or on humans or animals or for diagnostics. It is the responsibility of the user to comply with all local/state and Federal rules in the use of this product. Hycult Biotech is not responsible for any patent infringements that might result with the use of or derivation of this product.
References	<ol style="list-style-type: none">1. Krieg, A; CpG motifs in bacterial DNA and their immune effects. <i>Annu Rev Immunol</i> 2002, <i>20</i>: 7092. Vollmer, J et al; Characterization of three CpG oligodeoxynucleotide classes with distinct immunostimulatory activities. <i>Eur J Immunol</i> 2004, <i>34</i>: 2513. Kerkmann, M et al; Activation with CpG-A and CpG-B oligonucleotides reveals two distinct regulatory pathways of type I IFN synthesis in human plasmacytoid dendritic cells. <i>J Immunol</i> 2003, <i>170</i>: 44654. Wang, J et al; CpG-independent synergistic induction of beta-chemokines and a dendritic cell phenotype by orthophosphorothioate ODN and GM-CSF in elutriated human primary monocytes. <i>J Immunol</i> 2005, <i>174</i>: 61135. Latz, E et al; TLR9 signals after translocating from the ER to CpG DNA in the lysosome. <i>Nat Immunol</i> 2004, <i>5</i>: 190

**OLIGODEOXYNUCLEOTIDES
HUMAN AND MOUSE CpG-B DNA
Prototype ODN 2006**



Also available	HC4034	Non-CpG DNA; 200 nmol
	HC4037	Human and mouse CpG-A oligodeoxynucleotides, prototype ODN 2216; 200 nmol
	HC4038	Rabbit CpG oligodeoxynucleotides, prototype ODN 2007; 200 nmol
	HC4040	Rat CpG-B oligodeoxynucleotides; 200 nmol
	HC4041	Human and mouse CpG-C oligodeoxynucleotides, prototype ODN 2395; 200 nmol
	HC4042	Non-CpG DNA (rabbit), prototype ODN 2041; 200 nmol
	HM2087	Monoclonal antibody against human TLR9 (CD289), clone 5G5