



Bioinformática

Ontocancro

Ontocancro

- ▶ Ontocancro é uma ontologia extensível e possui uma arquitetura projetada para facilitar a integração de dados originários de diferentes bancos de dados públicos.
- ▶ A Ontocancro está armazenada em uma base de dados de conhecimento projetada para ser uma fonte de informação sobre a integração de dados de transcriptoma e interactoma envolvidos em vias metabólicas (*gene pathways*) de relacionadas a câncer.

Ontocancro - conceitos

- ▶ Interatoma: Interações proteína-proteína.
 - ▶ Transcriptoma: Conjunto de todos os genes expressos em uma célula.
 - ▶ Ontologia: Especificação explícita de uma conceitualização, ou seja, especificação formal de termos e seus relacionamentos.
-

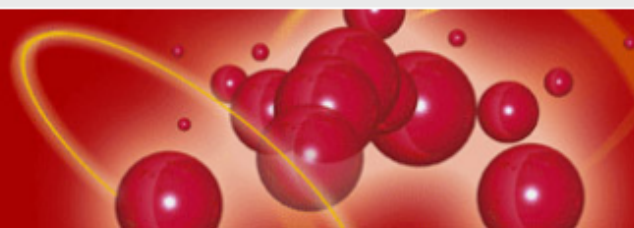


NCI - <http://pid.nci.nih.gov/>

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NATIONAL
CANCER
INSTITUTE

nature PathwayInteractionDatabase



[Home](#) > [Browse pathways](#) > Pathway

Caspase cascade in apoptosis

Revision Date: 13-Apr-2009

Source: NCI-Nature curated

Curated by: Shiva Krupa

Reviewed by: Christine Hawkins, Giaccone, Yufang Cui

Pathway ID: caspase_pathway

[Submit feedback for this pathway](#)

[Molecule list](#)

[References](#)

View graphic as: [JPG](#) [SVG](#) [? Help](#)

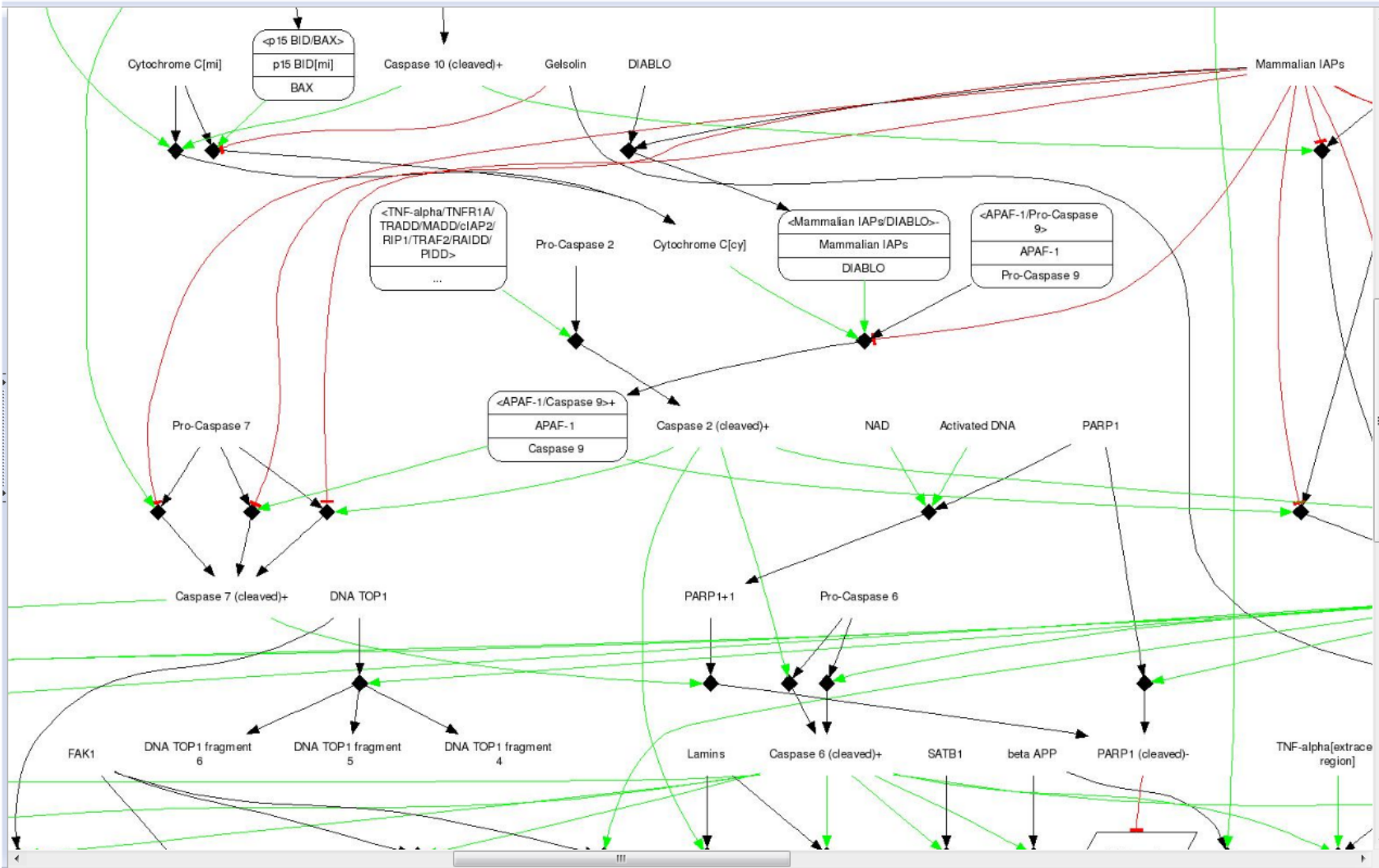
Save code as: [XML](#) [BioPAX](#) [? Help](#)

