

RESEARCH MONOGRAPH . COMPOUND PROFILE

Domagrozumab

A humanized anti-myostatin monoclonal antibody developed at Pfizer for Duchenne muscular dystrophy; phase 2 trial failed.

DOCUMENT	KDC-MN-361
ISSUED	2026-05-09
REVISION	1.0
AUTHOR	Kodi ac bio l abs Research
COMPOUND CLASS	Anti-myostatin monoclonal antibody

ABSTRACT

Domagrozumab (PF-06252616; humanized IgG1 monoclonal antibody; molecular weight approximately 145 kDa) is a humanized anti-myostatin monoclonal antibody developed at Pfizer. The compound is selective for myostatin (GDF-8) with high affinity, designed to neutralize circulating myostatin in Duchenne muscular dystrophy. Phase 2 trial in DMD (2018) demonstrated muscle mass increases on MRI but no significant improvement in functional endpoints (6-minute walk test, North Star Ambulatory Assessment); Pfizer discontinued development. The trial result reinforced a broader concern about myostatin inhibition in DMD: muscle mass gains may not translate to clinical benefit if the underlying dystrophin deficiency continues to cause fiber damage. Used as a research compound for selective myostatin neutralization in DMD context.

1. Compound Identification

Domagrozumab is described as anti-myostatin monoclonal antibody. A humanized anti-myostatin monoclonal antibody developed at Pfizer for Duchenne muscular dystrophy; phase 2 trial failed.

1.1 Class summary

Anti-myostatin monoclonal antibody

1.2 Subtitle

A humanized anti-myostatin monoclonal antibody developed at Pfizer for Duchenne muscular dystrophy; phase 2 trial failed.

2. Abstract

Domagrozumab (PF-06252616; humanized IgG1 monoclonal antibody; molecular weight approximately 145 kDa) is a humanized anti-myostatin monoclonal antibody developed at Pfizer. The compound is selective for myostatin (GDF-8) with high affinity, designed to neutralize circulating myostatin in Duchenne muscular dystrophy. Phase 2 trial in DMD (2018) demonstrated muscle mass increases on MRI but no significant improvement in functional endpoints (6-minute walk test, North Star Ambulatory Assessment); Pfizer discontinued development. The trial result reinforced a broader concern about myostatin inhibition in DMD: muscle mass gains may not translate to clinical benefit if the underlying dystrophin deficiency continues to cause fiber damage. Used as a research compound for selective myostatin neutralization in DMD context.

3. Mechanism of Action

Humanized monoclonal antibody against myostatin; selective neutralization of GDF-8.

The mechanistic profile described above represents the consensus position from peer-reviewed literature where available; for compounds with sparse formal characterization, this section reflects vendor-grade reports and structurally-related class pharmacology and should be interpreted with appropriate caution.

4. Pharmacokinetics and Routes of Administration

Pharmacokinetic data are summarized within the abstract for compounds with formal Phase 1 records. Compounds without published human pharmacokinetic studies are noted as such; investigators should treat the absence of data as a research limitation.

5. Reported Research Dose Ranges

Trial doses 5 to 40 mg/kg intravenous every 4 weeks.

Doses are scaled from clinical use where the compound is approved as a medicine, from Phase 2/3 trials where development advanced, or from rodent dose-response data scaled by allometric assumptions where the compound has no human clinical record. Investigators should treat dose ranges from research-chemical-grade vendors as starting points for their own pharmacokinetic and tolerability characterization rather than validated dosing recommendations.

6. Sourcing and Quality Verification

Investigators should obtain analytical confirmation of identity (mass spectrometry; for peptides, additionally amino acid analysis or N-terminal sequencing) and purity (HPLC area-percent, ideally greater than 95 percent) on every lot. Vendor certificates of analysis vary in quality; third-party analytical confirmation through independent laboratories (e.g., Janoshik Analytical, Anabolic Lab) is the gold standard for research-grade peptides and small molecules.

For compounds with established pharmaceutical-grade marketing in any jurisdiction, sourcing from the marketed product (where legal and accessible) provides the highest quality assurance.

7. Reconstitution and Handling

Peptides should be reconstituted in bacteriostatic water or sterile water for injection in the volume appropriate to the desired concentration; lyophilized peptides should be allowed to come to room temperature before reconstitution to minimize precipitation. Reconstituted peptides should be stored refrigerated and used within the timeframe specified by the manufacturer (typically 14 to 30 days for bacteriostatic water reconstitutions, shorter for sterile water).

Small molecules: storage conditions vary by compound; consult the certificate of analysis for the specific product. Most are stable at room temperature in dry, dark conditions; oxidation-sensitive compounds (e.g., catecholamine precursors) require cool storage and protection from light.

8. Stack Interaction Considerations

Investigators combining this compound with other research substances should consider receptor-level interactions (additive effects at shared targets), enzyme-level interactions (CYP-mediated drug-drug interactions where applicable), and pharmacodynamic interactions (additive sedation, additive serotonergic activity, additive hemodynamic effects).

The stack interaction section in published monographs of well-characterized compounds is necessarily incomplete for any specific combination; investigators should treat novel combinations with elevated caution and titrate gradually.

9. References

1. Wagner KR, et al. A phase 2 placebo-controlled trial of domagrozumab in patients with Duchenne muscular dystrophy. *Neurology* 2020.
2. St. Andre M, et al. A mouse anti-myostatin antibody increases muscle mass and improves muscle strength. *Skeletal Muscle* 2017.
3. Bhattacharya I, et al. Pharmacokinetics and pharmacodynamics of domagrozumab. *J Clin Pharmacol* 2018.

This monograph is provided for research use only. Not for medical, diagnostic, or therapeutic purposes. Not for human consumption. Compound class generalizations are noted where compound-specific data are sparse; investigators should weight the evidence accordingly.