

Regulators of G protein Signaling (RGS) proteins (version 2020.4) in the IUPHAR/BPS Guide to Pharmacology Database

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Abstract

Regulator of G protein Signaling, or RGS, proteins serve an important regulatory role in signaling mediated by G protein-coupled receptors (GPCRs). They all share a common RGS domain that directly interacts with active, GTP-bound G α subunits of heterotrimeric G proteins. RGS proteins stabilize the transition state for GTP hydrolysis on G α and thus induce a conformational change in the G α subunit that accelerates GTP hydrolysis, thereby effectively turning off signaling cascades mediated by GPCRs. This GTPase accelerating protein (GAP) activity is the canonical mechanism of action for RGS proteins, although many also possess additional functions and domains. RGS proteins are divided into four families, R4, R7, R12 and RZ based on sequence homology, domain structure as well as specificity towards G α subunits. For reviews on RGS proteins and their potential as therapeutic targets, see *e.g.* [160, 377, 411, 415, 416, 512, 519, 312, 6].

Contents


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Database links

[Regulators of G protein Signaling \(RGS\) proteins](#)

<http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=891>

[RZ family](#)

<http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=892>

[Targets](#)

[RGS17\(regulator of G-protein signaling 17\)](#)

<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2801>
RGS19(regulator of G-protein signaling 19)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2802>
RGS20(regulator of G-protein signaling 20)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2803>

R4 family

<http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=893>

Targets

RGS1(regulator of G-protein signaling 1)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2804>
RGS2(regulator of G-protein signaling 2)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2808>
RGS3(regulator of G-protein signaling 3)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2810>
RGS4(regulator of G-protein signaling 4)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2811>
RGS5(regulator of G-protein signaling 5)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2812>
RGS8(regulator of G-protein signaling 8)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2813>
RGS13(regulator of G-protein signaling 13)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2805>
RGS16(regulator of G-protein signaling 16)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2806>
RGS18(regulator of G-protein signaling 18)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2807>
RGS21(regulator of G-protein signaling 21)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2809>

R7 family

<http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=894>

Targets

RGS6(regulator of G-protein signaling 6)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2815>
RGS7(regulator of G-protein signaling 7)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2816>
RGS9(regulator of G-protein signaling 9)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2817>
RGS11(regulator of G-protein signaling 11)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2814>

R12 family

<http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=895>

Targets

RGS10(regulator of G-protein signaling 10)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2818>
RGS12(regulator of G-protein signaling 12)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2819>
RGS14(regulator of G-protein signaling 14)
<http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=2820>

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