A [key to the image](#) icons appears below the pathway.

Click on a biomolecule or interaction for additional information.

NCI - Pathway

MESTRADO EM
NANOCIÊNCIAS



KEGG - <http://www.genome.jp/kegg/>

http://www.genome.jp/dbget-bin/show_pathway?hsa04210



Apoptosis - Homo sapiens (human)

[Pathway menu | Pathway entry]

Homo sapiens (human)

Go

- = +

APOPTOSIS

Extrinsic Pathway

Death Ligand

Fas-L

TRAIL

TNF α

IL-1

Adaptor

Adaptor

FADD

TRADD

FADD

TRADD

RIP1

TRAF2

TRADD

FADD

MyD88

IRAK

Cytokine-cytokine
receptor interaction

Survival Factors

NGF

TrkA

PI3K

+p

IKK

+p

I κ B α

+p

NF- κ B

+p

DNA

Survival
Genes

IAP

Bcl-XL

Bcl-2

Survival

DNA

Death
Genes

p53 signaling
pathway

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GeneOntology -

<http://www.geneontology.org/>

← → ↺ ☆ http://amigo.geneontology.org/cgi-bin/amigo/gp-details.cgi?gp=UniProtKB:P55211&session_id=7852amigo1246828477#sequence ▶ ▢ 🔍

 the Gene Ontology AmiGO

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Search GO ☒ terms ☐ genes or proteins ☐ exact match

CASP9

Gene product information Peptide sequence Sequence information 5 term associations

Information

Symbol CASP9

Name(s) Caspase-9

Type protein

Species [Homo sapiens \(human\)](#)

Synonyms CASP9
CASP9_HUMAN
IPI00023875
IPI00216934
MCH6

Database UniProtKB, [UniProtKB:P55211](#)

Sequence [View sequence](#); [use as BLAST query sequence](#)

[Back to top](#)

Primary Peptide Sequence

Longest sequence shown.

RefName: Full-Caspase-9; Short-CASP-9; EC-3.4.22.62; AltName: Full-ICE-like apoptotic protease 6; Short-ICE-LAP6; AltName: Full-Apoptotic protease Mch-6; AltName: Full-Apoptotic protease-activating factor 3; Short-APAF-3; Contains: RefName: Full-Caspase-9

MDADRLRLRLRCLRLVEELQVQDLWALLSRFLFRPHMIEDIQAGSGSRERDQARQLII
DLSTRGSAQLPLFTISCLEDTCQDMLASFLRTNRQAALSKPTLENLTPVLRPEIRKPEV
LRPETPRFVDICSGGFCGVGALESRLGNADLAVILNMFPGCNCLINNNVFCRESGLRTR
TGSWIDCEKLRFRFSLRFRVVKODLTAKKQVLALELQAQDNGALDCCVTVILSGCQ
ASHLQFPNAVITGDCGFVSVEKIVNIFNGTSCPSLGGKPKLFFIQAQCGGQKDRHGFVAS
TSPEDSPGSGNFEDATFFQEGLATFDQLDAISSLFTPSDIFVSYSTFGFVSWRDFKSG
SWVETLDDIFQWASSEDLSLLLRVANAVSVKGIYKMPGCFNLRKRLFFKTS

