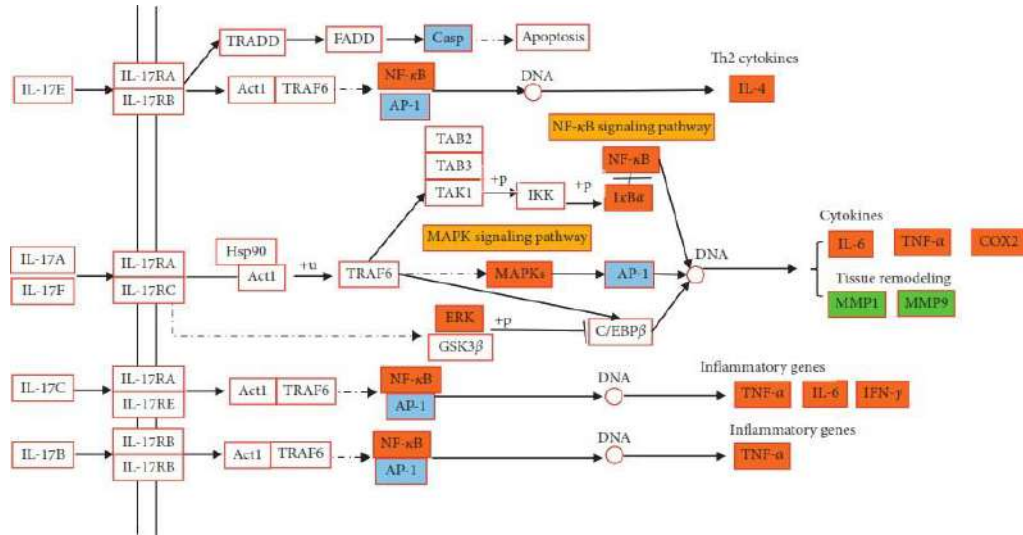
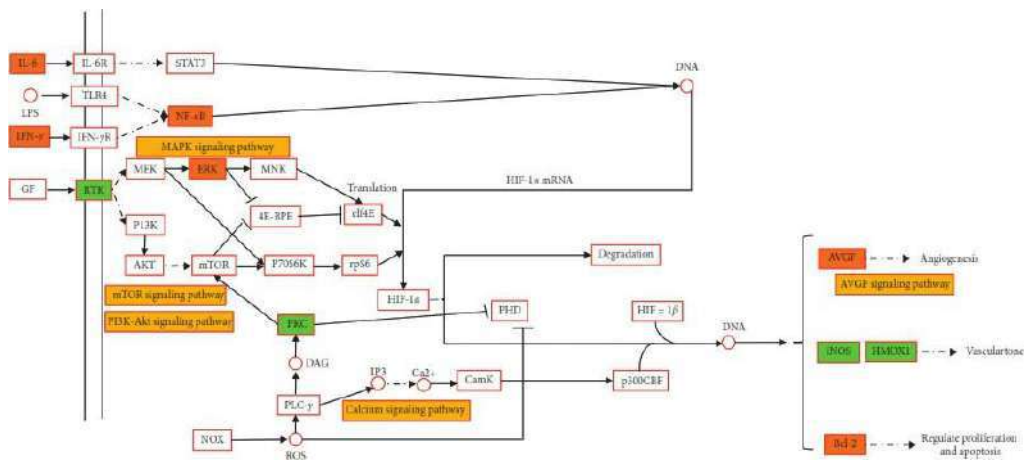


LAMPIRAN

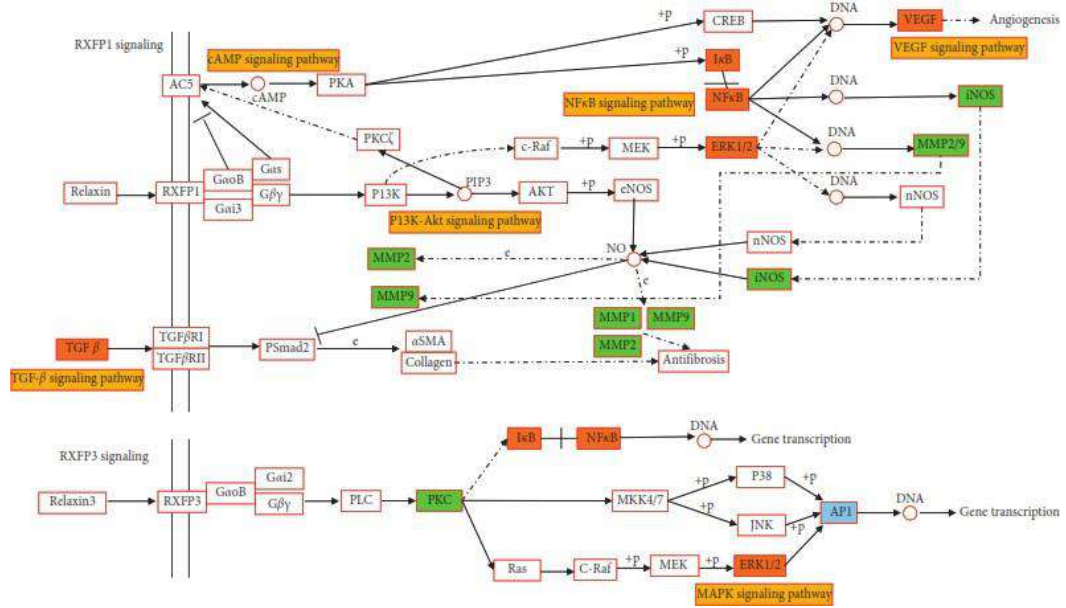
Lampiran 1 Identifikasi protein yang terlibat dalam patofisiologi hiperurikemia dan gout



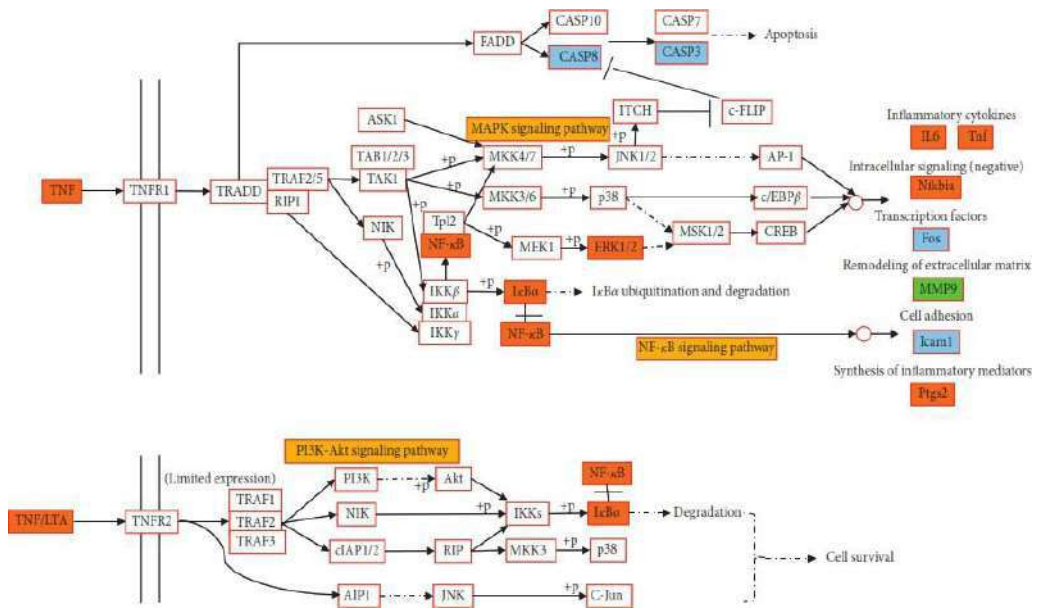
IL-17 Signaling Pathway



HIF-1 Signaling Pathway



Relaxin Signaling Pathway



TNF Signaling Pathway

Lampiran 2 Validasi nama gen

UniProtKB search results for 'abcg2'. The search returned 1,445 results. The table below shows the first 10 entries.

