

ATIC

Identity

Other names	PURH AICARFT/IMPCHASE (5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase) AICARFT IMPCHASE
Hugo Location	<u>ATIC</u> 2q35

[ATIC \(2p35\)](#) - Courtesy Mariano Rocchi, [Resources for Molecular Cytogenetics](#).
Laboratories willing to validate the probes are welcome : contact rochi@biologia.uniba.it

DNA/RNA

Transcription 1776 bp mRNA; transcribed in a centromeric to telomeric orientation

Protein

Description	591 amino acids, 64 kDa; two functional domains separated by a linker region with a dimerization domain (amino acids 170 to 199): amino acids 1 to 169 encode the IMP cyclohydrolase (IMPCH) function, and amino acids 200 to 591 encode the 5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase (AICARFT) function; homodimer
Expression	wide
Function	bifunctional purine biosynthesis:9th and 10th step of the de novo purine synthesis
Homology	belongs to the PURH family

Implicated in

Entity	inv(2)(p23q35) --> ATIC- ALK
Disease	found in rare cases of ALK+ anaplastic large cell lymphoma
Cytogenetics	hidden translocation most often
Hybrid/Mutated Gene	5' ATIC - 3' ALK
Abnormal Protein	791 amino acids, 87 kDa. 229 N-term amino acid from ATIC containing the IMPCH domain and the dimerization domain fused to the 562 C-term amino acids from ALK (i.e. the entire cytoplasmic portion of ALK with the tyrosine kinase domain); cytoplasmic localisation only.
Oncogenesis	ATIC seems to provoke the dimerization of ATIC-ALK, which should lead to constitutive autophosphorylation and activation of the ALK tyrosine kinase, as for NPM1-ALK (see t(2;5)(p23;q35)).

External links

Nomenclature

Hugo	ATIC
GDB	ATIC
Entrez Gene	ATIC 471 5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
Cards	
Atlas	ATICID227
GeneCards	ATIC
Ensembl	ATIC
CancerGene	ATIC
Genatlas	ATIC
GeneLynx	ATIC
eGenome	ATIC
euGene	471
Genomic and cartography	
GoldenPath	ATIC - 2q35 chr2:216002342-216039983 + 2q35 (hg17-May_2004)
Ensembl	ATIC - 2q35 [CytoView]
NCBI	Genes Cyto Gene Seq [Map View - NCBI]
OMIM	Disease map [OMIM]
HomoloGene	ATIC
Gene and transcription	
Genbank	AB062403 [SRS] AB062403 [ENTREZ]
Genbank	BC008879 [SRS] BC008879 [ENTREZ]
Genbank	D82348 [SRS] D82348 [ENTREZ]
Genbank	D89976 [SRS] D89976 [ENTREZ]
Genbank	U37436 [SRS] U37436 [ENTREZ]
RefSeq	NM_004044 [SRS] NM_004044 [ENTREZ]
RefSeq	NT_086634 [SRS] NT_086634 [ENTREZ]
AceView	ATIC AceView - NCBI
TRASER	ATIC Traser - Stanford
Unigene	Hs.90280 [SRS] Hs.90280 [NCBI] HS90280 [spliceNest]
Protein : pattern, domain, 3D structure	
SwissProt	P31939 [SRS] P31939 [EXPASY] P31939 [INTERPRO]
Interpro	IPR002695 AICARFT_IMPCHas [SRS] IPR002695
Interpro	AICARFT_IMPCHas [EBI]
Interpro	IPR004362 MG synth like [SRS] IPR004362 MG synth like [EBI]
CluSTR	P31939
Pfam	PF01808 AICARFT_IMPCHas [SRS] PF01808 AICARFT_IMPCHas [Sanger] pfam01808 [NCBI-CDD]
Pfam	PF02142 MGS [SRS] PF02142 MGS [Sanger] pfam02142 [NCBI-CDD]
Prodom	PD004666 AICARFT_IMPCHas [INRA-Toulouse]
Prodom	P31939 PUR9 HUMAN [Domain structure] P31939 PUR9 HUMAN [sequences sharing at least 1 domain]
Blocks	P31939
PDB	1PKX [SRS] 1PKX [PdbSum], 1PKX [IMB]
Polymorphism : SNP, mutations, diseases	
OMIM	601731 [map]
GENECLINICS	601731
SNP	ATIC [dbSNP-NCBI]
SNP	NM_004044 [SNP-NCI]
SNP	ATIC [GeneSNPs - Utah] ATIC [SNP - CSHL] ATIC [HGBASE - SRS]

General knowledge

Family Browser	ATIC [UCSC Family Browser]
SOURCE	NM_004044
SMD	Hs.90280
SAGE	Hs.90280
Enzyme	2.1.2.3 [Enzyme-SRS] 2.1.2.3 [Brenda-SRS] 2.1.2.3 [KEGG] 2.1.2.3 [WIT]
Amigo	function IMP cyclohydrolase activity
Amigo	function hydrolase activity
Amigo	process nucleobase, nucleoside, nucleotide and nucleic acid metabolism
Amigo	function phosphoribosylaminoimidazolecarboxamide formyltransferase activity
Amigo	process purine nucleotide biosynthesis
Amigo	function transferase activity
KEGG	Purine Metabolism
KEGG	One Carbon Pool by Folate
PubGene	ATIC

Other databases

Probes

Probe	Cancer Cytogenetics (Bari)
Probe	ATIC Related clones (RZPD - Berlin)

PubMed

PubMed	8 Pubmed reference(s) in LocusLink
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Bibliography

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Rayl EA, Moroson BA, Beardsley GP.
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Sugita T, Aya H, Ueno M, Ishizuka T, Kawashima K.
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Trinei M, Lanfrancone L, Campo E, Pulford K, Mason DY, Pelicci PG, Falini B.
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Leukemia 2000; 14: 1533-1559.

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Morris SW, Xue L, Ma Z, Kinney MC.
Br J Haematol 2001; 113: 275-295.
Medline [21275125](#)

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Contributor(s)

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URL : <http://www.infobiogen.fr/services/chromcancer/Genes/ATICID227.html>

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