[Back to top](#)

Primary Sequence Information

Display ID P55211

BioCarta - <http://www.biocarta.com/>

← → ↺ ☆ http://www.biocarta.com/pathfiles/h_aktPathway.asp

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Interactive graphic models of molecular and cellular pathways

USA EUROPE JAPAN

PATHWAYS ▶ AKT Signaling Pathway



Submitted by: **Michael Shih, PhD** ✉ Guru: ✉

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▶ REVISION HISTORY

BIOCARTA

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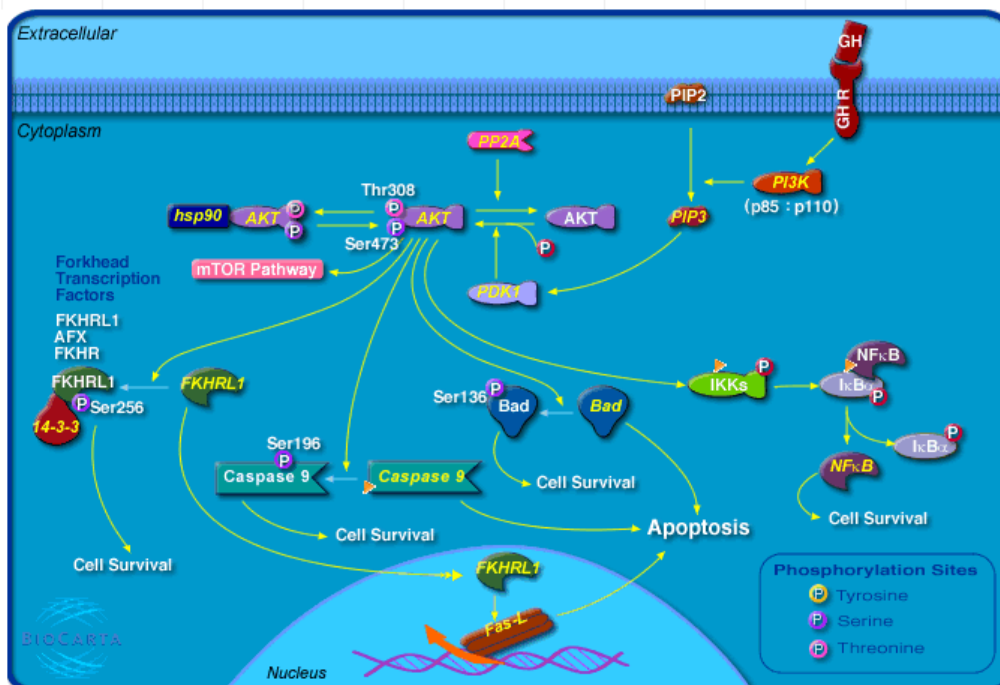
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This Pathway:

Other Species:

← → ↺ ☆ http://www.reactome.org/cgi-bin/eventbrowser?DB=gk_current&ID=57034 ▶ 📄 🔍

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UniProt:P55211 CASP9

Click on the map:

shifts focus zooms in zooms out

Identifier	UniProt:P55211
Database	UniProt
Species	Homo sapiens
Description	Caspase-9 shortName:CASP-9 alternativeName: ICE-like apoptotic protease 6 shortName:ICE-LAP6 alternativeName: Apoptotic protease Mch-6 alternativeName: Apoptotic protease-activating factor 3 shortName:APAF-3 component recommendedName: Caspase-9 subunit p35 /component component recommendedName: Caspase-9 subunit p10 /component
Links to corresponding entries in other databases	Brenda:3.4.22.62 EC:3.4.22.62 ENSEMBL:ENSG00000132906 Entrez Gene:842 HapMap:NM_001229 IntEnz:3.4.22.62 KEGG:842 OMIM:602234 RefSeq:NM_001229 RefSeq:NP_001220 UCSC human:P55211 UniProt:P55211
	CASP9_HUMAN, O95348, Q92852, Q9BQ62, Q9UEQ3, Q9UIJ8, ENSG00000132906, ENST00000333868, ENSP00000330237, 486_at, 487_g_at, 203984_s_at, 240437_at, 210775_x_at, 237451_x_at, 31478_at, U60521_at, M16653_at, g1532150_3p_s_at, g5103139_3p_s_at, Hs.34174.1A1_3p_at, Hs.34174.0A1_3p_x_at, g7705647_3p_at, A_14_P121733, A_23_P97309, A_24_P111342, CCDS158,

