

# Dupilumab

[Targets \(1\)](#)[Biointeractions \(1\)](#)

## IDENTIFICATION

### Name

Dupilumab

### Accession Number

DB12159

### Type

Biotech

### Groups

Approved, Investigational



### Biologic Classification

Protein Based Therapies  
Monoclonal antibody (mAb)

### Description

Dupilumab injection to treat adults with moderate-to-severe eczema (atopic dermatitis). Dupilumab is intended for patients whose eczema is not controlled adequately by topical therapies, or those for whom topical therapies are not advisable. Dupilumab can be used with or without topical corticosteroids. FDA approval on March 28, 2017.

### Protein chemical formula

Not Available

### Protein average weight

Not Available


















## Synonyms

Not Available

## External IDs

REGN668 / SAR231893

## Prescription Products

NAME 	DOSAGE 	STRENGTH 	ROUTE 	LABELLER 	MARKETING START 	MARKETING END 		
<b>Dupilumab</b>	Injection, solution	300 mg/2mL	Subcutaneous	Sanofi Aventis	2017-03-28	Not applicable		
<b>Dupilumab</b>	Solution	150 mg	Subcutaneous	Sanofi Aventis	2018-02-06	Not applicable		
<b>Dupilumab</b>	Injection, solution	300 mg/2mL	Subcutaneous	Sanofi Aventis	2017-03-28	Not applicable		

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## Categories

[Amino Acids, Peptides, and Proteins](#)

[Anti-Asthmatic Agents](#)

[Antibodies](#)

[Blood Proteins](#)

[Globulins](#)

[Immunoglobulins](#)

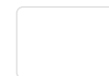
[Immunoproteins](#)

[Interleukin-4 Receptor alpha Antagonist](#)

[Misc. Skin and Mucous Membrane Agents](#)

[Proteins](#)

[Serum Globulins](#)

**CAS number**

1190264-60-8

## PHARMACOLOGY

**Indication**

Dupilumab is a monoclonal antibody designed for the treatment of atopic diseases such as eczema.

**Structured Indications** ⓘ[Severe Atopic Dermatitis](#)[Moderate Atopic dermatitis](#)**Pharmacodynamics**

Consistent with receptor blockade, serum levels of IL-4 and IL-13 were increased following dupilumab treatment. The relationship between the pharmacodynamic activity and the mechanism(s) by which dupilumab exerts its clinical effects is unknown.

**Mechanism of action**

It binds to the alpha subunit of the interleukin-4 receptor (IL-4R $\alpha$ ). Through blockade of IL-4R $\alpha$ , dupilumab modulates signaling of both the interleukin 4 and interleukin 13 pathway.

Ⓐ [Interleukin-4 receptor subunit alpha](#)

antagonist

Human

**Absorption**

Following an initial subcutaneous (SC) dose of 600 mg, dupilumab reached peak mean  $\pm$ SD concentrations (C<sub>max</sub>) of 70.1 $\pm$ 24.1 mcg/mL by approximately 1 week post dose. Steady-state concentrations were achieved by Week 16 following the administration of 600 mg starting dose and 300 mg dose either weekly (twice the recommended dosing frequency) or every other week. Across clinical trials, the mean  $\pm$ SD steady-state trough concentrations ranged from 73.3 $\pm$ 40.0

mcg/mL to 79.9 $\pm$ 41.4 mcg/mL for 300 mg administered every 2 weeks and from 173 $\pm$ 75.9 mcg/mL to 193 $\pm$ 77.0 mcg/mL for 300 mg administered weekly. The bioavailability of dupilumab following a SC dose is estimated to be 64%.



4.8±1.3 L

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### Protein binding

Not Available

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### Metabolism

Not Available

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### Route of elimination

The metabolic pathway of dupilumab has not been characterized. As a human monoclonal IgG4 antibody, dupilumab is expected to be degraded into small peptides and amino acids via catabolic pathways in the same manner as endogenous IgG. After the last steady-state dose of 300 mg Q2W or 300 mg QW dupilumab, the median times to non-detectable concentration (<78 ng/mL) are 10 and 13 weeks, respectively.

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### Half life

Not Available

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### Clearance

Not Available

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### Toxicity

Not Available

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### Affected organisms

Humans and other mammals

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### Pathways

Not Available

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### Pharmacogenomic Effects/ADRs [i](#)