Entry	Entry name	Protein names	Gene names	Organism	Length
Q9UNQ0	ABCG2_HUMAN	Broad substrate specificity ATP-binding cassette sub-family G member 2	ABCG2 ABCP, BCRP, BCRP1, MDR	Homo sapiens (Human)	655
Q7TMS5	ABCG2_MOUSE	Broad substrate specificity ATP-binding cassette sub-family G member 2	Abcg2 Abcp, Bcrp1	Mus musculus (Mouse)	657
Q80W57	ABCG2_RAT	Broad substrate specificity ATP-binding cassette sub-family G member 2	Abcg2 Bcrp1	Rattus norvegicus (Rat)	657
Q4GZT4	ABCG2_BOVIN	Broad substrate specificity ATP-binding cassette sub-family G member 2	ABCG2	Bos taurus (Bovine)	655
Q5MB13	ABCG2_MACMU	Broad substrate specificity ATP-binding cassette sub-family G member 2	ABCG2	Macaca mulatta (Rhesus macaque)	654
Q8MBE3	ABCG2_PIG	Broad substrate specificity ATP-binding cassette sub-family G member 2	ABCG2 BMDP	Sus scrofa (Pig)	656
B3RFJ1	B3RFJ1_CANLF	ATP-binding cassette sub-family G member 2	ABCG2 Abcg2	Canis lupus familiaris (Dog) (Canis familiaris)	655
Q9NQP5	ABCG2_DICDI	ABC transporter G family member 2	abcg2 mdra1, DDB_G0275689	Dictyostelium discoideum (Slime mold)	1,328
A0A0R430B6	A0A0R430B6_MOUSE	ATP-binding cassette sub-family G member 2	Abcg2	Mus musculus (Mouse)	657
B2D1N9	B2D1N9_BOVIN	ATP-binding cassette sub-family G member 2	ABCG2	Bos taurus (Bovine)	658

ATP-binding cassette sub-family G member 2

UniProtKB search results for 'hif1a'. The search returned 2,799 results. The table below shows the first 10 entries.

Entry	Entry name	Protein names	Gene names	Organism	Length
Q18665	HIF1A_HUMAN	Hypoxia-inducible factor 1-alpha	HIF1A BHLHE78, MOP1, PAS58	Homo sapiens (Human)	826
Q61221	HIF1A_MOUSE	Hypoxia-inducible factor 1-alpha	Hif1a	Mus musculus (Mouse)	830
Q35800	HIF1A_RAT	Hypoxia-inducible factor 1-alpha	Hif1a	Rattus norvegicus (Rat)	825
Q8XTA5	HIF1A_BOVIN	Hypoxia-inducible factor 1-alpha	HIF1A	Bos taurus (Bovine)	823
Q0P6G7	HIF1A_BOSMU	Hypoxia-inducible factor 1-alpha	HIF1A	Bos mutus grunniens (Wild yak) (Bos grunniens)	823
Q30926	HIF1A_EOSFB	Hypoxia-inducible factor 1-alpha	HIF1A	Eospalax fontanieri baileyi (Plateau zokor) (Eospalax baileyi)	819
D0VY79	D0VY79_HUMAN	Hypoxia-inducible factor 1-alpha	HIF1A hCG_21199	Homo sapiens (Human)	826
A0ASF4D0M0	A0ASF4D0M0_CANLF	Hypoxia-inducible factor 1-alpha	HIF1A	Canis lupus familiaris (Dog) (Canis familiaris)	823
A0A28782Q0	A0A28782Q0_PIG	Hypoxia-inducible factor 1-alpha	HIF1A	Sus scrofa (Pig)	824

Hypoxia-inducible factor 1-alpha

UniProt

UniProtKB 2021_04 results

Filter by:

- Reviewed (142)
- Unreviewed (991)

Popular organisms

- Human (183)
- Mouse (122)
- Rat (50)
- Bovine (40)
- Zebrafish (24)

Other organisms

Search terms

Filter 'ifng' as:

disease (1)

Entry	Entry name	Protein names	Gene names	Organism	Length
P01579	IFNG_HUMAN	Interferon gamma	IFNG	Homo sapiens (Human)	166
P42161	IFNG_CANLF	Interferon gamma	IFNG	Canis lupus familiaris (Dog) (Canis familiaris)	166
P07353	IFNG_BOVIN	Interferon gamma	IFNG	Bos taurus (Bovine)	166
P01590	IFNG_MOUSE	Interferon gamma	Ifng	Mus musculus (Mouse)	155
P17803	IFNG_PIG	Interferon gamma	IFNG	Sus scrofa (Pig)	166
P01581	IFNG_RAT	Interferon gamma	Ifng	Rattus norvegicus (Rat)	156
P42162	IFNG_CERAT	Interferon gamma	IFNG	Cercocebus atys (Sooty mangabey) (Cercocebus torquatus atys)	165
P63310	IFNG_MACMU	Interferon gamma	IFNG	Macaca mulatta (Rhesus macaque)	165
P46402	IFNG_FELCA	Interferon gamma	IFNG	Felis catus (Cat) (Felis silvestris catus)	167
P42160	IFNG_HORSE	Interferon gamma	IFNG	Equus caballus (Horse)	166

Interferon Gamma

UniProt

UniProtKB 2021_04 results

Filter by:

- Reviewed (142)
- Unreviewed (746)

Popular organisms

- Human (44)
- Mouse (33)
- Bovine (15)
- Rat (14)
- Fruit fly (5)

Other organisms

Search terms

Filter 'mmp2' as:

gene name (563)

Did you mean mmp2 (3,720) ?

Entry	Entry name	Protein names	Gene names	Organism	Length
P08253	MMP2_HUMAN	72 kDa type IV collagenase	MMP2, CLG4A	Homo sapiens (Human)	660
P33434	MMP2_MOUSE	72 kDa type IV collagenase	Mmp2	Mus musculus (Mouse)	662
P33436	MMP2_RAT	72 kDa type IV collagenase	Mmp2	Rattus norvegicus (Rat)	662
Q90611	MMP2_CHECK	72 kDa type IV collagenase	MMP2	Gallus gallus (Chicken)	663
Q8MPP3	D2MP_DROME	Matrix metalloproteinase-2	Mmp2, CG1794	Drosophila melanogaster (Fruit fly)	758
P50757	MMP2_RABIT	72 kDa type IV collagenase	MMP2	Oryctolagus cuniculus (Rabbit)	662
Q9GLE5	MMP2_BOVIN	72 kDa type IV collagenase	MMP2	Bos taurus (Bovine)	661
A0A2I3TEQ9	A0A2I3TEQ9_PANTR	72 kDa gelatinase	MMP2	Pan troglodytes (Chimpanzee)	660
A0A33750K7	A0A33750K7_FELCA	72 kDa gelatinase	MMP2	Felis catus (Cat) (Felis silvestris catus)	661