UniProt - <http://www.uniprot.org/>

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Search in Query
 Protein Knowledgebase (UniProtKB) Search Clear Fields »

Search Blast * Align * Retrieve ID Mapping *

★ Reviewed, UniProtKB/Swiss-Prot **P55211** (CASP9_HUMAN)
 Last modified June 16, 2009. Version 113. [History...](#)

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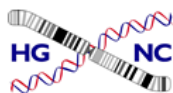
[TEXT](#) [XML](#) [RDF/XML](#) [GFF](#) [FASTA](#)

[Names and origin](#) · [Protein attributes](#) · [General annotation \(Comments\)](#) · [Ontologies](#) · [Binary interactions](#) · [Alternative products](#) · [Sequence annotation \(Features\)](#) · [Sequences](#) · [References](#) · [Web resources](#) · [Cross-references](#) · [Entry information](#) · [Relevant documents](#)

Names and origin Hide | To

Protein names	<p><i>Recommended name:</i> Caspase-9 Short name=CASP-9 EC=3.4.22.62</p> <p><i>Alternative name(s):</i> ICE-like apoptotic protease 6 Short name=ICE-LAP6 Apoptotic protease Mch-6 Apoptotic protease-activating factor 3 Short name=APAF-3</p> <p><u>Cleaved into the following 2 chains:</u> 1- <i>Recommended name:</i> Caspase-9 subunit p35 2- <i>Recommended name:</i> Caspase-9 subunit p10</p>
Gene names	<p>Name: CASP9</p>

HUGO - <http://www.genenames.org/>



About HGNC

Gene Search

Symbol Report: CASP9

[Home](#)

Giving unique and meaningful names to every human gene

Quick Gene Search

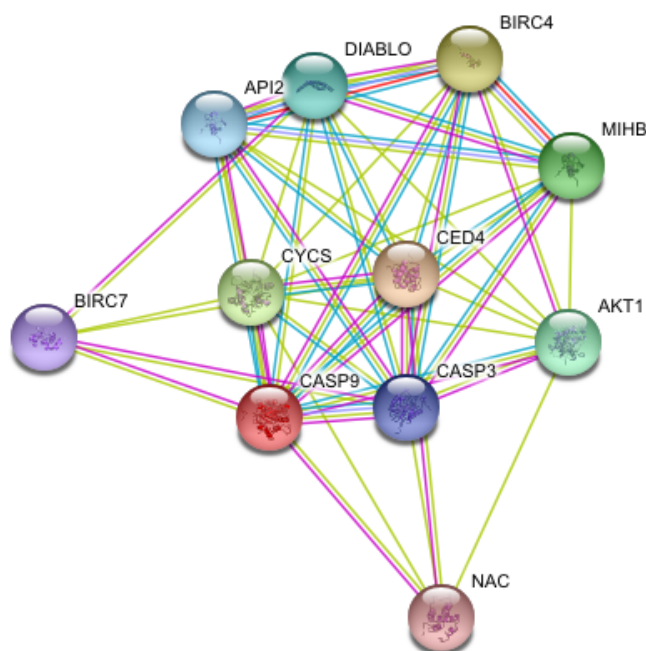
Core Data		Database Links				
Approved Symbol +	CASP9	RefSeq IDs +				
Approved Name +	caspase 9, apoptosis-related cysteine peptidase	NM_032996	GenBank	EMBL	DDBJ	UCSC
HGNC ID +	HGNC:1511	Accession Numbers +				
Status +	Approved	U60521	GenBank	EMBL	DDBJ	UCSC
Chromosome +	1p36.21	Mouse Genome Database ID +				
Previous Symbols +		MGI:1277950	MGD ID			
Previous Names +	"caspase 9, apoptosis-related cysteine protease"	Rat Genome Database ID (mapped data supplied by RGD) +				
Aliases +	MCH6, ICE-LAP6, APAF-3	RGD:61867	RGD ID			
Name Aliases +		Entrez Gene ID +				
Locus Type +	gene with protein product	842	Gene		Map Viewer	
		CCDS IDs +				
Gene Symbol Links		CCDS158.1	CCDS ID			
GENATLAS GeneCards GeneClinics/GeneTests GoPubmed HCOP H-InvDB Treefam wikigenes		Pubmed IDs +				
		8663294, 9390557	PMID		CiteXplore	
		VEGA IDs +				
		OTTHUMG00000002256	VEGA GeneView			
Specialist Database Links		Ensembl ID (mapped data supplied by Ensembl) +				

