

PRKAR1A gene

protein kinase cAMP-dependent type I regulatory subunit alpha

Normal Function

The *PRKAR1A* gene provides instructions for making one part (subunit) of an enzyme called protein kinase A. This enzyme promotes cell growth and division (proliferation). Protein kinase A is made up of four protein subunits, two of which are called regulatory subunits because they control whether this enzyme is turned on or off. The *PRKAR1A* gene provides instructions for making one of these regulatory subunits, called type 1 alpha. Protein kinase A remains turned off when the regulatory subunits are attached to the other two subunits of the enzyme. In order to turn on protein kinase A, the regulatory subunits must break away from the enzyme.

Health Conditions Related to Genetic Changes

Carney complex

More than 117 mutations in the *PRKAR1A* gene have been found to cause Carney complex. Most of these mutations result in an abnormal type 1 alpha regulatory subunit that is quickly broken down (degraded) by the cell. The lack of this regulatory subunit causes protein kinase A to be turned on more often than normal, which leads to uncontrolled cell proliferation. The signs and symptoms of Carney complex are related to the unregulated growth of cells in many parts of the body.

Other Names for This Gene

- cAMP-dependent protein kinase regulatory subunit RIalpha
- cAMP-dependent protein kinase type I-alpha regulatory chain
- CAR
- CNC1
- DKFZp779L0468
- KAP0_HUMAN
- MGC17251
- PKR1
- PPNAD1

- PRKAR1
- protein kinase A type 1a regulatory subunit
- protein kinase, cAMP-dependent, regulatory subunit type I alpha
- protein kinase, cAMP-dependent, regulatory, type I, alpha
- protein kinase, cAMP-dependent, regulatory, type I, alpha (tissue specific extinguisher 1)
- tissue-specific extinguisher 1
- TSE1

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of PRKAR1A ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=5573\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=5573[geneid]))

Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28PRKAR1A%5BTIAB%5D%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+1440+days%22%5Bdp%5D>)

Catalog of Genes and Diseases from OMIM

- PROTEIN KINASE, cAMP-DEPENDENT, REGULATORY, TYPE I, ALPHA; PRKAR1A (<https://omim.org/entry/188830>)

Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/5573>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=PRKAR1A\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=PRKAR1A[gene]))

References

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Genomic Location

The *PRKAR1A* gene is found on chromosome 17 (<https://medlineplus.gov/genetics/chromosome/17/>).

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