72 kDa type IV collagenase

UniProt

UniProtKB 2021_04 results

Filter by:

Reviewed (113)
Unreviewed (953)

Popular organisms

Human (43)
Mouse (35)
Rat (18)
Bovine (9)
Zebrafish (3)
Other organisms

Search terms

Filter "mmp9" as:
gene name (558)

Entry	Entry name	Protein name	Gene names	Organism	Length
P14780	MMP9_HUMAN	Matrix metalloproteinase-9	MMP9, CLC4B	Homo sapiens (Human)	707
P41245	MMP9_MOUSE	Matrix metalloproteinase-9	Mmp9, Clg9b	Mus musculus (Mouse)	730
P52176	MMP9_BOVIN	Matrix metalloproteinase-9	MMP9	Bos taurus (Bovine)	712
P50262	MMP9_RAT	Matrix metalloproteinase-9	Mmp9	Rattus norvegicus (Rat)	708
P41246	MMP9_RABBIT	Matrix metalloproteinase-9	MMP9	Oryctolagus cuniculus (Rabbit)	707
P80188	NGAL_HUMAN	Neutrophil gelatinase-associated IL...	LCN2, HNL, NGAL	Homo sapiens (Human)	199
Q7T317	Q7T317_DANRE	92 kDa gelatinase	mmp9	Danio rerio (Zebrafish) (Brachydanio rerio)	680
D3ZYK8	D3ZYK8_RAT	92 kDa gelatinase	Mmp9, rCG_3207B	Rattus norvegicus (Rat)	708
F1QC76	F1QC76_DANRE	92 kDa gelatinase	mmp9	Danio rerio (Zebrafish) (Brachydanio rerio)	680
F1PYF5	F1PYF5_CANLF	92 kDa gelatinase	MMP9	Canis lupus familiaris (Dog) (Canis familiaris)	732

Matrix metalloproteinase 9

Potential Molecular Mechanism x Sci-Hub removing barriers in r x nfkB1 in UniProtKB

UniProt

UniProtKB 2021_04 results

Filter by:

Reviewed (238)
Unreviewed (978)

Popular organisms

Human (69)
Mouse (67)
Rat (29)
Bovine (27)
Zebrafish (4)
Other organisms

Search terms

Filter "nfkb1" as:
disease (1)

Entry	Entry name	Protein name	Gene names	Organism	Length
P19838	NFKB1_HUMAN	Nuclear factor NF-kappa-B p105 subu...	NFKB1	Homo sapiens (Human)	968
P25799	NFKB1_MOUSE	Nuclear factor NF-kappa-B p105 subu...	Nfkb1	Mus musculus (Mouse)	971
Q63360	NFKB1_RAT	Nuclear factor NF-kappa-B p105 subu...	Nfkb1	Rattus norvegicus (Rat)	522
Q04861	NFKB1_CHICK	Nuclear factor NF-kappa-B p105 subu...	NFKB1	Gallus gallus (Chicken)	803
Q8VCM5	MUL1_MOUSE	Mitochondrial ubiquitin ligase acti...	Mul1, Gldc	Mus musculus (Mouse)	352
Q069V5	MUL1_HUMAN	Mitochondrial ubiquitin ligase acti...	MUL1, C1orf160, GIDE, MAPL, MULAN, RNF218	Homo sapiens (Human)	352
Q48768	MUL1_MACFA	Mitochondrial ubiquitin ligase acti...	MUL1, QtaA-15365	Macaca fascicularis (Crab-eating macaque) (Cynomolgus monkey)	352
Q8F320	NFKB1_CANLF	Nuclear factor NF-kappa-B p105 subu...	NFKB1	Canis lupus familiaris (Dog) (Canis familiaris)	972
H2QPY8	H2QPY8_PANTR	Nuclear factor NF-kappa-B p105 subu...	NFKB1	Pan troglodytes (Chimpanzee)	969
M3W7X5	M3W7X5_FELCA	Nuclear factor NF-kappa-B p105 subu...	NFKB1	Felis catus (Cat) (Felis silvestris catus)	989

Nuclear factor NF-kappa-B p105 subunit

UniProt

UniProtKB 2021_04 results

Filter by: Reviewed (74) Unreviewed (457)

Popular organisms: Mouse (19), Human (12), Rat (12), Bovine (7), Zebrafish (3)

Search terms: Filter "ptgs2" as: gene name (400)

Entry	Entry name	Protein names	Gene names	Organism	Length
P35354	PGH2_HUMAN	Prostaglandin G/H synthase 2	PTGS2, COX2	Homo sapiens (Human)	604
P27607	PGH2_CHICK	Prostaglandin G/H synthase 2	PTGS2, CEF-147	Gallus gallus (Chicken)	603
Q05769	PGH2_MOUSE	Prostaglandin G/H synthase 2	Ptgs2, Cox-2, Cox2, Pghs-b, Tls10	Mus musculus (Mouse)	604
P35355	PGH2_RAT	Prostaglandin G/H synthase 2	Ptgs2, Cox-2, Cox2	Rattus norvegicus (Rat)	604
Q02725	PGH2_NEOVI	Prostaglandin G/H synthase 2	PTGS2, COX2	Neovison vison (American mink) (Mustela vison)	604
Q02768	PGH2_RABIT	Prostaglandin G/H synthase 2	PTGS2, COX-2, COX2	Oryctolagus cuniculus (Rabbit)	604
P79208	PGH2_SHEEP	Prostaglandin G/H synthase 2	PTGS2, COX2	Ovis aries (Sheep)	603
Q52698	PGH2_BOVIN	Prostaglandin G/H synthase 2	PTGS2, COX2	Bos taurus (Bovine)	604
P70682	PGH2_CAVPO	Prostaglandin G/H synthase 2	PTGS2, COX2	Cavia porcellus (Guinea pig)	604
Q19183	PGH2_HORSE	Prostaglandin G/H synthase 2	PTGS2, COX2	Equus caballus (Horse)	604

Prostaglandin G/H synthase 2

UniProt

UniProtKB 2021_04 results

Filter by: Reviewed (126) Unreviewed (9,213)

