

Beta-3 adrenergic receptor

The **beta-3 adrenergic receptor** (β_3 adrenoreceptor), also known as **ADRB3**, is a beta-adrenergic receptor, and also denotes the human gene encoding it.^[1]

1 Function

Actions of the β_3 receptor include:

- Enhancement of lipolysis in adipose tissue.^[2]
- Thermogenesis in skeletal muscle^[3]

It is located mainly in adipose tissue and is involved in the regulation of lipolysis and thermogenesis. Some β_3 agonists have demonstrated antistress effects in animal studies, suggesting it also has a role in the central nervous system (CNS). β_3 receptors are found in the gallbladder, urinary bladder, and in brown adipose tissue. Their role in gallbladder physiology is unknown, but they are thought to play a role in lipolysis and thermogenesis in brown fat. In the urinary bladder it is thought to cause relaxation of the bladder and prevention of urination.^[4]

2 Mechanism of action

Beta adrenergic receptors are involved in the epinephrine- and norepinephrine-induced activation of adenylate cyclase through the action of the G proteins of the type G_s .^[1]

3 Ligands

3.1 Agonists

- Amibegron (SR-58611A)^{[5][6]}
- CL-316,243^[7]
- L-742,791^[8]
- L-796,568^[9]
- LY-368,842
- Mirabegron (YM-178),^[10] approved for treatment of overactive bladder in Japan, United States, UK, Canada, China and India.

- Ro40-2148
- Solabegron (GW-427,353)^[11]

A selective β_3 agonist has potential weight loss effects through modulation of lipolysis.^[2]

3.2 Antagonists

- L-748,328^[8]
- L-748,337^[8]
- SR 59230A was thought to be a selective β_3 antagonist^[12] but later found to also be an antagonist of the α_1 receptor.^[13]

4 Interactions

Beta-3 adrenergic receptor has been shown to interact with Src.^[14]

5 See also

- Other adrenergic receptors
 - Alpha-1 adrenergic receptor
 - Alpha-2 adrenergic receptor
 - Beta-1 adrenergic receptor
 - Beta-2 adrenergic receptor
 - Beta Blocker

6 References

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7 Further reading

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8 External links

- " β_3 -adrenoceptor". *IUPHAR Database of Receptors and Ion Channels*. International Union of Basic and Clinical Pharmacology.

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9.1 Text

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