

NutTraitDataBase Manual

This database contains information about genes and gene families that directly or indirectly govern nutritional traits like mineral transportation and accumulation, vitamin biosynthesis and essential amino acid biosynthesis in flowering plants.

The Homepage of database looks like this

NutTraitDataBase

Home Essential Amino Acids Vitamins Minerals Help-Manual Contact US

NutTraitDatabase

This database contains information about genes and gene families that directly or indirectly govern nutritional traits like mineral transportation and accumulation, vitamin biosynthesis and essential amino acid biosynthesis in field crops and flowering plants.

ICAR-Indian Agricultural Statistics Research Institute Library Avenue, PUSA, New Delhi - 110 012

The Home page of Database contains 6 options in the top menu bar accessible with one click.

- A click on 'Home' brings you back to the home page from any other page
- A click on 'Essential Amino Acid' takes to you another page containing information about genes related to essential amino acid biosynthesis
- A click on 'Vitamin' takes to you another page containing information about genes related to vitamin biosynthesis.
- A click on 'Minerals' takes to you another page containing information about genes related to mineral transportation.
- 'Help manual' provides you all the details for using of the database.
- 'Contact us' provides information of the database development team for resolving any queries.

The 'Essential Amino Acid' page contains information genes responsible for biosynthesis of nine EAAs for human diet: Valine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, and methionine. By clicking on any of these 9 EAA labels you will get the information of all biosynthetic genes responsible for biosynthesis of that particular EAA.



The banner features the ICAR logo on the left and the IASRI logo on the right. The central text reads "NutTraitDataBase". Below the banner is a green navigation bar with the following links: Home, Essential Amino Acids, Vitamins, Minerals, Help-Manual, and Contact US.

Histidine (H)
Isoleucine (I)
Leucine (L)
Lysine (K)
Methionine (M)
Phenylalanine (F)
Threonine (T)
Tryptophan (W)
Valine (V)

Essential amino acids

Essential amino acids (EAAs) are needed for the synthesis of proteins in an organism but cannot be synthesized by the organism itself. Therefore EAAs must be present in the diet. There are nine EAAs for human diet: Valine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, and methionine.

By clicking on 'lysine' on Essential Amino Acid page you will get this page containing all information of genes related to lysine biosynthesis in tabular format. To get the protein sequence of any of the genes click on uniprot id hyperlink, Or you can download all sequences by clicking on download all at the bottom of the page.



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Amino Acid Lysine details

Uniprot id	Protein Name	PAnter ID	Organism
A0A022QDU0	Uncharacterized protein	PTHR11133	Erythranthe guttata
A0A022QKY8	Uncharacterized protein	PTHR31689	Erythranthe guttata
A0A022QMI5	Aspartokinase	PTHR21499	Erythranthe guttata
A0A022R4A7	Uncharacterized protein	PTHR21499	Erythranthe guttata
A0A022R693	Uncharacterized protein	PTHR12215	Erythranthe guttata
A0A022RAB2	Uncharacterized protein	PTHR12215	Erythranthe guttata
A0A022RNP0	Uncharacterized protein	PTHR31689	Erythranthe guttata
A0A022RUJ7	Uncharacterized protein	PTHR43727	Erythranthe guttata
A0A061E3P8	Aspartate kinase 1	PTHR21499	Theobroma cacao
A0A061E6P4	Pyridoxal-dependent decarboxylase family protein isoform 1	PTHR43727	Theobroma cacao

By clicking on any Uniprot id you will get its sequence as in below page.



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Uniprot id	Protein Sequence
A0A022PMZ8	MASNQTQSRDSQNAQLHDLEMMQDPEFDYSTRSQWLRRAAVLGANDGLVSTAALMVGAVGAVKHGMKAMILTGFAGLVAGA CSMAIGEYVSVHSQLDIEYAQMCRDSEKRAGGGADAVEDGGDKESLPNPVQAAAASALAFVSGAMVPLLAASFIKEYRV RIGVVAAVTVALVFGWLGAVLGRAPVVRSSARVLVGGWLAMAVTFGLTKLIGTKGLTLN

The Uniprot Id is linked to Uniprot Database. You may click on the Uniprot ID to get the Uniprot page for related information about the protein ID.

All the related information for the protein like its functional annotation, taxonomy, subcellular location, interaction, structure, family & domain and links to other important databases etc. can be availed on the linked Uniprot page .

The screenshot shows the UniProt website interface. At the top, there is a browser tab bar with several open tabs, and the address bar shows the URL uniprot.org/uniprotkb/A0A022PMZ8/entry. The UniProt logo and navigation menu are visible, including options like BLAST, Align, Peptide search, ID mapping, and SPARQL. The main content area displays the protein entry for A0A022PMZ8, identified as A0A022PMZ8_ERYGU. Key information includes its status as an uncharacterized protein from Erythranthe guttata (Yellow monkey flower). The page features a left sidebar with various menu items such as Function, Names & Taxonomy, Subcellular Location, Phenotypes & Variants, PTM/Processing, Expression, Interaction, Structure, Family & Domains, Sequence, and Similar Proteins. The main content area shows the 'Function' section with 'GO annotations' and a 'Slimming set' dropdown menu set to 'plant'. Below this, there is a large, complex diagram representing the protein's structure and its associated GO annotations, with terms like 'all molecular function', 'all biological process', and 'all cellular component' visible. A 'Feedback' button is located on the right side of the page.

Similar to 'Essential Amino Acid' page all the information related to Vitamin biosynthesis gene can be availed through 'Vitamin' Page.



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- [Vitamin A](#)
- [Vitamin B1](#)
- [Vitamin B2](#)
- [Vitamin B3](#)
- [Vitamin B5](#)
- [Vitamin B6](#)
- [Vitamin B7](#)
- [Vitamin C](#)
- [Vitamin E](#)
- [Vitamin K1](#)

Vitamin

Vitamins are a diverse group of primary metabolites. These are produced in modest amounts, making it challenging to research the related pathways and enzymes. Vitamins derived from plants are of great significance to human health.

Similar to 'Essential Amino Acid' page all the information related to Mineral Transportation genes can be availed through 'Minerals' Page.



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Calcium
magnesium
potassium
sodium
cobalt
copper
iron
manganese
zinc

Minerals

The cationic minerals essential for human diet like calcium, magnesium, potassium, iron etc. are mainly obtained through edible plants. The process of selective transport over short or long distance is responsible for accumulation of these elements in the edible plant parts.