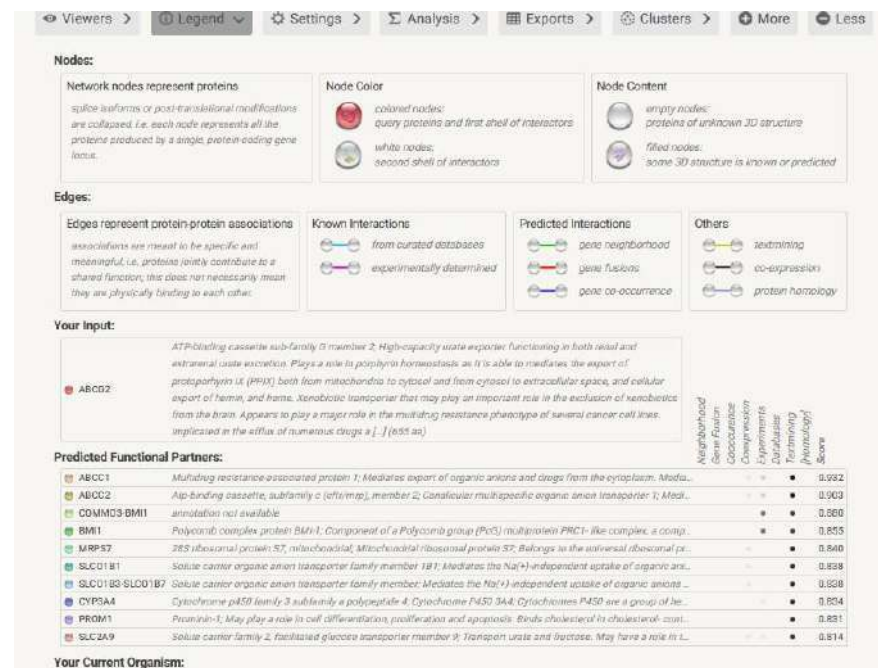
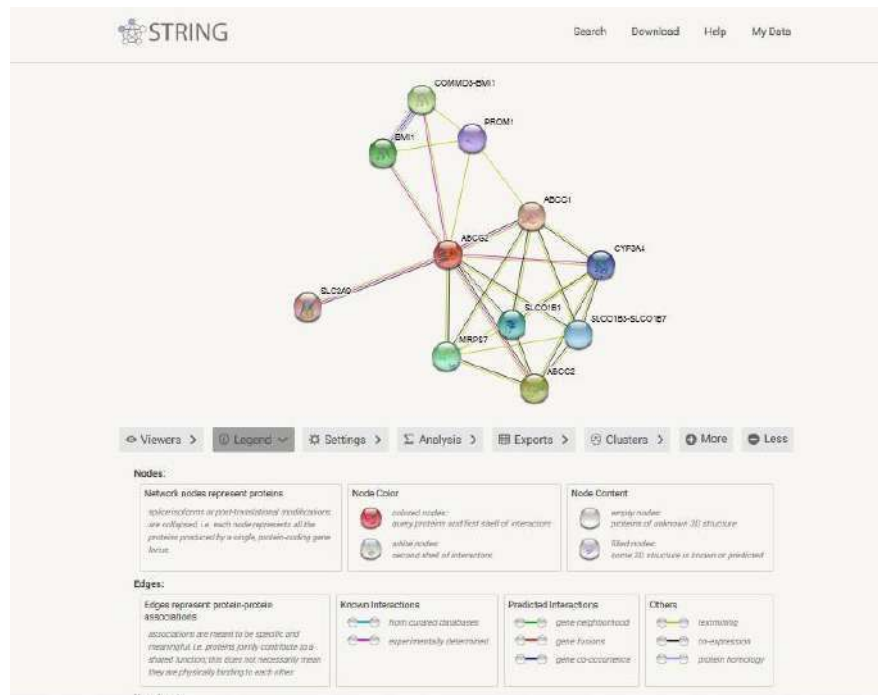
Popular organisms: Mouse (17), A. thaliana (10), Human (15), Bovine (10), Rat (6)

Search terms: Filter "xdh" as: disease (1)

Entry	Entry name	Protein names	Gene names	Organism	Length
P47989	XDH_HUMAN	Xanthine dehydrogenase/oxidase	XDH, XDHA	Homo sapiens (Human)	1,333
Q00519	XDH_MOUSE	Xanthine dehydrogenase/oxidase	Xdh	Mus musculus (Mouse)	1,335
Q8GUQ8	XDH1_ARATH	Xanthine dehydrogenase 1	XDH1, Atg34800, T11111.130	Arabidopsis thaliana (Mouse-ear cress)	1,361
P22985	XDH_RAT	Xanthine dehydrogenase/oxidase	Xdh	Rattus norvegicus (Rat)	1,331
P80457	XDH_BOVIN	Xanthine dehydrogenase/oxidase	XDH	Bos taurus (Bovine)	1,332
P10351	XDH_DROME	Xanthine dehydrogenase	ry, XDH, CG7642	Drosophila melanogaster (Fruit fly)	1,235
Q784Z0	Q784Z0_HBV	Capsid protein	C, c, core, preC, HBVgp4	Hepatitis B virus (HBV)	183
P47990	XDH_CHICK	Xanthine dehydrogenase/oxidase	XDH	Gallus gallus (Chicken)	1,358
Q8GAK6	XDH_PAENI	D-xylose dehydrogenase	xdh, ORF40	Paenarthrobacter nicotinovorans (Arthrobacter nicotinovorans)	388
F1LQ56	F1LQ56_RAT	Xanthine dehydrogenase	Xdh, rCG_61833	Rattus norvegicus (Rat)	1,331

Xanthine dehydrogenase/oxidase

Lampiran 3 Pencarian interaksi protein-protein



ATP-binding cassette sub-family G member 2

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Viewers Legend Settings Analysis Exports Clusters More Less

Nodes:
 Network nodes represent proteins
 Node Color
 Node Content

Viewers Legend Settings Analysis Exports Clusters More Less

Nodes:

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 - colored nodes: query proteins and first shell of interactors
 - white nodes: second shell of interactors
- Node Content**
 - empty nodes: proteins of unknown 3D structure
 - filled nodes: some 3D structure is known or predicted

Edges:

- Edges represent protein-protein associations**
associations are meant to be specific and meaningful, i.e. proteins jointly contribute to a shared function; this does not necessarily mean they are physically binding to each other.
- Known Interactions**
 - from curated databases
 - experimentally determined
- Predicted Interactions**
 - gene neighborhood
 - gene fusions
 - gene co-occurrence
- Others**
 - text mining
 - corepression
 - protein homology

Your input:
 Hypoxia-inducible factor 1-alpha. Functions as a master transcriptional regulator of the adaptive response to hypoxia. Under hypoxic conditions, activates the transcription of over 40 genes, including erythropoietin, glucose transporters, glycolytic enzymes, vascular endothelial growth factor, HIF1A, and other genes whose protein products increase oxygen delivery or facilitate metabolic adaptation to hypoxia. Plays an essential role in embryonic vasculogenesis, tumor angiogenesis, and pathophysiology of ischemic disease. Binds to core DNA sequence 5'-(A)C(G)G-3' within the hypoxia res.L.1 (HRE aa)

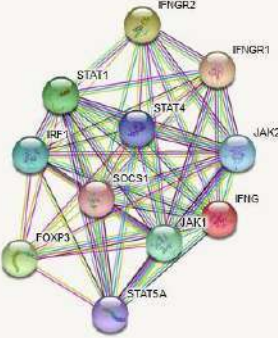
Predicted Functional Partners:

Protein	Description	Neighborhood	Gene Fusion	Co-expression	Corepression	Cooperation	Epigenetics	Database	Text Mining	Protein Homology	Score
EGLN3	Hypoxia-inducible factor prolyl hydroxylase Egl nine homolog 3. Cellular oxygen sensor that catalyzes, under normoxic condi...	●●●	●	●	●	●	●	●	●	●	0.999
VHL	Von Hippel-Lindau disease tumor suppressor involved in the ubiquitination and subsequent proteasomal degradation via the v...	●●●	●	●	●	●	●	●	●	●	0.999
MDM2	E3 ubiquitin-protein ligase Mdm2: E3 ubiquitin-protein ligase that mediates ubiquitination of p53/TP53, leading to its degradati...	●●●	●	●	●	●	●	●	●	●	0.999
TCEB2	Elongin B, SII, also known as elongin, is a general transcription elongation factor that increases the RNA polymerase II transcri...	●●●	●	●	●	●	●	●	●	●	0.999
CREBBP	CREB-binding protein; Acetylates histones, giving a specific tag for transcriptional activation. Also acetylates non-histone prote...	●●●	●	●	●	●	●	●	●	●	0.999
EP300	Histone acetyltransferase p300. Functions as histone acetyltransferase and regulates transcription via chromatin remodeling. ...	●●●	●	●	●	●	●	●	●	●	0.999
STAT3	Signal transducer and activator of transcription 3. Signal transducer and transcription activator that mediates cellular respons...	●●●	●	●	●	●	●	●	●	●	0.999
TP53	Cellular tumor antigen p53. Acts as a tumor suppressor in many tumor types; induces growth arrest or apoptosis depending o...	●●●	●	●	●	●	●	●	●	●	0.999
HIF1AN	Hypoxia-inducible factor 1 alpha inhibitor [HIF hydroxylase]; Hypoxia-inducible factor 1 alpha inhibitor; Hydroxylates HIF-1 alph...	●●●	●	●	●	●	●	●	●	●	0.999
SMAD3	Methers against decapentaplegic homolog 3; Receptor-regulated SMAD (R-SMAD) that is an intracellular signal transducer an...	●●●	●	●	●	●	●	●	●	●	0.999

Your Current Organism:

Hypoxia-inducible factor 1-alpha

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Viewers Legend Settings Analysis Exports Clusters More Less

Nodes:

Network nodes represent proteins
splice isoforms or post-translational modifications are collapsed, i.e. each node represents all the proteins produced by a single, protein-coding gene locus.

Node Color

- colored nodes: query proteins and first shell of interactors
- white nodes: second shell of interactors

Node Content

- empty nodes: proteins of unknown 3D structure
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Viewers Legend Settings Analysis Exports Clusters More Less

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Known Interactions

- from curated databases
- experimentally determined

Predicted Interactions

- gene neighborhood
- gene fusions
- gene co-occurrence

Others

- text mining
- co-expression
- protein homology

Your Input:

IFNG
Interferon gamma: Produced by lymphocytes activated by specific antigens or mitogens. IFN-gamma, in addition to having antiviral activity, has important immunoregulatory functions. It is a potent activator of macrophages, it has antiproliferative effects on transformed cells and it can potentiate the antiviral and antitumor effects of the type I interferons. Belongs to the type II (or gamma) interferon family (166 aa)

Predicted Functional Partners:

	Neighborhood	Gene Fusion	Co-occurrence	Coregulation	Coexpression	Experimental	Textmining	Homology	Score
IFNGR1	Interferon gamma receptor 1. Associates with IFNGR2, to form a receptor for the cytokine interferon gamma (IFNG). Ligand bin...	●	●	●	●	●	●	●	0.999
IFNGR2	Interferon gamma receptor 2. Associates with IFNGR1 to form a receptor for the cytokine interferon gamma (IFNG). Ligand bin...	●	●	●	●	●	●	●	0.995
FOXP3	Forkhead box protein P3. Transcriptional regulator which is crucial for the development and inhibitory function of regulatory T c...	●	●	●	●	●	●	●	0.989
STAT1	Signal transducer and activator of transcription 1-alpha/beta. Signal transducer and transcription activator that mediates cellu...	●	●	●	●	●	●	●	0.983
JAK1	Tyrosine-protein kinase JAK1. Tyrosine kinase of the non-receptor type, involved in the IFN-alpha/beta/gamma signal pathway. ...	●	●	●	●	●	●	●	0.979
IRF1	Interferon regulatory factor 1. Transcriptional regulator which displays a remarkable functional diversity in the regulation of cell...	●	●	●	●	●	●	●	0.969
JAK2	Tyrosine-protein kinase JAK2. Non-receptor tyrosine kinase involved in various processes such as cell growth, development, dif...	●	●	●	●	●	●	●	0.967
STAT4	Signal transducer and activator of transcription 4. Carries out a dual function: signal transduction and activation of transcrip...	●	●	●	●	●	●	●	0.967
STAT5A	Signal transducer and activator of transcription 5A. Carries out a dual function: signal transduction and activation of transcrip...	●	●	●	●	●	●	●	0.962
SOCS1	Suppressor of cytokine signaling 1. SOCS family proteins form part of a classical negative feedback system that regulates cyto...	●	●	●	●	●	●	●	0.959

Your Current Organism:
Homo sapiens

Interferon Gamma

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Known Interactions

- from curated databases
- experimentally determined

Predicted Interactions

- gene neighborhood
- gene fusions
- gene co-occurrence

Others

- textmining
- co-expression
- protein homology

Your Input:

MMP2
Matrix metalloproteinase 2 (gelatinase 2); 72 kDa type IV collagenase; Ubiquitous metalloproteinase that is involved in diverse functions such as remodeling of the vasculature, angiogenesis, tissue repair, tumor invasion, inflammation, and atherosclerotic plaque rupture. As well as degrading extracellular matrix proteins, can also act on several nonmatrix proteins such as biglycan and beta-type C1G9P promoting vasoconstriction. Also cleaves KISS at a Gly-Leu bond. Appears to have a role in myocardial cell death pathways. Contributes to myocardial oxidative stress by regulat[...]. (699 aa)

Predicted Functional Partners:

Protein	Description	Neighborhood	Gene Fusion	Co-occurrence	Coexpression	Experiments	Database	Textmining	Homology	Score
TIMP1	Matelloproteinase inhibitor 1; Metalloproteinase inhibitor that functions by forming one to one complexes with target metallo...	●	●	●	●	●	●	●	●	0.999
TIMP2	Metalloproteinase inhibitor 2; Complexes with metalloproteinases (such as collagenases) and irreversibly inactivates them b...	●	●	●	●	●	●	●	●	0.999
TIMP3	Temp metalloproteinase inhibitor 3; Metalloproteinase inhibitor 3; Complexes with metalloproteinases (such as collagenases) ...	●	●	●	●	●	●	●	●	0.998
DCN	Decorin; May affect the rate of fibrin formation; Small leucine rich repeat proteoglycans	●	●	●	●	●	●	●	●	0.991
COL18A1	Collagen alpha-1(XVIII) chain; Probably plays a major role in determining the retinal structure as well as in the closure of the n...	●	●	●	●	●	●	●	●	0.991
TGFB1	Transforming growth factor beta 1; Multifunctional protein that controls proliferation, differentiation and other functions in m...	●	●	●	●	●	●	●	●	0.989
VEGFA	Vascular endothelial growth factor A; Growth factor active in angiogenesis, vasculogenesis and endothelial cell growth. Induc...	●	●	●	●	●	●	●	●	0.984
STAT3	Signal transducer and activator of transcription 3; Signal transducer and transcription activator that mediates cellular respons...	●	●	●	●	●	●	●	●	0.975
LCN2	Neuropilin-1 gelatinase-associated lipocalin; Non-trafficking protein involved in multiple processes such as apoptosis, innate im...	●	●	●	●	●	●	●	●	0.973
THBS2	Thrombospondin 2/3/4/5; Thrombospondin 2; Adhesive glycoprotein that mediates cell-to-cell and cell-to-matrix interactions...	●	●	●	●	●	●	●	●	0.971

Your Current Organism:

Homo sapiens
NCBI taxonomy ID: 9606
Other names: H. sapiens, human, man

72 kDa type IV collagenase

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Nodes:

Network nodes represent proteins
splice isoforms or post-translational modifications are collapsed, i.e. each node represents all the proteins produced by a single, protein-coding gene locus.

