



MetaCore

For Data Search



インフォコム株式会社
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遺伝子、タンパク質、薬剤の検索

本項の目的

データベース中の分子、相互作用などの各種情報の検索方法を学習いたします。

1. メニュー右上部の *Search* に *MDM2* を入力し、*Search* ボタンをクリックします。

2. 検索結果が下記のように表示されます。

The screenshot shows the EZ Search interface with the search term 'mdm2' entered. The results are displayed in a list format. The first result is 'Mdm2 transformed mouse 3T3 cell double minute 2 (Mus musculus)'. The second result is 'MDM2 Mdm2 p53 binding protein homolog (mouse) (Homo sapiens)', which is highlighted. The third result is 'Mdm2 Mdm2 p53 binding protein homolog (mouse) (Rattus norvegicus)'. The fourth result is 'Mdm2, transformed 3T3 cell double minute p53 binding protein (Mus musculus)'. The fifth result is 'MTBP Mdm2, transformed 3T3 cell double minute 2, p53 binding protein (mouse) binding protein, 104kDa (Homo sapiens)'. The interface includes a search bar, a search button, and a 'Selected Genes' section.

3. *MDM2 Mdm2 p53 binding protein homolog (mouse) (Homo sapiens)* をクリックします。MDM2 の詳細画面(アノテーション情報)が表示されます。

The screenshot shows the detailed information page for MDM2. The page is titled 'MDM2' and includes a 'Table of Content' on the left. The main content is organized into sections: 'General', 'Gene Details', and 'Protein Details'. The 'Gene Details' section includes information such as Symbols (MDM2, hdm2, HDMX, MGC5370, MGC71221), HUGO Full Name (Mdm2 binding protein homolog (mouse)), Synonyms (Mdm2 p53 binding protein homolog (mouse), ubiquitin-protein ligase E3 Mdm2, mouse double minute 2 homolog, double minute 2, human homolog of; p53-binding protein, Mdm2, transformed 3T3 cell double minute 2, p53 binding protein, p53-binding protein MDM2), Description (This gene is a target gene of the transcription factor tumor protein p53. The encoded protein is a nuclear phosphoprotein that binds and inhibits transactivation by tumor protein p53, as part of an autoregulatory negative feedback loop. Overexpression of this gene can result in excessive inactivation of tumor protein p53, diminishing its tumor suppressor function. This protein has E3 ubiquitin ligase activity, which targets tumor protein p53 for proteasomal degradation. This protein also affects the cell cycle, apoptosis, and tumorigenesis through interactions with other proteins, including retinoblastoma 1 and ribosomal protein L5. More than 40 different alternatively spliced transcript variants have been isolated from both tumor and normal tissues. [provided by RefSeq]), Chromosomal Location (chr12:12q14.3-q15), Species (Homo sapiens), and Orthologs (Homologues, NCBI) (Canis lupus familiaris, Canis rerio, Mus musculus, Rattus norvegicus, Bos taurus, Pan troglodytes). The 'Protein Details' section includes information such as Name (MDM2_HUMAN / E3 ubiquitin-protein ligase Mdm2), Synonyms (Double minute 2 protein, E3 ubiquitin-protein ligase Mdm2, Hdm2, MDM2_HUMAN, Oncoprotein Mdm2, p53-binding protein Mdm2), Description (Inhibits TP53/p53- and TP73/p73-mediated cell cycle arrest and apoptosis by binding its transcriptional activation domain. Functions as a ubiquitin ligase E3, in the presence of E1 and E2, toward p53 and itself. Permits the nuclear export of p53 and targets it for proteasome-mediated proteolysis), EC Number (6.3.2.-), Molecular Weight (55233), Localization (cytoplasm, cytosol, insoluble fraction, intracellular, nucleolus, nucleoplasm, nucleus), and Organ/Tissue Expression (RNA) (Adrenal Glands, Bone Marrow, Brain, Colon, Fetal brain, Fetal kidney, Fetal liver, Fetal thymus, Heart, Intestine, Small, Kidney, Liver, Lung, Lymphocytes, Mammary Glands, Human, Muscle, Skeletal, ovarian carcinoma, Ovary, Palatine Tonsil, Pancreas, Placenta, Prostate, Retina, Salivary Glands, Skin, Spinal Cord, Spleen, Testis, Thymus gland, Thyroid gland, Trachea, Uterus).

