Leinco Technologies, Inc.
excellence in early discovery research™

mAbMods™ Recombinant Chimeric Anti-Mouse CTLA-4

Recombinant Monoclonal Antibody for In Vivo Use

Product Information

Product No.:	C2886
Clone:	9D9-mIgG2a
Isotype:	Mouse IgG2a k

Product Description

Specificity:
Activity is directed against mouse Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4)[1,2]. Clone 9D9 specifically binds to the extracellular domain of mouse CTLA-4 and is frequently used as a surrogate antibody in murine cancer models to mimic the effects of human anti-CTLA-4 therapies[1,3].

Antigen Distribution:
CTLA-4 is primarily expressed on the surface of activated T lymphocytes[2]. It is constitutively expressed at high levels on Regulatory T cells (Tregs), where it is essential for their suppressive function[3,4]. In resting naive T cells, CTLA-4 is largely sequestered in intracellular vesicles and is rapidly translocated to the cell surface following T-cell receptor (TCR) stimulation[2,4].

Background:
CTLA-4 (CD152) is a transmembrane coinhibitory receptor of the CD28 immunoglobulin superfamily that functions as an essential immune checkpoint. It attenuates T-cell activation by outcompeting the costimulatory receptor CD28 for ligand binding to APC-expressed B7-1 (CD80) and B7-2 (CD86).[2,3].

The In Vivo & Ex Vivo Advantage: Tuning Effector Functions
What sets the mAbMods™ framework apart is the ability to strategically alter antibody properties to match your specific experimental layout:

Decoupling Blockade from Depletion: The native hybridoma-derived 9D9 clone features a mouse IgG2b isotype, which naturally triggers a dual mechanism of action: blocking the CTLA-4/B7 interaction while simultaneously depleting intratumoral regulatory T cells (Tregs) via FcγR engagement.

Engineered Precision: Our engineered mAbMods™ variants (such as Fc-Muted™ LALA-PG mutations or switched mouse IgG isotypes) allow researchers to strategically alter or entirely silence these Fc-mediated effector functions (ADCC/ADCP).

By eliminating or amplifying specific Fc-receptor interactions, you can easily parse out whether your experimental phenotype is driven by pure checkpoint antagonism or cellular depletion. This degree of control provides cleaner data arrays in complex syngeneic mouse tumor models, organoid environments, and primary T-cell cultures.

Background & Evolution: From the Allison Lab to Modern Engineering
The foundational anti-mouse CTLA-4 clone, 9D9, was first isolated and published by Nobel Laureate Dr. Jim Allison, whose pioneering work established immune checkpoint blockade as a pillar of modern oncology. As a historic cornerstone of tumor immunology, the 9D9 clone has been featured in hundreds of landmark publications.

Over the years, the scientific community has evaluated multiple sequence variations and mutations of this classic clone to unlock deeper insights into the tumor microenvironment. Our mAbMods™ recombinant platform builds directly upon this rich scientific literature. By modernizing the classic 9D9 clone into a defined

Products are for research use only. Not for use in diagnostic or therapeutic procedures.

recombinant format, we empower researchers with an advanced tool designed to meet the rigorous reproducibility standards of contemporary preclinical drug development.

Known Reactivity Species:
Mouse

Expression Host:
HEK-293 Cells

Format:
Purified No Carrier Protein

Immunogen:
Mouse CTLA-4

Formulation
This recombinant monoclonal antibody is aseptically packaged and formulated in 0.01 M phosphate buffered saline (150 mM NaCl) PBS pH 7.2 - 7.4 with no carrier protein, potassium, calcium or preservatives added. Due to inherent biochemical properties of antibodies, certain products may be prone to precipitation over time. Precipitation may be removed by aseptic centrifugation and/or filtration.