Node Color

- colored nodes: query proteins and first shell of interactors
- white nodes: second shell of interactors

Node Content

- empty nodes: proteins of unknown 3D structure
- filled nodes: some 3D structure is known or predicted

Edges:

Edges represent protein-protein associations
associations are meant to be specific and meaningful, i.e. proteins jointly contribute to a shared function; this does not necessarily mean they are physically binding to each other.

Known Interactions

- from curated databases
- experimentally determined

Predicted Interactions

- gene neighborhood
- gene fusions
- gene co-occurrence

Others

- text mining
- co-expression
- protein homology

Your Input:

Matrix metalloproteinase-9: May play an essential role in local proteolysis of the extracellular matrix and in leukocyte migration. Could play a role in bone osteoclastic resorption. Cleaves K5S1 at a Gly-Leu bond. Cleaves type IV and type V collagen into large C-terminal three quarter fragments and shorter N-terminal one quarter fragments. Degrades fibronectin but not laminin or P₂ peptide. M19 matrix metalloproteinases. (207 aa)

MMP9

Predicted Functional Partners:

Protein	Neighborhood	Gene Fusion	Co-occurrence	Co-expression	Experiments	Databases	Text Mining	Homology	Score
TIMP1	●	●	●	●	●	●	●	●	0.999
LCN2	●	●	●	●	●	●	●	●	0.999
CD44	●	●	●	●	●	●	●	●	0.906
TGFβ1	●	●	●	●	●	●	●	●	0.991
TIMP3	●	●	●	●	●	●	●	●	0.987
VEGFA	●	●	●	●	●	●	●	●	0.987
IL6	●	●	●	●	●	●	●	●	0.986
PLG	●	●	●	●	●	●	●	●	0.984
SDC1	●	●	●	●	●	●	●	●	0.984
CDH1	●	●	●	●	●	●	●	●	0.983

Your Current Organism:

Homio sapiens

Matrix metalloproteinase-9

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Predicted Interactions

- gene neighborhood
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Others

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- co-expression
- protein homology

Your input:

Nuclear factor NF-kappa-B p105 subunit, NF-kappa-B is a pleiotropic transcription factor present in almost all cell types and is the endpoint of a series of signal transduction events that are initiated by a vast array of stimuli related to many biological processes such as inflammation, immunity, differentiation, cell growth, tumorigenesis and apoptosis. NF-kappa-B is a homo- or heterodimeric complex formed by the Rel-like domain-containing proteins RELA/p50, RELB, NFKB1/p105, NFKB1/p50, REL and NFKB2/p52 and the heterodimeric p50-p50 complex appears to be most abundant one. *The Scientist* [] (2009-04)

Predicted Functional Partners:

Protein	Description	Neighborhood	Gene Fusion	Co-occurrence	Co-expression	Text Mining	Protein Homology	Score
NFKBIA	NF-kappa-B inhibitor alpha. Inhibits the activity of dimeric NF-kappa-B/RELB complexes by trapping REL dimers in the cytoplasm.	●	●	●	●	●	●	0.990
RELB	RelB proto-oncogene, cI4b subunit; Transcription factor RelB; NF-kappa-B is a pleiotropic transcription factor which is present...	●	●	●	●	●	●	0.990
CHUK	Inhibitor of nuclear factor kappa-B kinase subunit alpha. Sirtuin kinase that plays an essential role in the NF-kappa-B signaling...	●	●	●	●	●	●	0.990
RELA	RelA proto-oncogene, cI4b subunit; Transcription factor p55; NF-kappa-B is a pleiotropic transcription factor present in almost...	●	●	●	●	●	●	0.990
NFKB1	Inhibitor of nuclear factor kappa-B kinase subunit beta; Sirtuin kinase that plays an essential role in the NF-kappa-B signaling...	●	●	●	●	●	●	0.990
MAFK3B	Mitogen-activated protein kinase kinase kinase B; Required for lipopolysaccharide (LPS)-induced; TLR4-mediated activation o...	●	●	●	●	●	●	0.987
TRIP2	TRIPAK3 interacting protein 2; Inhibits NF-kappa-B activation by blocking the interaction of RIPK1 with its downstream effecto...	●	●	●	●	●	●	0.990
HDAC1	Histone deacetylase 1/2; Histone deacetylase 1; Responsible for the deacetylation of lysine residues on the N-terminal part of...	●	●	●	●	●	●	0.996
REL	Rel proto-oncogene, cI4b subunit; Proto-oncogene c-Rel; Proto-oncogene that may play a role in differentiation and lymphomato...	●	●	●	●	●	●	0.993
EP300	Histone acetyltransferase p300; Functions as histone acetyltransferase and regulates transcription via chromatin remodeling...	●	●	●	●	●	●	0.992

Your Current Organism:

Homo sapiens
 NCBI taxonomy ID: 9606
 Other names: H. sapiens; human; man

Nuclear factor NF-kappa-B p105 subunit

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Predicted Interactions:
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 gene fusions
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Others:
 text mining
 co-expression
 protein homology

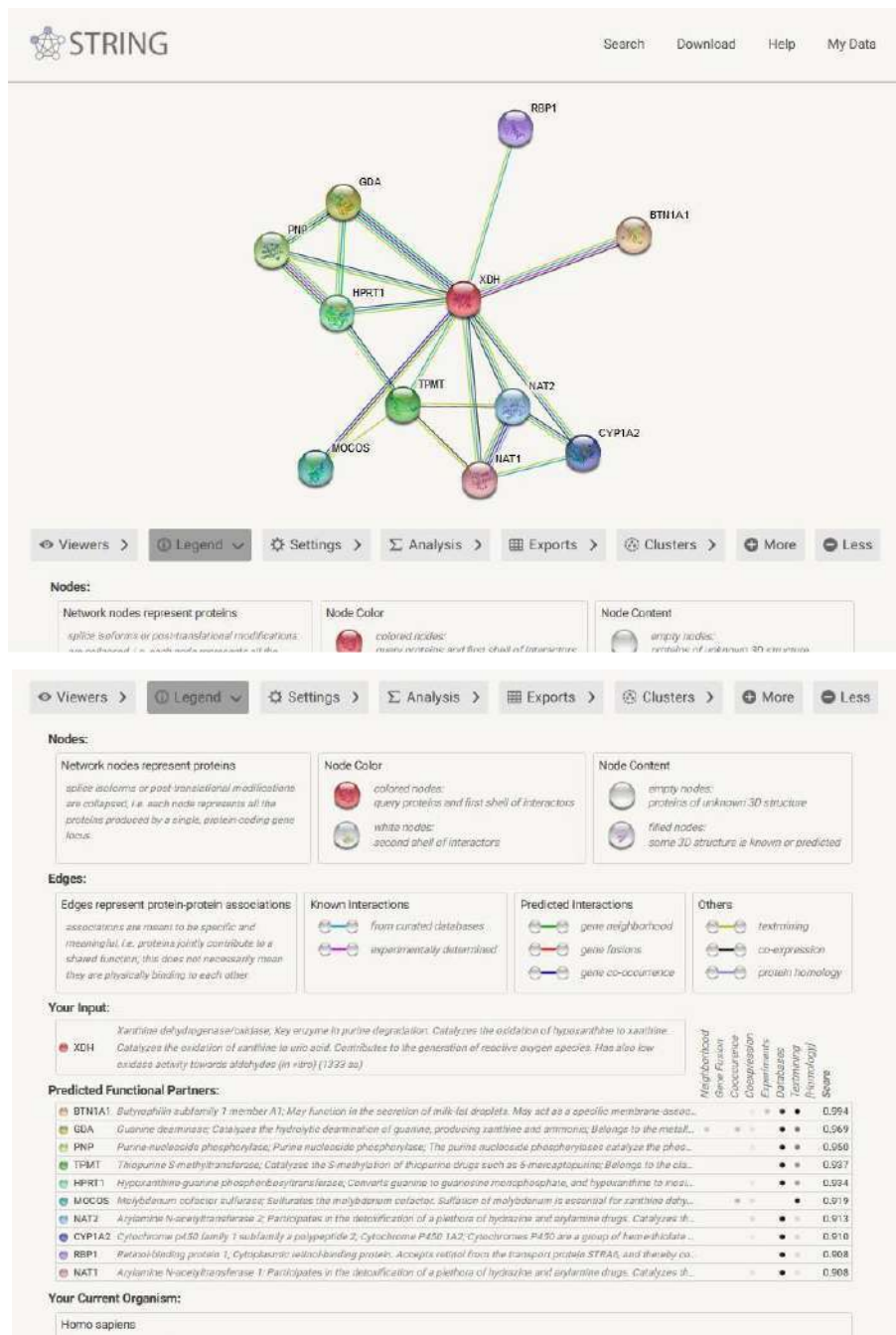
Your Input:
 Prostaglandin G/H synthase 2; Converts arachidonate to prostaglandin H2 (PGH2), a committed step in prostanoic synthesis. Constitutively expressed in some tissues in physiological conditions, such as the endothelium, kidney and brain, and in pathological conditions, such as in cancer. PTGS2 is responsible for production of inflammatory prostaglandins. Up-regulation of PTGS2 is also associated with increased cell adhesion, phenotypic changes, resistance to apoptosis and tumor angiogenesis; in cancer cells, PTGS2 is a key step in the production of prostaglandin E2 (PGE2), which plays imp [...] (404 aa)