4. 検索結果の右に表示される Object Found を選択することで、入力した検索ワードが含まれる各分野(タンパク質、低分子、カノニカルパスウェイ Map、相互作用、関連文献)での検索結果を表示します。

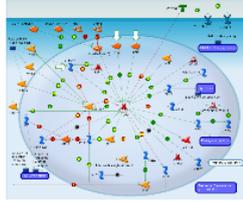
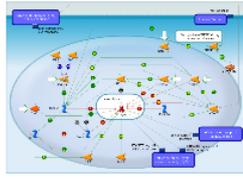
The screenshot shows the EZ Search application interface. At the top, there is a search bar with the text 'mdm2' and a 'Search' button. To the right of the search bar, there is a checkbox for 'Exact match'. Below the search bar, the 'Objects Found' sidebar is highlighted with a red circle. It lists various categories: Genes (38), Proteins (40), Compounds (3), Network objects (17), Interactions (204), and Articles (369). The main content area displays search results for 'mdm2', showing a list of genes with their Entrez Gene IDs, synonyms, and descriptions. The first result is 'Mdm2' (Entrez Gene ID: 4193) with a description: 'Mdm2, transformed 3T3 cell double minute 2, p53 binding protein (mouse), double minute 2, human homolog of; p53-binding homolog, mouse double minute 2, human homolog of; p53-binding protein, p53-binding protein MDM2, ubiquitin-protein ligase E3 Mdm2, Gene Type: protein-coding'. Other results include MDM2 (Entrez Gene ID: 17246), MDM2 (Entrez Gene ID: 27085), TBRG1 (Entrez Gene ID: 84897), MDM2 (Entrez Gene ID: 105837), RGD1565672 (Entrez Gene ID: 500870), and TBR1 (Entrez Gene ID: 21376).

(低分子)

The screenshot shows the 'Result pages: 1 (Showing results 1 to 3 of 3)' section of a chemical search interface. It displays two chemical compounds with their structures and names. The first compound is [4-[(E)-3-(4-iodophenyl)prop-2-enyl]phenyl]boronic acid, with a chemical structure showing a benzene ring with an iodine atom at the para position, connected via a prop-2-enyl chain to another benzene ring which has a boronic acid group at the para position. The second compound is 2-(benzyl)-3-(4-chlorophenyl)-3-(3-hydroxypropoxy)isoindolin-1-one, with a chemical structure showing an isoindolin-1-one core substituted with a benzyl group at position 2, a 4-chlorophenyl group at position 3, and a 3-hydroxypropoxy group at position 3.

(Map)

Result pages: [1](#) [2](#) [Next](#) (Showing results 1 to 10 of 19)

- [Transcription](#) [P53 signaling pathway](#)

Network Objects: [p14ARF](#), [XPA](#), [PIAS2](#), [ATM](#), [CBP](#), [JNK\(MAPK8-10\)](#), [MEKK1\(MAP3K1\)](#), [MMP-2](#), [PCAF](#), [c-Fos](#),
Description: p53 signaling pathway The Tumor protein p53 (p53) plays a critical role in safeguarding the integrity of the genome. Upon activation, p53 binds to the enhancer/promoter elements of downstream target genes and regulates their transcription, through which it initiates cellular programs that account for most of its tumor-suppressor functions. The signal transduction circuit of p53 consists of the upstream mediators, the core regulation components and the downstream effectors. The core regulatory circuitry consists of Mdm2 p53 binding protein homolog (MDM2), Cyclin-dependent kinase inhibitor 2A (p14ARF) and E2F transcription factor 1 (E2F1). p53 activates MDM2 transcription. MDM2 in conjunction with Proteasome 26S subunit non-ATPase 10 (PSMD10 (Gankyrin)) mediates p53 ubiquitination and degradation. E2F1 activates transcription of p53 and p14ARF. p14ARF facilitates proteolytic degradation of E2F1 and MDM2 -mediated p53 ubiquitination. Transcription of p53 is also mediated by nuclear factor
- [DNA damage](#) [Role of SUMO in p53 regulation](#)

