



# Guselkumab

Targets (1)

Biointeractions (1)

## IDENTIFICATION

### Name

Guselkumab

### Accession Number

DB11834

### Type

Biotech

### Groups

Approved, Investigational

### Biologic Classification

Protein Based Therapies  
Monoclonal antibody (mAb)

### Description

Guselkumab is a human immunoglobulin G1 lambda (IgG1 $\lambda$ ) monoclonal antibody that selectively blocks interleukin-23. IL-23 is an inflammatory cytokine that activates the CD4+ T-helper (Th17) cell pathway to mediate the inflammatory cascade that induces psoriatic plaque formation [2]. In clinical trials, guselkumab demonstrated improved skin clearance and symptomatic improvements in dermatological manifestations of psoriasis.

Developed by Janssen, the subcutaneous injection form of guselkumab was approved in July 2017 under the market name Tremfya for the treatment of adult patients with moderate-to-severe plaque psoriasis.

### Protein chemical formula

 $C_{6402}H_{9864}N_{1676}O_{1994}S_{42}$



## Sequences

>Heavy chain

```

EVQLVQSGAEVKKPGESLKISCKGSGYSFSNYWIGWVRQMPGKGLEWMGIIDPSNSYTRY
SPSFQGGVLTISADKSISTAYLQWSSLKASDTAMYYCARWYKPFQVWGGTGLVTVSSAST
KGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLY
SLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSCDKTHTCPPCPAPELGGPSV
FLFPPKPKDITLISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTY
RVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTK
NQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQG
NVFSCSVMHREALHNYTQKSLSLSPGK

```

>Light chain

```

QSVLTQPPSVSGAPGQRVTISCTGSSSNIGSGYDVHWYQQLPGTAPKLLIYGNSKRPSGV
PDRFSGSKSGTSASLAITGLQSEDEADYYCASWTDGLSLVVFGGGKLTVLGQPKAAPSV
TLFPPSSEELQANKATLVCLISDFYPGAVTVAWKADSSPVKAGVETTTPSKQSNKYAAS
SYLSLTPEQWKSHRYSYSCQVTHEGSTVEKTVAPTECS

```

[Download FASTA Format](#)

## Synonyms









Not Available

## External IDs

CNT01959

## Prescription Products

Search

NAME 	DOSAGE 	STRENGTH 	ROUTE 	LABELLER 	MARKETING START 	MARKETING END 			
<b>Tremfya</b>	Injection	100 mg/mL	Subcutaneous	Janssen Biotech, Inc.	2017-07-13	Not applicable			
<b>Tremfya</b>	Solution	100 mg	Subcutaneous	Janssen Pharmaceuticals	2017-11-27	Not applicable			

Showing 1 to 2 of 2 entries

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## Categories

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



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[Globulins](#)

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[Immunoglobulins](#)

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[Immunoproteins](#)

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[Interleukin-23 Antagonist](#)

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

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[Proteins](#)

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[Serum Globulins](#)

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**UNII**[089658A12D](#)

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**CAS number**

1350289-85-8

**PHARMACOLOGY****Indication**

Indicated for the treatment of adults with moderate-to-severe plaque psoriasis who are candidates for systemic therapy or phototherapy.

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**Associated Conditions**[Severe Plaque psoriasis](#)[Moderate Plaque psoriasis](#)

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**Pharmacodynamics**

Guselkumab is shown to reduce serum levels of IL-17A, IL-17F and IL-22 [\[Label\]](#).

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**Mechanism of action**

Guselkumab targets the p19 alpha subunit of IL-23. While IL-23 promotes the normal inflammatory and immune responses, the p19 and p40 subunits of IL-23 are found to be over-expressed in the condition of psoriasis and other autoimmune inflammatory skin diseases [\[2, 4\]](#). Guselkumab selectively binds to the p19 subunit of IL-23 in dendritic cells and keratinocytes and blocks its interaction with IL-23 receptor, which further prevents the release of other pro-inflammatory cytokines and chemokines via stimulation of immune cells such as Th17 cells [\[Label\]](#). Thus,

**A Interleukin-23 subunit alpha**

blocker

Human

**Absorption**

Following a 100mg subcutaneous administration, the peak plasma concentration (C<sub>max</sub>) of guselkumab is 8.09 ± 3.68 mcg/mL which is reached after approximately 5.5 days [Label].

**Volume of distribution**

The apparent volume of distribution is 13.5 L [Label].

**Protein binding**

Not Available

**Metabolism**

Like other human IgG monoclonal antibodies, guselkumab is expected to be degraded into small peptides and amino acids via catabolic pathways [Label].

**Route of elimination**

Like other human IgG monoclonal antibodies, guselkumab is expected to be both renally and fecally excreted as smaller peptide units.

**Half life**

Mean half-life of guselkumab is approximately 15 to 18 days in subjects with plaque psoriasis [Label].

**Clearance**

Apparent clearance in subjects with plaque psoriasis is 0.516 L/day [Label].

**Toxicity**

Animal studies to assess the effect of guselkumab on carcinogenesis, mutagenesis and impairment on fertility have not been conducted. When subcutaneously injected into guinea pigs, the doses of guselkumab up to 100mg/kg twice-weekly demonstrated no effects on fertility parameters [Label].