String - <http://string.embl.de/>

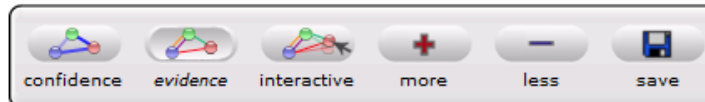
← → ↻ ☆ http://string.embl.de/newstring.cgi/show_network_section.pl

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 **STRING 8.1**

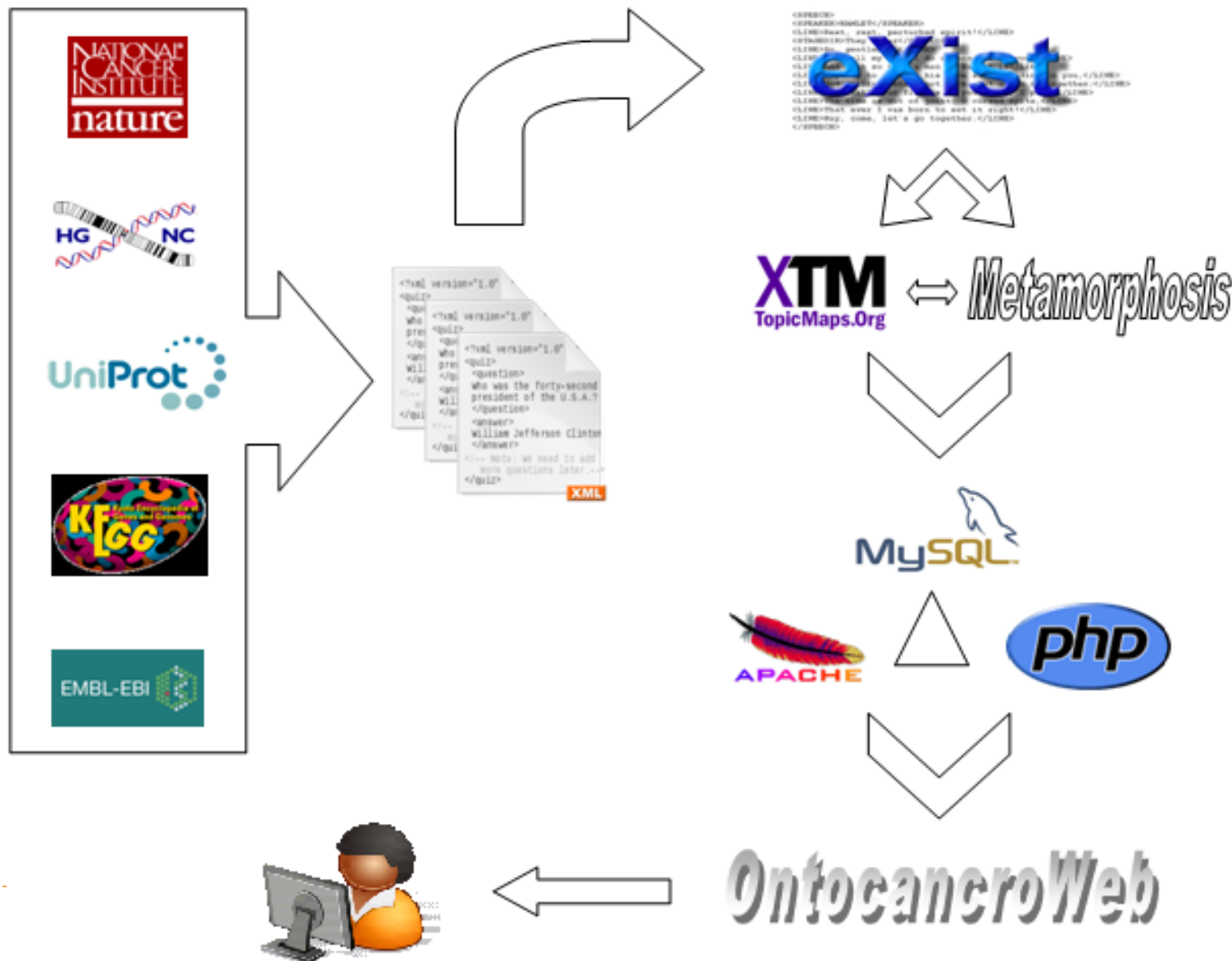


This is the **evidence view**. Different line colors represent the types of evidence for the association.



