Adenylyl cyclases (ACs) (version 2019.4) in the IUPHAR/BPS Guide to Pharmacology Database

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Abstract

Adenylyl cyclase, E.C. 4.6.1.1, converts ATP to cyclic AMP and pyrophosphate. Mammalian membrane-delimited adenylyl cyclases (nomenclature as approved by the NC-IUPHAR Subcommittee on Adenylyl cyclases [10]) are typically made up of two clusters of six TM domains separating two intracellular, overlapping catalytic domains that are the target for the nonselective activators Gαₜ (the stimulatory G protein α subunit) and forskolin (except AC9, [26]). adenosine and its derivatives (e.g. 2',5'-dideoxyadenosine), acting through the P-site, are inhibitors of adenylyl cyclase activity [33]. Four families of membranous adenylyl cyclase are distinguishable: calmodulin-stimulated (AC1, AC3 and AC8), Ca²⁺- and Gβγ-inhibitable (AC5, AC6 and AC9), Gβγ-stimulated and Ca²⁺-insensitive (AC2, AC4 and AC7), and forskolin-insensitive (AC9) forms. A soluble adenylyl cyclase (AC10) lacks membrane spanning regions and is insensitive to G proteins. It functions as a cytoplasmic bicarbonate (pH-insensitive) sensor [6].

Contents

This is a citation summary for Adenylyl cyclases (ACs) in the Guide to Pharmacology database (GtoPdb). It exists purely as an adjunct to the database to facilitate the recognition of citations to and from the database by citation analyzers. Readers will almost certainly want to visit the relevant sections of the database which are given here under database links.

GtoPdb is an expert-driven guide to pharmacological targets and the substances that act on them. GtoPdb is a reference work which is most usefully represented as an on-line database. As in any publication this work should be appropriately cited, and the papers it cites should also be recognized. This document provides a citation for the relevant parts of the database, and also provides a reference list for the research cited by those parts.

Please note that the database version for the citations given in GtoPdb are to the most recent preceding version in which the family or its subfamilies and targets were substantially changed. The links below are to the current version. If you need to consult the cited version, rather than the most recent version, please contact the GtoPdb curators.

Database links
Adenylyl cyclases (ACs)
http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=257

Enzymes

AC1 (adenylyl cyclase 1)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1278

AC2 (adenylyl cyclase 2)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1279

AC3 (adenylyl cyclase 3)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1280

AC4 (adenylyl cyclase 4)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1281

AC5 (adenylyl cyclase 5)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1282

AC6 (adenylyl cyclase 6)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1283

AC7 (adenylyl cyclase 7)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1284

AC8 (adenylyl cyclase 8)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1285

AC9 (adenylyl cyclase 9)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1286

AC10 (adenylyl cyclase 10)
http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=3068

References