**Affected organisms**

**Pathways**

Not Available

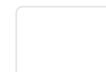
**Pharmacogenomic Effects/ADRs** ⓘ

Not Available

**INTERACTIONS****Drug Interactions** ⓘ

Search

<b>DRUG</b>	<b>INTERACTION</b>	<b>DRUG GROUP</b>
<a href="#">Anthrax immune globulin human</a>	The therapeutic efficacy of Anthrax immune globulin human can be decreased when used in combination with Guselkumab.	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 Guselkumab.	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 Guselkumab.	Approved
<a href="#">BCG vaccine</a>	The therapeutic efficacy of BCG vaccine can be decreased when used in combination with Guselkumab.	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 Guselkumab.	Approved
Corynebacterium diphtheriae toxoid antigen (formaldehyde inactivated)	The therapeutic efficacy of Corynebacterium diphtheriae toxoid antigen (formaldehyde inactivated) can be decreased when used in combination with Guselkumab.	Approved
<a href="#">G17DT</a>	The therapeutic efficacy of G17DT can be decreased when used in combination with Guselkumab.	Investigational
GI-5005	The therapeutic efficacy of GI-5005 can be decreased when used in combination with Guselkumab.	Investigational
<a href="#">Hepatitis A Vaccine</a>	The therapeutic efficacy of Hepatitis A Vaccine can be decreased when used in combination with Guselkumab.	Approved



[Hepatitis B Vaccine \(Recombinant\)](#)

The therapeutic efficacy of Hepatitis B Vaccine (Recombinant) can be decreased when used in combination with Guselkumab.

Approved,  
Withdrawn

Showing 1 to 10 of 26 entries

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## Food Interactions

Not Available

## REFERENCES

### General References

1. Sofen H, Smith S, Matheson RT, Leonardi CL, Calderon C, Brodmerkel C, Li K, Campbell K, Marciniak SJ Jr, Wasfi Y, Wang Y, Szapary P, Krueger JG: Guselkumab (an IL-23-specific mAb) demonstrates clinical and molecular response in patients with moderate-to-severe psoriasis. *J Allergy Clin Immunol*. 2014 Apr;133(4):1032-40. doi: 10.1016/j.jaci.2014.01.025. [[PubMed:24679469](#)]
2. Levin AA, Gottlieb AB: Specific targeting of interleukin-23p19 as effective treatment for psoriasis. *J Am Acad Dermatol*. 2014 Mar;70(3):555-61. doi: 10.1016/j.jaad.2013.10.043. Epub 2013 Dec 24. [[PubMed:24373779](#)]
3. Gaspari AA, Tying S: New and emerging biologic therapies for moderate-to-severe plaque psoriasis: mechanistic rationales and recent clinical data for IL-17 and IL-23 inhibitors. *Dermatol Ther*. 2015 Jul-Aug;28(4):179-93. doi: 10.1111/dth.12251. [[PubMed:26201310](#)]
4. Fitch E, Harper E, Skorcheva I, Kurtz SE, Blauvelt A: Pathophysiology of psoriasis: recent advances on IL-23 and Th17 cytokines. *Curr Rheumatol Rep*. 2007 Dec;9(6):461-7. [[PubMed:18177599](#)]

### External Links

PubChem Substance

[347911245](#)

Wikipedia

[Guselkumab](#)

### AHFS Codes

84:92.00 — Misc. Skin and Mucous Membrane Agents

### FDA label

[Download](#) (672 KB)

## CLINICAL TRIALS



PHASE	↕ STATUS	↕ PURPOSE	↕ CONDITIONS	↕ COUNT	↕
1	Completed	Not Available	<a href="#">Healthy Volunteers</a>	1	
1	Completed	Treatment	<a href="#">Healthy Volunteers</a>	1	
1	Completed	Treatment	<a href="#">Psoriasis</a>	2	
1	Not Yet Recruiting	Other	<a href="#">Healthy Volunteers</a>	1	
2	Active Not Recruiting	Treatment	<a href="#">Psoriatic Arthritis</a>	1	
2	Completed	Treatment	<a href="#">Palmoplantar Pustulosis</a>	1	
2	Completed	Treatment	<a href="#">Psoriasis</a>	1	
2, 3	Recruiting	Treatment	<a href="#">Crohn's Disease (CD)</a>	1	
3	Active Not Recruiting	Treatment	<a href="#">Palmoplantar Pustulosis</a>	1	
3	Active Not Recruiting	Treatment	<a href="#">Psoriasis</a>	5	

Showing 1 to 10 of 15 entries

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## PHARMACOECONOMICS

**Manufacturers**

Not Available

**Packagers**

Not Available

**Dosage forms**

FORM	↕ ROUTE	↕ STRENGTH	↕
Injection	Subcutaneous	100 mg/mL	
Solution	Subcutaneous	100 mg	

Showing 1 to 2 of 2 entries

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**Prices**

Not Available



Not Available

## PROPERTIES

### State

Liquid

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### Experimental Properties

Not Available

## TAXONOMY

### Description

Not Available

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### Kingdom

Organic Compounds

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### Super Class

Organic Acids

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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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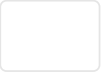
### Substituents

Not Available

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### Molecular Framework





## External Descriptors

Not Available

## TARGETS

### 1. Interleukin-23 subunit alpha

#### Kind

Protein

#### Organism

Human

#### Pharmacological action

Yes

#### Actions

Blocker

#### General Function

Not Available

#### Specific Function

Associates with IL12B to form the IL-23 interleukin, a heterodimeric cytokine which functions in innate and adaptive immunity. IL-23 may constitute with IL-17 an acute response to infection in peri...

#### Gene Name

IL23A

#### Uniprot ID

[Q9NPF7](#)

#### Uniprot Name

Interleukin-23 subunit alpha

#### Molecular Weight

20729.56 Da

References



10.1007/s13555-015-0092-3. Epub 2015 Dec 29. [[PubMed:26714681](#)]

Drug created on October 20, 2016 14:52 / Updated on July 13, 2018 01:14

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