Arquitetura da Ontocancro

MESTRADO EM
NANOCIÊNCIAS



Ontocancro

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Ontocancro^{1.0}



Disruption of the mechanisms that regulate cell-cycle checkpoints, DNA repair, and apoptosis results in genomic instability and the development of cancer. The description of the complex genetic network entangling these pathways requires new tools to integrate large quantities of biological information that are disseminated in several databases in order to design biological information systems.

An ontology is an adequate tool to perform such task. Ontocancro is stored in a knowledge database that compiles and integrates transcriptomics and interatomics data involved in gene pathways of genome stability obtained from several curated databases as NCI-Nature, BioCarta, KEGG, Reactome, Prosite, GO, and STRING.

Ontocancro also deals with the lack of consensus in the definition of gene pathways in the scientific literature and in the databases providing the Ontocancro pathways that are comprehensive gene lists for some reference pathways.

Ontocancro project is a collaboration among Universidade Federal de Santa Maria, Centro Universitário Franciscano and Universidade Federal do Rio Grande do Sul from Brazil. Ontocancro is an open source and free on-line resource.

Quick Links

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CASP9

[Genes](#)

Ontocancro pathways

- [Apoptosis](#)
- [Expanded Apoptosis](#)

NCI pathways

- [Caspase cascade in apoptosis](#)

Biocarta pathways

- [AKT Signaling Pathway](#)
- [Caspase Cascade in Apoptosis](#)
- [Apoptotic Signaling in Response to DNA Damage](#)
- [D4-GDI Signaling Pathway](#)
- [Induction of apoptosis through DR3 and DR4/5 Death Receptors](#)
- [Stress Induction of HSP Regulation](#)
- [Role of Mitochondria in Apoptotic Signaling](#)
- [Ras Signaling Pathway](#)

Approved Symbol provided by HGNC	CASP9
EntrezGene	842
String Symbol	CASP9
Chromosome	1p36.21
Aliases	MCH6, ICE-LAP6, APAF-3
ENSG	ENSG00000132906
ENSP	ENSP00000330237
UniGene	Hs.329502
Affymetrix platform GPL570	203984_s_at 210775_x_at
RefSeq	NM_001229 NM_032996
Status	Approved
Organism	Homo sapiens



Interacting partners:

Gene Symbol	ENSP
GZMB	ENSP00000371982
BCL2L1	ENSP00000365230
CYP3A4	ENSP00000337915
PDPK1	ENSP00000344220
APAF1	ENSP00000353059
XIAP	ENSP00000360242
AKT1	ENSP00000270202
CASP6	ENSP00000265164
CASP7	ENSP00000298700
CASP3	ENSP00000311032
CYCS	ENSP00000307786
NOD1	ENSP00000222823
VIM	ENSP00000224237
BIRC2	ENSP00000227758
AKT2	ENSP00000309428
BIRC7	ENSP00000217169
DIABLO	ENSP00000267169
BIRC5	ENSP00000301633
AKT3	ENSP00000263826
BIRC3	ENSP00000263464
NLRP1	ENSP00000269280

- [Ras Signaling Pathway](#)
- [Trefoil Factors Initiate Mucosal Healing](#)
- [West Nile Virus](#)

KEGG pathways

- [Apoptosis - Homo sapiens \(human\)](#)

Reactome pathways

- [Apoptosis](#)

Prosite protein domains

- [CARD Domain Proteins](#)

Resultados Obtidos até agora...

- ▶ Vias:
 - ▶ mais de 120
- ▶ Genes:
 - ▶ 1428
- ▶ Bancos:
 - ▶ 9
- ▶ Interações entre genes:
 - ▶ mais de 9000

Acknowledgements

- ▶ Este trabalho é parcialmente suportado pelo CNPq (projeto 478432/2008-9).
- ▶ Temos também a permissão para o acesso e divulgação dos dados dos bancos utilizados: NCI-Nature, BioCarta, KEGG, Reactome, Prosite, GO, and STRING.