Network Objects: [SAE2](#), [SAE1](#), [Chk2](#), [PIAS2](#), [MDM2](#), [RanBP2](#), [Ubiquitin](#), [SUMO-1](#), [DAXX](#), [PIAS1](#), [PML](#), [E2F1](#), [p300](#), [p53](#),
Description: Role of SUMO in p53 regulation Tumor suppressor p53 acts in many tumor types and induces growth arrest or apoptosis depending on the physiological circumstances and cell type. This protein is involved in the cell cycle regulation as a trans-activator. Abundance and activity of the tumor suppressor p53 are regulated by many different posttranslational modifications. Covalent modification with the small ubiquitin-related protein (SUMO) is one of these paths. SUMO is a protein moiety that is ligated to lysine residues in a variety of target proteins. The addition of SUMO can modulate the ability of proteins to interact with their partners, alter their patterns of subcellular localization and control their stability. Four different ubiquitous SUMO-related proteins have been identified in mammalian cells. It was shown that one of them, SUMO-1, participates in p53 regulation. In response to ionizing or UV-irradiation, cell cycle checkpoint kinase 2 (Chk2) phosphorylates p53 on Ser-20. It stimulates, in turn,

(相互作用リスト)

Result pages: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [Next](#) (Showing results 1 to 50 of 264)

- [MDM2](#)  [MDM2](#)
Effect: activation
Mechanism: Transport
Species: Homo sapiens
Description: MDM2 is activated by sumoylation during nuclear translocation.
- [FHIT](#)  [MDM2](#)
Effect: inhibition
Mechanism: Binding
Species: Homo sapiens
Description: FHIT physically interacts with MDM2 and decreases its activity.
- [RASSF1](#)  [MDM2](#)
Effect: inhibition
Mechanism: Binding
Species: Homo sapiens
Description: RASSF1A interacts with MDM2 in vivo and in vitro, and RASSF1A increases MDM2 self-ubiquitination by disrupting MDM2-DAXX-HAUSP interactions.
- [PLAC8](#)  [MDM2](#)
Effect: activation
Mechanism: Binding
Species: Mus musculus
Description: PLAC8 physically interacts with MDM2 and increases its activity.
- [MDM2](#)  [Keratin 2](#)
Effect: Unspecified
Mechanism: Binding
Species: Homo sapiens
Description: MDM2 physically interacts with Keratin 2.
- [MDM2](#)  [Nibrin](#)
Effect: inhibition
Mechanism: Binding
Species: Homo sapiens
Description: MDM2 physically interacts with Nibrin and decreases its activity.

