

Datasheet for 200-301-NF2**ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4****Overview**

Description:	ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4 - 200-301-NF2
Item No.:	200-301-NF2
Size:	100 µg
Applications:	ELISA, IF, Multiplex
Host Species:	Mouse

Product Details

Background:	Current studies focusing on RNA therapeutics use as potential drugs antisense oligonucleotides (ASO), short interfering RNA (siRNA), and micro RNA (miRNA). The choice of oligonucleotide chosen for a specific treatment is dependent on many factors. However, all oligo therapeutics must be modified in some manner, as unmodified nucleotides are difficult to identify and are highly susceptible to degradation by endogenous nucleases. Modifications can be created within the sugar-phosphate backbone (first generation), the ribose sugar (second and third generation), or at multiple locations (third generation). Antibodies to modified oligonucleotides are useful for basic immunoassays including, ELISA, IHC, and IF. In addition, several types of toxicology assays (immunogenicity assays), such as antibody-drug assays (ADA) or other pharmacokinetic (PK) and pharmacodynamic (PD) studies require oligonucleotide antibodies as analytical tools for general research and preclinical trial experiments. Antibodies to an oligonucleotide therapeutic allow researchers to assess cellular uptake, tissue distribution, and can serve as a positive control for immunogenicity studies.
Synonyms:	2'-O-Methoxyethyl, 2'MOE, ASO, anti-sense oligonucleotide, siRNA, RNA therapeutic, gapmer, aptamer
Host Species:	Mouse
Clonality:	Monoclonal
Clone ID:	MOE4
Format:	IgG1

Target Details

Immunogen Type:	Other
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Immunogen:	ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4 was prepared from cell culture supernatant produced by repeated immunizations with a proprietary oligo sequence.
Purity/Specificity:	This Protein A purified ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4 is directed against 2'MOE modified ribose sugar. This product was Protein A purified from monospecific supernatant.

Application Details

Tested Applications:	ELISA, IF, Multiplex
Application Note:	ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4 has been validated for use in ELISA. In antigen-down or immunometric ELISAs, the ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4 preferentially detects 2'MOE modified ribose sugar groups over native deoxyribose or ribose sugars. It is also likely to be functional in IF and IHC assays, however, its sensitivity, specificity, and conditions for optimal use in these assays has not yet been determined. All assays should be optimized by the user.
Assay Dilutions:	All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.
ELISA:	1:1000

Formulation

Physical State:	Liquid (sterile filtered)
Concentration:	0.966mg/mL by UV absorbance at 280 nm
Buffer:	0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2
Preservative:	0.01% (w/v) Sodium Azide
Stabilizer:	10 mg/mL Bovine Serum Albumin (BSA) - Immunoglobulin and Protease free

Shipping & Handling

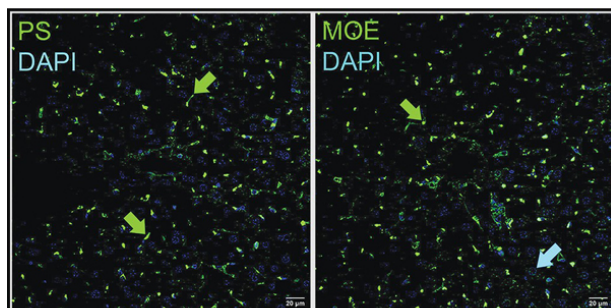
Shipping Condition:	Dry Ice
Storage Condition:	Store vial at -20° C or below prior to opening. Store the vial at -20°C or below after dilution. Avoid cycles of freezing and thawing.
Expiration:	Expiration date is one (1) year from date of receipt.

