

# ODN 1826 VacciGrade™

CpG ODN, type B (murine) - TLR9-based adjuvant

Catalog # vac-1826-1

For research use only. Not for use in humans.

Version # 11D30-MT

## PRODUCT INFORMATION

### Content:

- 1 mg of lyophilized ODN 1826 VacciGrade™
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

### ODN 1826 sequence

5'-tccatgacgttcctgacgtt-3' (20 mer)

*Note: Bases are phosphorothioate (nuclease resistant).*

### Storage and stability

- ODN 1826 VacciGrade™ is shipped at room temperature and should be stored at -20°C for up to 1 year.
- Upon resuspension, prepare aliquots of ODN 1826 VacciGrade™ and store at -20°C. Product is stable 6 months at -20°C when properly stored. Avoid repeated freeze-thaw cycles.

### Quality control

ODN 1826 is VacciGrade™ (preclinical grade). It is prepared under strict aseptic conditions. It is tested for sterility and the presence of endotoxins. ODN 1826 VacciGrade™ is guaranteed sterile and its endotoxin level is <1 EU/mg (measurement by kinetic chromogenic LAL assay).

## METHODS

### Preparation of sterile stock solution (2 mg/ml)

- Add 500 µl of the endotoxin-free physiological water provided to the 1 mg ODN 1826 VacciGrade™ vial to obtain a solution at 2 mg/ml.
- Mix the solution by pipetting up and down.

**Working Concentration:** 20-50 µg/mouse

## DESCRIPTION

Synthetic oligodeoxynucleotides containing unmethylated CpG motifs (CpG ODNs), such as ODN 1826, have been extensively studied as adjuvants<sup>1</sup>. These CpG motifs are present at a 20-fold greater frequency in bacterial DNA compared to mammalian DNA<sup>2</sup>. CpG ODNs are recognized by TLR9, which is expressed exclusively on human B cells and plasmacytoid dendritic cells (pDCs), thereby inducing Th1-dominated immune responses<sup>3</sup>. Pre-clinical studies conducted in rodents and non-human primates and human clinical trials have demonstrated that CpG ODNs can significantly improve vaccine-specific antibody responses<sup>1</sup>.

Three types of stimulatory CpG ODNs have been identified, types A, B and C, which differ in their immune-stimulatory activities<sup>4,5</sup>. Moreover, CpG ODNs activate TLR9 in a species-specific manner<sup>6</sup>. ODN 1826 VacciGrade™ is a type B CpG ODN specific for mouse TLR9. Type B CpG ODNs contain a full phosphorothioate backbone with one or more CpG dinucleotides and can strongly activate B cells<sup>4</sup>.

ODN 1826 has been tested as an adjuvant in numerous animal models<sup>7-9</sup>. Research in mice demonstrated that ODN 1826 administration can induce the activation of antigen presenting cells<sup>8</sup> and type I IFN anti-viral activity<sup>8,9</sup>, indicative of a Th1 immune response.

1. **Steinhagen F. et al., 2010.** TLR-based immune adjuvants. Vaccine [Epub ahead of print]. 2. **Hemmi H. et al., 2000.** A Toll-like receptor recognizes bacterial DNA. Nature 408: 740-5. 3. **Coffman RL. et al., 2010.** Vaccine adjuvants: Putting innate immunity to work. Immunity 33(4):492-503. 4. **Krug A. et al., 2001.** Identification of CpG oligonucleotide sequences with high induction of IFN-alpha/beta in plasmacytoid dendritic cells. Eur J Immunol, 31(7): 2154-63. 5. **Marshall JD. et al., 2005.** Superior activity of the type C class of ISS in vitro and in vivo across multiple species. DNA Cell Biol. 24(2):63-72. 6. **Bauer, S. et al., 2001.** Human TLR9 confers responsiveness to bacterial DNA via species-specific CpG motif recognition. PNAS, 98(16):9237-42. 7. **Xiong Z. et al., 2008.** Effective CpG immunotherapy of breast carcinoma prevents but fails to eradicate established brain metastasis. Clin Cancer Res 14: 5484-93. 8. **Longhi MP. et al., 2009.** Dendritic cells require a systemic type I interferon response to mature and induce CD4+ Th1 immunity with poly IC as adjuvant. J Exp Med 206: 1589-602. 9. **Ank MB. et al., 2008.** An important role for type III interferon (IFN-lambda/IL-28) in TLR-induced antiviral activity. J Immunol 180: 2474-85.

## TECHNICAL SUPPORT

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## RELATED PRODUCTS

| Product                    | Description                                     | Catalog Code |
|----------------------------|---|--------------|
| <b>Adjuvants</b>           |   |              |
| AddaVax™                   | Squalene-Oil-in-water                           | vac-adx-10   |
| Alhydrogel® adjuvant 2%    | Aluminium hydroxide gel                         | vac-alu-250  |
| IFA                        | Incomplete Freund's adjuvant                    | vac-ifa-10   |
| Poly(I:C) VacciGrade™      | TLR3 agonist                                    | vac-pic      |
| MPLA VacciGrade™           | TLR4 agonist                                    | vac-mpla     |
| Flagellin FliC VacciGrade™ | TLR5 agonist                                    | vac-fla      |
| Gardiquimod VacciGrade™    | TLR7 agonist                                    | vac-gdq      |
| Imiquimod VacciGrade™      | TLR7 agonist                                    | vac-imq      |
| R848 VacciGrade™           | TLR7/8 agonist                                  | vac-r848     |
| ODN 2006 VacciGrade™       | human TLR9 agonist                              | vac-2006-1   |
| N-glycolyl-MDP VacciGrade™ | NOD2 agonist                                    | vac-gmdp     |
| <b>OVA Antigens</b>        |   |              |
| EndoFit™ Ovalbumin         | For <i>in vivo</i> use; endotoxin level <1EU/mg | vac-pova     |
| Ovalbumin                  | For detection; Western, ELISA                   | vac-stova    |
| Ova 257-264                | For detection; ELISPOT                          | vac-sin      |
| Ova 323-339                | For detection; ELISPOT                          | vac-isq      |

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