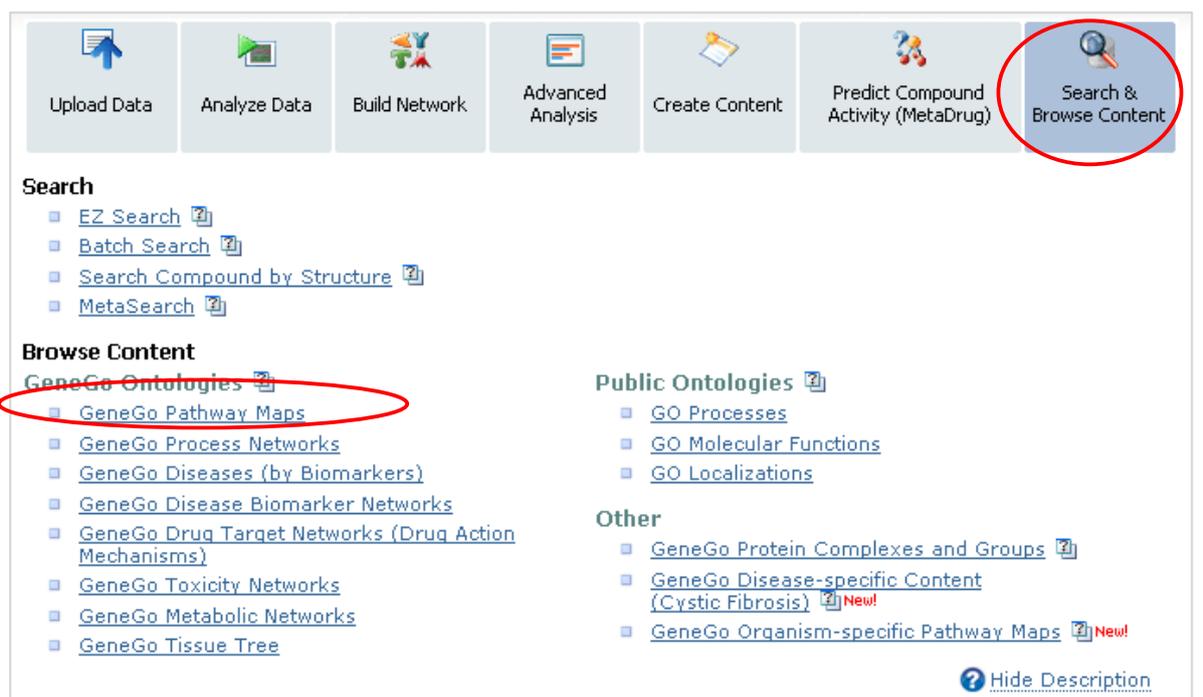


ワイルドカード(*)を使った検索も可能です。

カノニカルパスウェイ(マップ)の表示

カノニカルパスウェイ(マップ)の表示およびパスウェイ上のオブジェクトおよび相互作用情報の閲覧方法について記載いたします。

- 1.1 Start Page より *Search & Browse Contents* を選択し、ここで *GeneGo Pathway Maps* をクリックします。



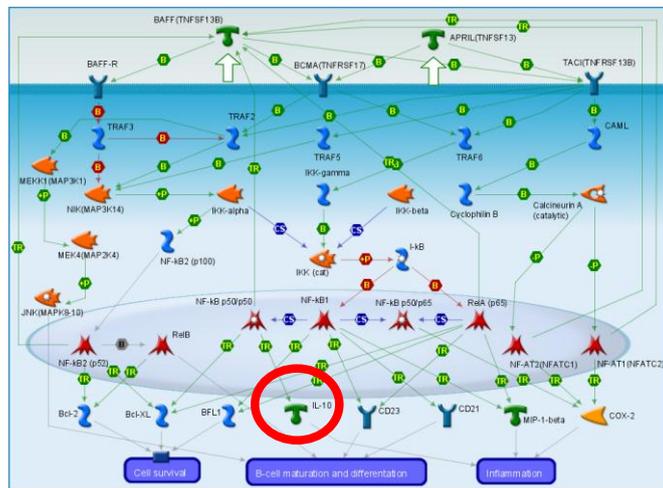
- 1.2 GeneGo Pathway Maps 画面では、すべてのマップが、カテゴリ毎に階層構造で表示されます。フォルダをクリックすると、その下の階層が展開されます。Expand ボタンをクリックすると、すべての階層が展開されます。今回は下記ディレクトリにあるマップを1つ選択します。
(*Regulatory processes/ Apoptosis and survival/ Apoptosis and survival_APRIL and BAFF signaling*)

New! - Updated map folders and novel pathway maps added over the last three months
****** - Maps not included in enrichment analysis.