Images



Vial

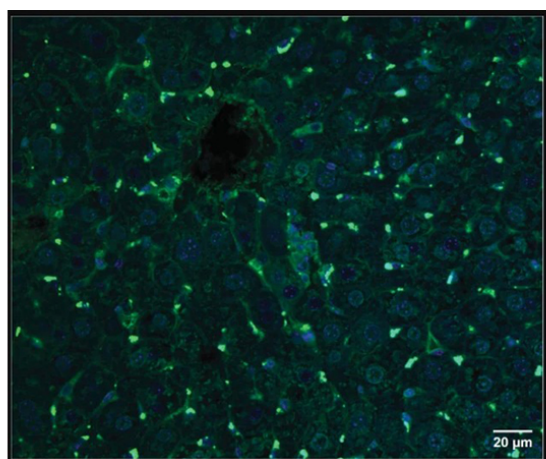
ModDetect® 2'-O-Methoxyethyl (2'MOE) Clone MOE4



Immunofluorescence Microscopy

Immunohistochemistry of a systemically delivered ASO in mice.

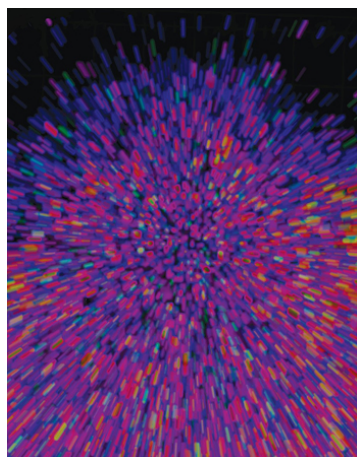
A 2'-MOE modified gapmer with PS bonds (MOE/PS) was delivered subcutaneously to mice and fixed liver tissue immunostained with ModDetect® anti-PS clone PS03 (p/n 200-301-MU9) or anti-MOE clone MOE4 (p/n 200-301-NF2) antibodies independently as indicated. Representative positive immunostaining (green arrows) indicates accumulation of the ASO in nonparenchymal cells surrounding hepatocytes (blue arrows indicate example large hepatic nuclei, DAPI). Images taken by confocal microscopy at 20x. Scale bars as indicated. FIG. 5A. PMID: 40685980.



Immunofluorescence Microscopy

Biodistribution of ASO.

ModDetect® Anti-MOE antibody clone MOE4 [p/n 200-301-NF2] detection of a 2'-MOE modified ASO 20-mer (5-10-5 gapmer containing ten MOE/PS bonds) delivered subcutaneously to mice (50 mg/kg, 72h). Liver tissue was immunostained with anti-MOE antibody (green) diluted 1:1,000 (overnight) and counterstained with DAPI (blue). Representative positive immunostaining indicates accumulation of the ASO in nonparenchymal cells surrounding hepatocytes (arrows). PBS treated mice (negative control) showed no reaction (data not shown). Scale bar is indicated.



Immunocytochemistry

Immunocytochemistry using ModDetect®. This image, featured on the cover of *OTS Nucleic Acid Therapeutics*, Vol. 35, No. 4, August 2025, features a three-dimensional reconstruction with pseudo-color rendering of a spheroid culture with staining for cell nuclei and immunocytochemistry using antibodies to detect endosomes and the phosphorothioate (PS) modification of an antisense oligonucleotide. These cultures were used as part of a benchmarking study in cells and tissue to assess the ModDetect series of antibodies raised against PS and 2'-MOE.

Image provided by Peter Oliver of the Medical Research Council Nucleic Acid Therapy Accelerator, Research Complex at Harwell, Didcot, UK.

References

- Chimento DP et al. Bioanalytical Assays for Oligonucleotide Therapeutics: Adding Antibody-Based Immunoassays to the Toolbox as an Orthogonal Approach to LC-MS/MS and Ligand Binding Assays. *Nucleic Acid Ther.* (2025)
- Fial I et al. Characterizing Antibodies Targeting Antisense Oligonucleotide Phosphorothioate and 2'-O-Methoxyethyl Modifications for Intracellular Trafficking and Biodistribution Studies. *Nucleic Acid Ther.* (2025)

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