Predicted Functional Partners:

Protein	Description	Weighted	Gene Fusion	Co-occurrence	Compassion	Experiments	Databases	Text Mining	Homology	Score
PTGES	Microsomal prostaglandin G synthase 1; Prostaglandin E synthase; Catalyzes the oxidation of prostaglandin endoperoxid...	●								0.998
TP53	Cellular tumor antigen p53; Acts as a tumor suppressor in many tumor types; induces growth arrest or apoptosis depending o...	●								0.994
PTGIS	Prostacyclin synthase; Catalyzes the isomerization of prostaglandin H2 to prostacyclin (= prostaglandin I2); Cytochrome P450 ...	●								0.991
ALOX5	Arachidonate 5-lipoxygenase; Catalyzes the first step in leukotriene biosynthesis, and thereby plays a role in inflammatory proc...	●								0.982
PTGES2	Prostaglandin G synthase 2; Isoenzyme that catalyzes the conversion of PGG2 into the more stable prostaglandin E2 (PGE2), th...	●								0.972
STAT3	Signal transducer and activator of transcription 3; Signal transducer and transcription activator that mediates cellular response...	●								0.967
PTGES3	Cytosolic prostaglandin synthase; Prostaglandin G synthase 3; Cytosolic prostaglandin synthase that catalyzes the oxidized...	●								0.964
ALOX15	Arachidonate 15-lipoxygenase; Non-heme iron-containing dioxygenase that catalyzes the stereo-specific peroxidation of free a...	●								0.961
TBXAS1	Thromboxane A synthase 1; Thromboxane-A synthase; Cytochrome P450 family 5	●								0.959
ALOX12	Arachidonate 12-lipoxygenase, 12S-type; Non-heme iron-containing dioxygenase that catalyzes the stereo-specific peroxidati...	●								0.951

Your Current Organism:
 Homo sapiens
 NCBI taxonomy id: 9606

Prostaglandin G/H synthase 2



Xanthine dehydrogenase/oxidase

Lampiran 4 Data senyawa kandungan kimia dari KNAPsACK



input type = all , input word = *Phyllanthus niruri*

Number of matched data : 19

CAS ID	CAS ID	Metabolite	Molecular formula	MW	Organization or InChIkey etc.
C00001705	10351-98-9	Phyllanthin	C24H34O6	418.2355882	Phyllanthus niruri
C00001707	33678-00-5	Hypophyllanthin	C24H30O7	430.19915331	Phyllanthus niruri
C00002608	25543-99-5	Hinokinin	C20H18O6	354.11033831	Phyllanthus niruri
C00002647	149-91-7	Gallic acid	C7H6O5	170.0215233	Phyllanthus niruri
C00002652	554-37-0	Glucogalin	C19H16O10	332.07434673	Phyllanthus niruri
C00003672	83-46-5	beta-Sitosterol	C29H50O	414.38616622	Phyllanthus niruri
C00004631	117-39-5	Quercetin	C15H10O7	302.04285268	Phyllanthus niruri
C00005138	480-10-4	Astragaln	C21H20O11	448.10056148	Phyllanthus niruri
C00005153	65063-32-3	Kaempferol 4'-rhamnoside	C21H20O10	432.10564686	Phyllanthus niruri
C00005302	95309-27-2	Fisetin 4'-glucoside	C21H20O11	448.10056148	Phyllanthus niruri
C00005373	482-35-9	Quercetin-3-O-glucoside	C21H20O12	464.09547611	Phyllanthus niruri
C00005374	522-12-3	Quercitrin	C21H20O11	448.10056148	Phyllanthus niruri
C00005413	153-18-4	Rutin	C27H30O16	610.16338491	Phyllanthus niruri
C00006271	96253-68-8	Nirurin	C32H40O15	664.23672061	Phyllanthus niruri
C00006292	480-35-3	Eriodictin	C21H22O10	434.12129692	Phyllanthus niruri
C00028161	91653-34-6	4-Methoxynorsecurinine	C13H15NO3	233.10519335	Phyllanthus niruri L.
C00033823	50656-77-4	Niranthin	C24H32O7	432.21490336	Phyllanthus niruri
C00033824	50656-78-5	Niretralin	C24H30O7	430.19915331	Phyllanthus niruri
C00037423	73291-44-4	Lintetralin	C29H28O6	490.18858863	Phyllanthus niruri

Lampiran 5 Data Protein target senyawa kandungan kimia dari Uniprot

Senyawa	Kode gen target	Nama gen target
<i>Quercetin</i>	ABCG2	<i>ATP-binding cassette sub-family G member 2</i>
	HIF1A	<i>Hypoxia-inducible factor 1-alpha</i>
	IFNG	<i>Interferon gamma</i>
	MMP2	<i>72 kDa type IV collagenase</i>
	MMP9	<i>Matrix metalloproteinase-9</i>
	NFKB1	<i>Nuclear factor NF-kappa-B p105 subunit</i>
	PTGS2	<i>Prostaglandin G/H synthase 2</i>
	XDH	<i>Xanthine dehydrogenase/oxidase</i>
<i>Isoquercetin</i>	XDH	<i>Xanthine dehydrogenase/oxidase</i>

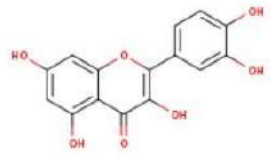
Lampiran 6 Prediksi protein target dari SwissTargetPrediction