Maps Organism-specific maps Conventional metabolic maps ** Search maps

Expand Collapse

- ROOT
 - Metabolic maps
 - Regulatory processes
 - Apoptosis and survival **New!**
 - Apoptosis and survival APRIL and BAFF signaling**
 - Apoptosis and survival Anti-apoptotic TNFs/NF- κ B/IAP pathway
 - Apoptosis and survival Anti-apoptotic TNFs/NF- κ B/IAP pathway
 - Apoptosis and survival Anti-apoptotic action of membrane-bound ESR1
 - Apoptosis and survival Anti-apoptotic action of nuclear ESR1 and ESR2
 - Apoptosis and survival Apoptotic Activin A signaling
 - Apoptosis and survival Apoptotic TNF-family pathways
 - Apoptosis and survival BAD phosphorylation
 - Apoptosis and survival Beta-2 adrenergic receptor anti-apoptotic action
 - Apoptosis and survival Caspase cascade
 - Apoptosis and survival Ceramides signaling pathway **New!**
 - Apoptosis and survival Cytoplasmic/mitochondrial transport of proapoptotic proteins Bid, Bmf and Bim
 - Apoptosis and survival DNA-damage-induced apoptosis
 - Apoptosis and survival FAS signaling cascades
 - Apoptosis and survival HTR1A signaling
 - Apoptosis and survival Inhibition of ROS-induced apoptosis by 17beta-estradiol
 - Apoptosis and survival Lymphotoxin-beta receptor signaling
 - Apoptosis and survival NGF signaling pathway
 - Apoptosis and survival Regulation of Apoptosis by Mitochondrial Proteins
 - Apoptosis and survival Role of CDK5 in neuronal death and survival



開いたマップ上では、細胞内局在を考慮して各オブジェクトとその関係性(相互作用)が図示されます。

- 1.3 *IL10* をクリックしてください。マップ上で注目するオブジェクトをクリックすることでクリックした分子に関連している情報を閲覧することが出来ます。さらに開いた画面で Object 名 (IL-10) をクリックすると、IL10 のプロパティ情報が示されます。

Network objects

Build network

#	Name	Description
1	IL-10	

Proteins

#	Name	Description
1	IL10_RAT	Interleukin-10
2	IL10_MOUSE	Interleukin-10
3	IL10_HUMAN	Interleukin-10



IL-10

Table of Content

- General
- Pathways and Processes
- Diseases
- Therapeutic Properties
- ADMETox Properties
- Reactions
- Interactions
- Biologic Activity

Human Mouse Rat

General

Gene Details

IL10

Symbols	IL10, CSIF, IL-10, IL10A, MGC126450, MGC126451, TGIF
HUGO Full Name	interleukin 10
Synonyms	cytokine synthesis inhibitory factor, interleukin 10
Description	The protein encoded by this gene is a cytokine produced primarily by monocytes and to a lesser extent by lymphocytes. This cytokine has pleiotropic effects in immunoregulation and inflammation. It down-regulates the expression of Th1 cytokines, MHC class II Ags, and costimulatory molecules on macrophages. It also enhances B cell survival, proliferation, and antibody production. This cytokine can block NF-kappa B activity, and is involved in the regulation of the JAK-STAT signaling pathway. Knockout studies in mice suggested the function of this cytokine as an essential immunoregulator in the intestinal tract. [provided by RefSeq]
Chromosomal Location	Chr1 1q31-q32
Predicted Target of microRNA by TargetScan	IL10
Species	Homo sapiens
Orthologs (Homologenes, NCBI)	Canis lupus familiaris , Danio rerio , Mus musculus , Rattus norvegicus , Gallus gallus , Bos taurus , Pan troglodytes