Not Available

## INTERACTIONS

### Drug Interactions [i](#)



DRUG	↕ INTERACTION	↕ DRUG GROUP
<a href="#">Anthrax immune globulin human</a>	The therapeutic efficacy of Anthrax immune globulin human can be decreased when used in combination with Dupilumab.	Approved
<a href="#">Bacillus calmette-guerin substrain connaught live antigen</a>	The therapeutic efficacy of Bacillus calmette-guerin substrain connaught live antigen can be decreased when used in combination with Dupilumab.	Approved, Investigational
<a href="#">Bacillus calmette-guerin substrain tice live antigen</a>	The therapeutic efficacy of Bacillus calmette-guerin substrain tice live antigen can be decreased when used in combination with Dupilumab.	Approved
<a href="#">BCG vaccine</a>	The therapeutic efficacy of BCG vaccine can be decreased when used in combination with Dupilumab.	Investigational
<a href="#">Clostridium tetani toxoid antigen (formaldehyde inactivated)</a>	The therapeutic efficacy of Clostridium tetani toxoid antigen (formaldehyde inactivated) can be decreased when used in combination with Dupilumab.	Approved
<a href="#">Corynebacterium diphtheriae toxoid antigen (formaldehyde inactivated)</a>	The therapeutic efficacy of Corynebacterium diphtheriae toxoid antigen (formaldehyde inactivated) can be decreased when used in combination with Dupilumab.	Approved
<a href="#">G17DT</a>	The therapeutic efficacy of G17DT can be decreased when used in combination with Dupilumab.	Investigational
<a href="#">GI-5005</a>	The therapeutic efficacy of GI-5005 can be decreased when used in combination with Dupilumab.	Investigational
<a href="#">Hepatitis A Vaccine</a>	The therapeutic efficacy of Hepatitis A Vaccine can be decreased when used in combination with Dupilumab.	Approved
<a href="#">Hepatitis B Vaccine (Recombinant)</a>	The therapeutic efficacy of Hepatitis B Vaccine (Recombinant) can be decreased when used in combination with Dupilumab.	Approved, Withdrawn

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## Food Interactions

Not Available

## REFERENCES

### General References

1. Wenzel S, Ford L, Pearlman D, Spector S, Sher L, Skobieranda F, Wang L, Kirkesseli S, Rocklin R, Bock B, Hamilton J, Ming JE, Radin A, Stahl N, Yancopoulos GD, Graham N, Pirozzi G: Dupilumab in persistent asthma

**External Links**

PubChem Substance

[347911292](#)

Wikipedia

[Dupilumab](#)**AHFS Codes**

84:92.00 — Misc. Skin and Mucous Membrane Agents

## CLINICAL TRIALS

**Clinical Trials** ⓘ

Search

PHASE	STATUS	PURPOSE	CONDITIONS	COUNT
1	Active Not Recruiting	Treatment	<a href="#">Atopic Dermatitis (AD)</a> / <a href="#">Atopic disorders</a>	1
1	Completed	Basic Science	<a href="#">Atopic Dermatitis (AD)</a>	1
1	Completed	Treatment	<a href="#">Healthy Volunteers</a>	2
1	Completed	Treatment	<a href="#">Skin Inflammation</a>	1
1	Recruiting	Treatment	<a href="#">Asthma, Allergic</a>	1
1, 2	Completed	Treatment	<a href="#">Atopic Dermatitis (AD)</a>	1
2	Completed	Treatment	<a href="#">Asthma Bronchial</a>	2
2	Completed	Treatment	<a href="#">Atopic Dermatitis (AD)</a>	6
2	Completed	Treatment	<a href="#">Oesophagitis, Eosinophilic</a>	1
2	Completed	Treatment	<a href="#">Polyps, Nasal</a>	1

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## PHARMACOECONOMICS



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**Packagers**Not Available

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**Dosage forms**

FORM	↕ ROUTE	↕ STRENGTH	↕
Injection, solution	Subcutaneous	300 mg/2mL	
Solution	Subcutaneous	150 mg	

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**Prices**Not Available

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**Patents**

Not Available

**PROPERTIES****State**Not Available

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**Experimental Properties**

Not Available

**TAXONOMY****Description**Not Available

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**Kingdom**Organic Compounds

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**Class**

Carboxylic Acids and Derivatives

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**Sub Class**

Amino Acids, Peptides, and Analogues

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**Direct Parent**

Peptides

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**Alternative Parents**

Not Available

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**Substituents**

Not Available

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**Molecular Framework**

Not Available

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**External Descriptors**

Not Available

## TARGETS

**1. Interleukin-4 receptor subunit alpha****Kind**

Protein

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**Organism**

Human

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**Pharmacological action**

Yes

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**Actions**





Receptor signaling protein activity

### Specific Function

Receptor for both interleukin 4 and interleukin 13. Couples to the JAK1/2/3-STAT6 pathway. The IL4 response is involved in promoting Th2 differentiation. The IL4/IL13 responses are involved in regu...

### Gene Name

IL4R

### Uniprot ID

[P24394](#)

### Uniprot Name

Interleukin-4 receptor subunit alpha

### Molecular Weight

89657.42 Da

### References

1. Wenzel S, Ford L, Pearlman D, Spector S, Sher L, Skobieranda F, Wang L, Kirkesseli S, Rocklin R, Bock B, Hamilton J, Ming JE, Radin A, Stahl N, Yancopoulos GD, Graham N, Pirozzi G: Dupilumab in persistent asthma with elevated eosinophil levels. N Engl J Med. 2013 Jun 27;368(26):2455-66. doi: 10.1056/NEJMoa1304048. Epub 2013 May 21. [[PubMed:23688323](#)]

Drug created on October 20, 2016 15:30 / Updated on May 15, 2018 11:55

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This project is supported by the **Canadian Institutes of Health Research** (award #111062), **Alberta Innovates - Health Solutions**, and by **The Metabolomics Innovation Centre (TMIC)**, a nationally-funded research and core facility that supports a wide range of cutting-edge metabolomic studies. TMIC is funded by **Genome Alberta**, **Genome British Columbia**, and **Genome Canada**, a not-for-profit organization that is leading Canada's national genomics strategy with funding from the federal government. Maintenance, support, and commercial licensing is provided by **OMx Personal Health Analytics, Inc.** Designed by **Educe Design & Innovation Inc.**