SwissDrugDesign | SwissDock | SwissParam | SwissSidechain | SwissBioLigand | **SwissTargetPrediction** | SwissADME | SwissSimilarity

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Query Molecule

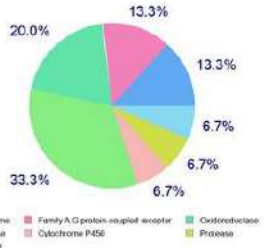



Export results:     
















Show entries

Target Classes

Top 15
Top 25
Top 50
All



Target	Common name	Uniprot ID	ChEMBL ID	Target Class	Probability*	Known actives (3D/2D)
NADPH oxidase 4	NOX4	Q9NPH5	CHEMBL1250375	Enzyme	<div style="width: 100%; height: 10px; background-color: green;"></div>	7 / 8 

Target	Common name	Uniprot ID	ChEMBL ID	Target Class	Probability*	Known actives (3D/2D)
NADPH oxidase 4	NOX4	Q9NPH5	CHEMBL1250375	Enzyme	<div style="width: 100%; height: 10px; background-color: green;"></div>	7 / 8 
Vasopressin V2 receptor	AVPR2	P30518	CHEMBL1790	Family A G protein-coupled receptor	<div style="width: 100%; height: 10px; background-color: green;"></div>	1 / 1 
Aldose reductase	AKR1B1	P15121	CHEMBL1900	Enzyme	<div style="width: 100%; height: 10px; background-color: green;"></div>	18 / 72 
Xanthine dehydrogenase	XDH	P47989	CHEMBL1929	Oxidoreductase	<div style="width: 100%; height: 10px; background-color: green;"></div>	12 / 20 
Monoamine oxidase A	MAOA	P21397	CHEMBL1951	Oxidoreductase	<div style="width: 100%; height: 10px; background-color: green;"></div>	4 / 14 
Insulin-like growth factor I receptor	IGF1R	P08069	CHEMBL1957	Kinase	<div style="width: 100%; height: 10px; background-color: green;"></div>	3 / 3 
Tyrosine-protein kinase receptor FLT3	FLT3	P36888	CHEMBL1974	Kinase	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 7 
Cytochrome P450 19A1	CYP19A1	P11511	CHEMBL1978	Cytochrome P450	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 18 
Epidermal growth factor receptor erbB1	EGFR	P00533	CHEMBL203	Kinase	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 28 
Thrombin	F2	P00734	CHEMBL204	Protease	<div style="width: 100%; height: 10px; background-color: green;"></div>	11 / 3 
Carbonic anhydrase II	CA2	P00918	CHEMBL205	Lyase	<div style="width: 100%; height: 10px; background-color: green;"></div>	7 / 15 
Serine/threonine-protein kinase PIM1	PIM1	P11309	CHEMBL2147	Kinase	<div style="width: 100%; height: 10px; background-color: green;"></div>	7 / 7 
Arachidonate 5-lipoxygenase	ALOX5	P09917	CHEMBL215	Oxidoreductase	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 46 
Serine/threonine-protein kinase Aurora-B	AURKB	Q96GD4	CHEMBL2185	Kinase	<div style="width: 100%; height: 10px; background-color: green;"></div>	3 / 4 
Dopamine D4 receptor	DRD4	P21917	CHEMBL219	Family A G protein-coupled receptor	<div style="width: 100%; height: 10px; background-color: green;"></div>	1 / 1 

Showing 1 to 15 of 100 entries

Previous 2 3 4 5 6 7 Next

*Probability for the query molecule - assumed as bioactive - to have this protein as target.

Quercetin


SwissDrugDesign | SwissDock | SwissParam | SwissSidechain | SwissBioesters | **SwissTargetPrediction** | SwissADME | SwissSimilarity

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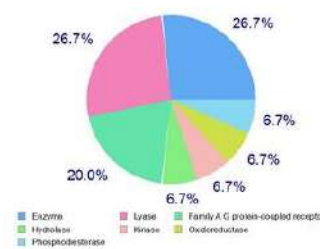
SwissTargetPrediction


Query Molecule




Target Classes

Top 15
Top 25
Top 50
All


















Export results: 

Show entries Search:

Target	Common name	Uniprot ID	ChEMBL ID	Target Class	Probability*	Known actives (3D/2D)
Aldose reductase	AKR1B1	P15121	CHEMBL1900	Enzyme	<div style="width: 100%; height: 10px; background-color: green;"></div>	11 / 66 

Show entries Search:

Target	Common name	Uniprot ID	ChEMBL ID	Target Class	Probability*	Known actives (3D/2D)
Aldose reductase	AKR1B1	P15121	CHEMBL1900	Enzyme	<div style="width: 100%; height: 10px; background-color: green;"></div>	11 / 66 
Carbonic anhydrase II	CA2	P00918	CHEMBL205	Lyase	<div style="width: 100%; height: 10px; background-color: green;"></div>	4 / 10 
Carbonic anhydrase VII	CA7	P43166	CHEMBL2326	Lyase	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 13 
Carbonic anhydrase XII	CA12	O43570	CHEMBL3242	Lyase	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 20 
Carbonic anhydrase IV	CA4	P22748	CHEMBL3729	Lyase	<div style="width: 100%; height: 10px; background-color: green;"></div>	5 / 10 
NADPH oxidase 4	NOX4	Q9NPH5	CHEMBL1250375	Enzyme	<div style="width: 100%; height: 10px; background-color: green;"></div>	1 / 7 
Adrenergic receptor alpha-2	ADRA2C	P18825	CHEMBL1916	Family A G protein-coupled receptor	<div style="width: 100%; height: 10px; background-color: green;"></div>	2 / 2 
Acetylcholinesterase	ACHE	P22303	CHEMBL220	Hydrolase	<div style="width: 80%; height: 10px; background-color: green;"></div>	3 / 21 
Quinone reductase 2	NQO2	P16083	CHEMBL3959	Enzyme	<div style="width: 70%; height: 10px; background-color: green;"></div>	1 / 1 
Ribosomal protein S6 kinase alpha 3	RPS6KA3	P51812	CHEMBL2345	Kinase	<div style="width: 60%; height: 10px; background-color: green;"></div>	5 / 19 
Neuromedin-U receptor 2	NMUR2	Q9GZQ4	CHEMBL1075144	Family A G protein-coupled receptor	<div style="width: 50%; height: 10px; background-color: green;"></div>	1 / 1 
Alpha-2a adrenergic receptor	ADRA2A	P08913	CHEMBL1867	Family A G protein-coupled receptor	<div style="width: 40%; height: 10px; background-color: green;"></div>	1 / 1 
Cyclooxygenase-2	PTGS2	P35354	CHEMBL230	Oxidoreductase	<div style="width: 30%; height: 10px; background-color: green;"></div>	1 / 5 
Lymphocyte differentiation antigen CD38	CD38	P28907	CHEMBL4660	Enzyme	<div style="width: 20%; height: 10px; background-color: green;"></div>	0 / 2 
Phosphodiesterase 5A	PDE5A	O76074	CHEMBL1827	Phosphodiesterase	<div style="width: 10%; height: 10px; background-color: green;"></div>	0 / 6 

Showing 1 to 15 of 100 entries Previous 2 3 4 5 6 7 Next

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Isoquercetin

Lampiran 7 Visualisasi menggunakan Cytoscape