Protein Details

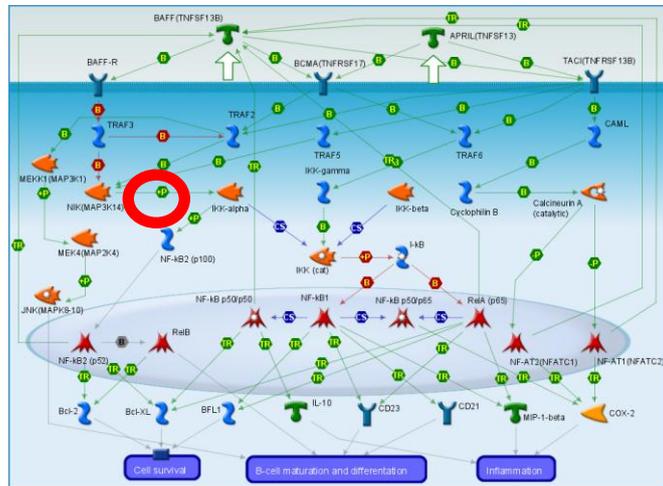
IL10_HUMAN

Name	IL10_HUMAN / Interleukin-10
Synonyms	CSIF, Cytokine synthesis inhibitory factor, IL-10, IL10_HUMAN, Interleukin-10
Description	Inhibits the synthesis of a number of cytokines, including IFN-gamma, IL-2, IL-3, TNF and GM-CSF produced by activated macrophages and by helper T-cells.
Molecular Weight	20517
Localization	extracellular region, extracellular space
Organ/Tissue Expression (RNA)	Adrenal Glands, Bone Marrow, Brain, Colon, Fetal brain, Fetal kidney, Fetal liver, Fetal thymus, Heart, Intestine, Small, Kidney, Liver, Lung, Lymphocytes, Mammary Glands, Human, Muscle, Skeletal, Ovary, Palatine Tonsil, Placenta, Prostate, Retina, Salivary Glands, Skin, Spinal Cord, Spleen, t-cell, Thymus Gland, Thyroid Gland, Trachea, Uterus



Human、Mouse、Rat のタブをクリックすることで、生物種毎の情報に切り替えることが可能です。

- 1.4 *NIK*と*IKK-alpha*の間の相互作用をクリックしてください。マップ上で注目する相互作用をクリックすると、文献ソースのリストが示されます。論文の題名をクリックすると PubMed アブストラクトが開きます。また、ヒト/マウス/ラットの生物種情報も収録しております。



Link Info

Link	Effect	Mechanism	Species
NIK(MAP3K14) → IKK-alpha	activation	Phosphorylation	Mus musculus, Rattus norvegicus, Homo sapiens

References

Hide All Details **Show All Details** Export to EndNote

- Woronicz JD, Cao H, Cao Z, Rothé M, Goeddel DV. [IkappaB kinase-beta: NF-kappaB activation and complex formation with IkappaB kinase-alpha and NIK.](#) Science 1997 Oct 31;278(5339):866-9 PMID: 9346485

Note	Method	Cell line/Tissue/Species
NIK associated with IKK-beta, although this interaction was weaker than NIK's interaction with IKK-alpha	western blot, coimmunoprecipitation, transfection	HEK293/Homo sapiens
- Bouwmeester T, Bauch A, Ruffner H, Angrand PO, Bergamini G, Croughton K, Cruciat C, Eberhard D, Gagneur J, Ghidelli S, Hopf C, Huhse B, Mangano R, Michon AM, Schirle M, Schlegl J, Schwab M, Stein MA, Bauer A, Casari G, Drewes G, Gavin AC, Jackson DB, Joberty G, Neubauer G, Rick J, Kuster B, Superti-Furga G. [A physical and functional map of the human TNF-alpha/NF-kappa B signal transduction pathway.](#) Nature cell biology 2004 Feb;6(2):97-105 PMID: 14743216

Note	Method	Cell line/Tissue/Species
Interaction of purified NIK(MAP3K14) with IKK-alpha was shown by liquid-chromatography mass spectrometry and directed functional perturbation studies using RNA interference	LC/MS/MS, protein kinase assay, coimmunoprecipitation	Homo sapiens

【補足】 Show All Detail ボタン(赤線部)をクリックすると相互作用の基となった実験および Cell Line 情報を閲覧することが出来ます。また、Export to ボタン(青線部)をクリックするとチェックを入れた文献情報を EndNote へ出力することも可能です。

1.5 マップの上側にある Visualization options の Diseases—*Alzheimer Disease*:を選択してください。この機能用いると、注目する疾患、組織等に関連するオブジェクトにマークを付加することができます。今回は疾患情報なので  がオブジェクト右上に表示されます。

Visualization options

Markers	
Show	<input checked="" type="checkbox"/> All popups <input type="checkbox"/>
Diseases	 <input type="text"/>
Genes	 <input type="text"/>
Proteins	 <input type="text"/>
Compounds	 <input type="text"/>
Tissues	 <input type="text"/>
Orthologs	 <input type="text"/>
Organisms	 <input type="text"/>
Drug targets	 <input type="text"/>

