IUPHAR/BPS Guide to Pharmacology CITE
https://doi.org/10.2218/gtopdb/F151/2019.4

ABCA subfamily (version 2019.4) in the IUPHAR/BPS Guide to Pharmacology Database

Mary Vore[1]

1. University of Kentucky, USA

Abstract

To date, 12 members of the human ABCA subfamily are identified. They share a high degree of sequence conservation and have been mostly related with lipid trafficking in a wide range of body locations. Mutations in some of these genes have been described to cause severe hereditary diseases related with lipid transport, such as fatal surfactant deficiency or harlequin ichthyosis. In addition, most of them are hypothesized to participate in the subcellular sequestration of drugs, thereby being responsible for the resistance of several carcinoma cell lines against drug treatment [1].

Contents

This is a citation summary for ABCA subfamily 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

ABCA subfamily
http://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=151

- Transporters
  - ABC1, CERP(ABCA1)
    http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=756
  - ABC2(ABCA2)
    http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=757

ABC3, ABCC(ABCA3)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=758

ABCR(ABCA4)

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=759

ABCA5

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=760

ABCA6

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=761

ABCA7

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=762

ABCA8

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=763

ABCA9

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=764

ABCA10

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=765

ABCA12

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=766

ABCA13

http://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=767

References

1. Albrecht C and Viturro E. (2007) The ABCA subfamily--gene and protein structures, functions and associated hereditary diseases. *Pflugers Arch.* **453**: 581-9 [PMID:16586097]
2. DeStefano GM, Kurban M, Anyane-Yeboa K, Dall'Armi C, Di Paolo G, Feenstra H, Silverberg N, Rohena L, López-Cepeda LD and Jobanputra V *et al.*. (2014) Mutations in the cholesterol transporter gene ABCA5 are associated with excessive hair overgrowth. *PLoS Genet.* **10**: e1004333 [PMID:24831815]
3. Favari E, Zanotti I, Zimetti F, Ronda N, Bernini F and Rothblat GH. (2004) Probucol inhibits ABCA1-mediated cellular lipid efflux. *Arterioscler. Thromb. Vasc. Biol.* **24**: 2345-50 [PMID:15514211]
4. Fu Y, Mukhamedova N, Ip S, D'Souza W, Henley KJ, DiTommaso T, Kesani R, Ditiatkovski M, Jones L and Lane RM *et al.*. (2013) ABCA12 regulates ABCA1-dependent cholesterol efflux from macrophages and the development of atherosclerosis. *Cell Metab.* **18**: 225-38 [PMID:23931754]
5. Fujinami K, Zernant J, Chana RK, Wright GA, Tsunoda K, Ozawa Y, Tsubota K, Robson AG, Holder GE and Allikmets R *et al.*. (2015) Clinical and molecular characteristics of childhood-onset Stargardt disease. *Ophthalmology* **122**: 326-34 [PMID:25312043]
6. Hollingworth P, Harold D, Sims R, Gerrish A, Lambert JC, Carrasquillo MM, Abraham R, Hamshere ML, Pahwa JS and Moskvina V *et al.*. (2011) Common variants at ABCA7, MS4A6A/MS4A4E, EPHA1, CD33 and CD2AP are associated with Alzheimer's disease. *Nat. Genet.* **43**: 429-35 [PMID:21460840]
7. Koldamova R, Fitz NF and Lefterov I. (2014) ATP-binding cassette transporter A1: from metabolism to neurodegeneration. *Neurobiol. Dis.* **72 Pt A**: 13-21 [PMID:24844148]
8. Nawaz S, Tariq M, Ahmad I, Malik NA, Baig SM, Dahl N and Klar J. (2012) Non-bullous congentital ichthyosiform erythroderma associated with homozygosity for a novel missense mutation in an ATP binding domain of ABCA12. *Eur J Dermatol* **22**: 178-81 [PMID:22257947]
9. Quazi F and Molday RS. (2014) ATP-binding cassette transporter ABCA4 and chemical isomerization protect photoreceptor cells from the toxic accumulation of excess 11-cis-retinal. *Proc. Natl. Acad. Sci. U.S.A.* **111**: 5024-9 [PMID:24707049]
10. Rodríguez-Pazos L, Ginarte M, Vega A and Toribio J. (2013) Autosomal recessive congenital ichthyosis. *Actas Dermosifiliogr* **104**: 270-84 [PMID:23562412]
11. Sethi AA, Stonik JA, Thomas F, Demosky SJ, Amar M, Neufeld E, Brewer HB, Davidson WS, D'Souza W and Sviridov D *et al.*. (2008) Asymmetry in the lipid affinity of bihelical amphipathic peptides. A structural

determinant for the specificity of ABCA1-dependent cholesterol efflux by peptides. *J. Biol. Chem.* **283**: 32273-82 [PMID:18805791]

12. van Leeuwen EM, Karssen LC, Deelen J, Isaacs A, Medina-Gomez C, Mbarek H, Kanterakis A, Trompet S, Postmus I and Verweij N *et al.*. (2015) Genome of The Netherlands population-specific imputations identify an ABCA6 variant associated with cholesterol levels. *Nat Commun* **6**: 6065 [PMID:25751400]
13. Wu CA, Tsujita M, Hayashi M and Yokoyama S. (2004) Probucol inactivates ABCA1 in the plasma membrane with respect to its mediation of apolipoprotein binding and high density lipoprotein assembly and to its proteolytic degradation. *J. Biol. Chem.* **279**: 30168-74 [PMID:15140889]
14. Zuo Y, Zhuang DZ, Han R, Isaac G, Tobin JJ, McKee M, Welti R, Brissette JL, Fitzgerald ML and Freeman MW. (2008) ABCA12 maintains the epidermal lipid permeability barrier by facilitating formation of ceramide linoleic esters. *J. Biol. Chem.* **283**: 36624-35 [PMID:18957418]