Purity
≥95% monomer by analytical SEC

Endotoxin
<0.5 EU/mg as determined by the LAL method

Storage and Stability
Functional grade preclinical antibodies may be stored sterile as received at 2-8°C for up to one month. For longer term storage, aseptically aliquot in working volumes without diluting and store at ≤ -70°C. **Avoid Repeated Freeze Thaw Cycles.**

Product Preparation
This mAbMods™ Recombinant Chimeric Anti-Mouse CTLA-4 (Clone 9D9) represents a major technological evolution over traditional hybridoma-derived antibodies. Utilizing advanced recombinant expression platforms, this antibody pairs the exact, highly specific antigen-binding variable domains of the classic 9D9 clone with an engineered mouse constant (Fc) region.

Traditional hybridoma production can be highly vulnerable to genetic drift and batch-to-batch variability. By contrast, our recombinant manufacturing workflow guarantees sequence certainty, uniform purity, and completely animal-free, low-endotoxin formulations. The result is a highly reproducible, premium-grade reagent optimized specifically for prolonged in vivo functional studies and high-sensitivity ex vivo screening. These antibodies are manufactured in an animal free facility located in Saint Louis, Missouri USA, using only *in vitro* protein free cell culture techniques and are purified by a multi-step process including the use of protein A or G to assure extremely low levels of endotoxins, leachable protein A or aggregates.

Pathogen Testing
To protect mouse colonies from infection by pathogens and to assure that experimental preclinical data is not affected by such pathogens, all of Leinco's recombinant biosimilar antibodies are tested and guaranteed to be negative for all pathogens in the IDEXX IMPACT I Mouse Profile.

Applications
Applications and Recommended Usage (Quality Tested By Leinco):

WB
Other Applications Reported in Literature:
***in vivo* Functional Blockade,**
***in vivo* Treg Depletion**

Products are for research use only. Not for use in diagnostic or therapeutic procedures.

Primary Applications
In Vivo Checkpoint Blockade: Study the efficacy of CTLA-4 inhibition alone or in combination with anti-PD-1/PD-L1 therapies without traditional hybridoma limitations.

Effector Function Dissection: Utilize Fc-muted variants to isolate structural blocking mechanisms from cell-mediated cytotoxicity.

Ex Vivo & Organoid Modeling: Minimize non-specific background binding and Fc-receptor-mediated cell activation in primary tissue cultures and cell-based assays.

Syngeneic Tumor Infiltration Assays: Track exact changes to CD8+ T-cell activation and lymphocyte infiltration under customized effector baselines.

Country of Origin
USA

References

1. Selby MJ, Engelhardt JJ, Quigley M, et al. Anti-CTLA-4 antibodies of IgG2a isotype exhibit enhanced antitumor activity through Fc-mediated depletion of intratumoral regulatory T cells. Cancer Immunol Res. 1(1):32-42. 2013.
2. Egen JG, Kuhns MS, Allison JP. CTLA-4: new insights into its biological function and use in tumor immunotherapy. Nat Immunol. 3(7):611-618. 2002.
3. Peggs KS, Quezada SA, Chambers CA, et al. Blockade of CTLA-4 on both effector and regulatory T cell compartments contributes to the antitumor activity of anti-CTLA-4 antibodies. J Exp Med. 206(8):1717-1725. 2009.
4. Walker LS, Sansom DM. The emerging role of CTLA-4 as a cell-extrinsic regulator of T cell responses. Nat Rev Immunol. 11(12):852-863. 2011.
5. Bulliard Y, Jolicoeur R, Zhang J, et al. OX40 engagement depletes intratumoral Tregs via activating Fc-γRs, leading to antitumor efficacy. Immunol Cell Biol. 92(6):475-480. 2014.
6. Quezada SA, Peggs KS, Curran MA, Allison JP. CTLA4 blockade and GM-CSF combination immunotherapy alters the intratumor balance of effector and regulatory T cells. J Exp Med. 203(9):2119-2135. 2006.

Products are for research use only. Not for use in diagnostic or therapeutic procedures.
410 Axminister Dr, St. Louis, MO 63026 (800) 538-1145 leincoglobal@leinco.com