# Alpha 1 Receptor

The alpha 1 adrenergic receptor is a G protein coupled receptor (GPCR) that is associated with the Gq subunit. The Gq subunit activates phospholipase C, which hydrolyzes PIP2 to DAG and IP3 in signal transduction pathways. DAG then acts as a second messenger that activates protein kinase C and IP3 plays a role in phosphorylation of certain proteins. Catecholamines including norepinephrine and epinephrine signal through the alpha 1 receptor in the central and peripheral nervous systems. Activation of this receptor has several effects on the body including increased vascular smooth muscle contraction, increased pupillary dilator muscle contraction, and increased intestinal and bladder sphincter muscle contraction.




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## Characteristics

**Gq Subunit**

Gq Magazine

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**Increase Vascular Smooth Muscle Contraction**

Up-arrow Vessel and Smoothie-muscle with Flexing-arm

Activation of this receptor in the smooth muscle of blood vessels leads to vasoconstriction of both arteries and veins, leading to increased blood pressure seen in the sympathetic response.

**Increase Pupillary Dilator Muscle Contraction**

Purple-pupils Dilated

Alpha 1 receptors are present in the pupillary dilator muscles. Activation leads to an increase in pupillary dilator muscle contraction, also known as mydriasis. This is responsible for pupil dilation seen in the sympathetic response.

**Increase Intestinal and Bladder Sphincter Muscle Contraction**

Intestines and Bladder on Sphinx Flexing

Activation of alpha 1 receptors leads to increase contraction of intestinal and bladder sphincter muscles. This leads to decreased micturition and defecation during times of stress.

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