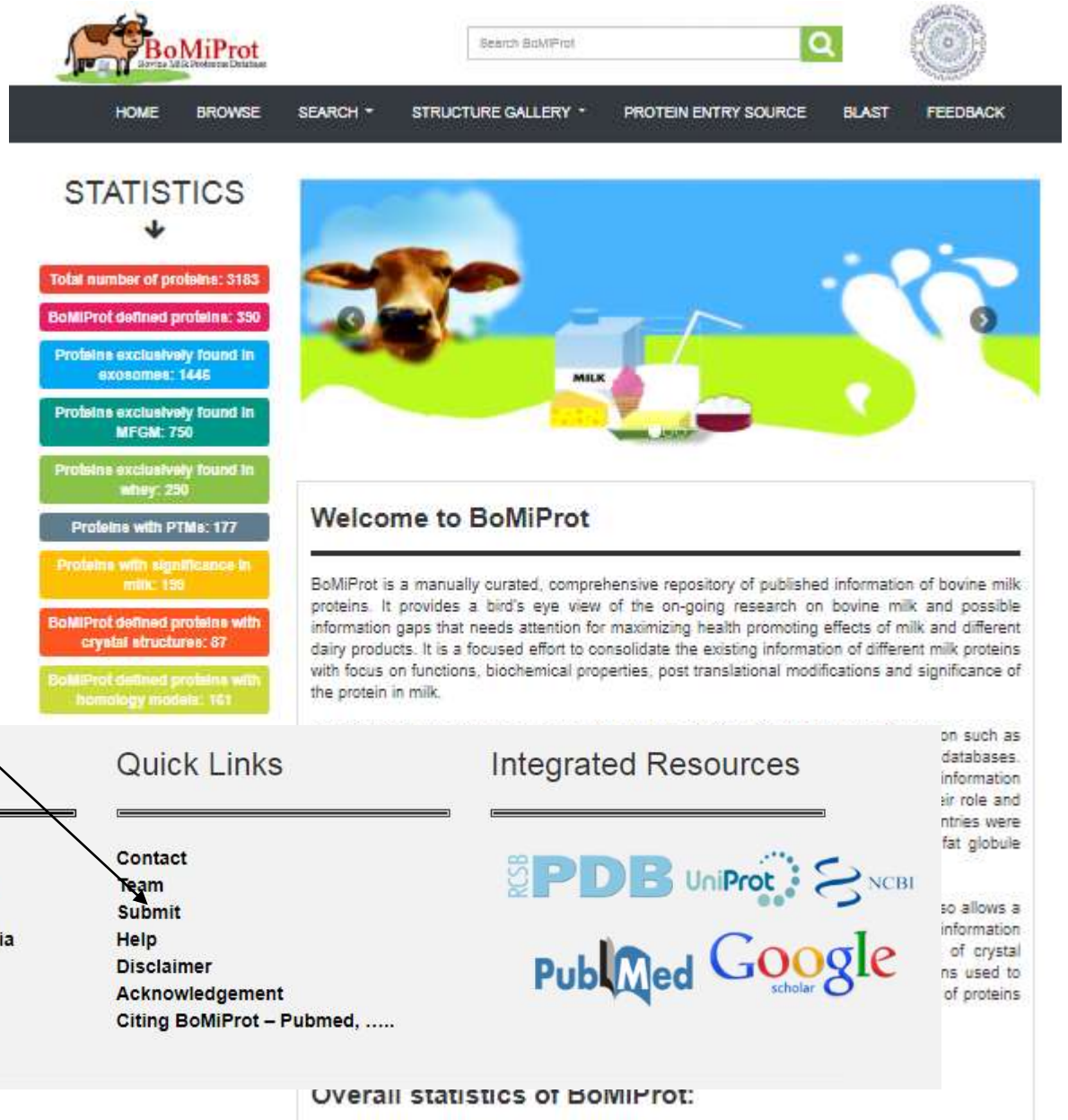
BoMiProt Tutorial

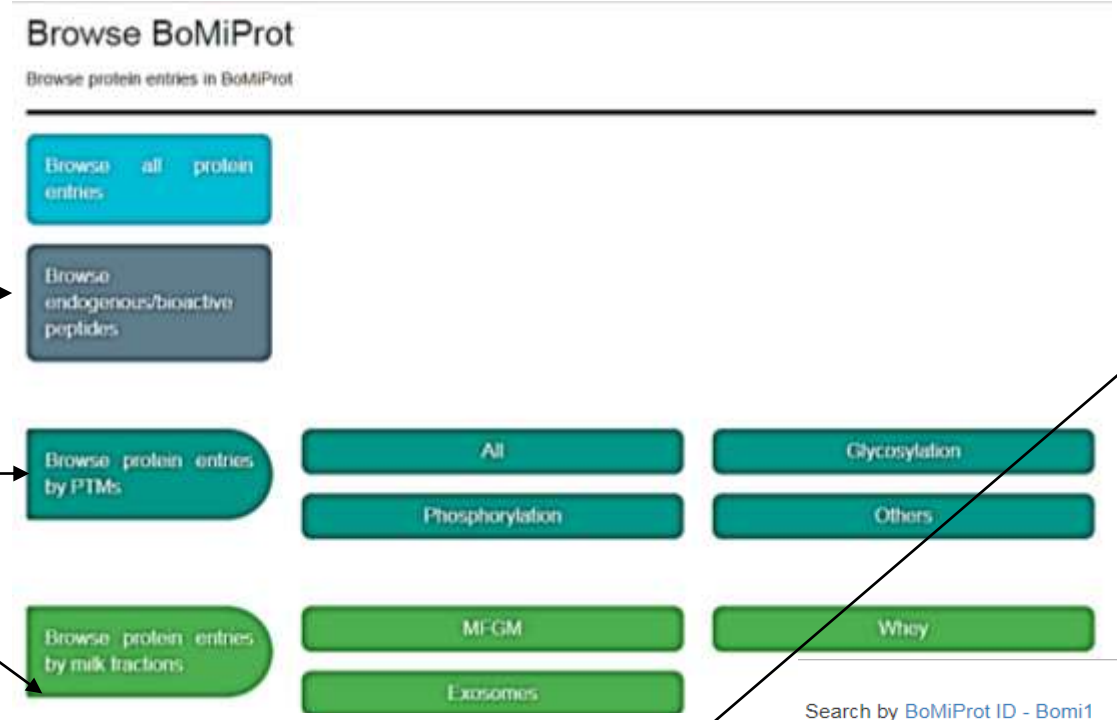
BoMiProt Home Page

Information can be retrieved by clicking on any of the desired links appearing as pull-down menus under four headings – Browse, Search, Structure Gallery, and Protein Entry Source

One can submit a new bovine milk protein



Browse Proteins in BoMiProt

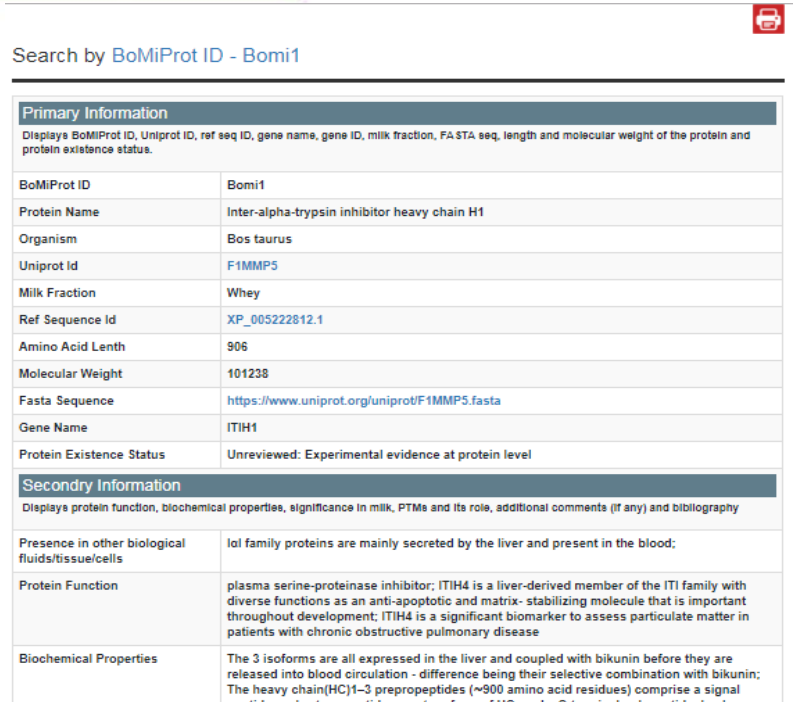


Browse Endogenous peptides

Browse Protein entries based on PTMs or Milk fractions

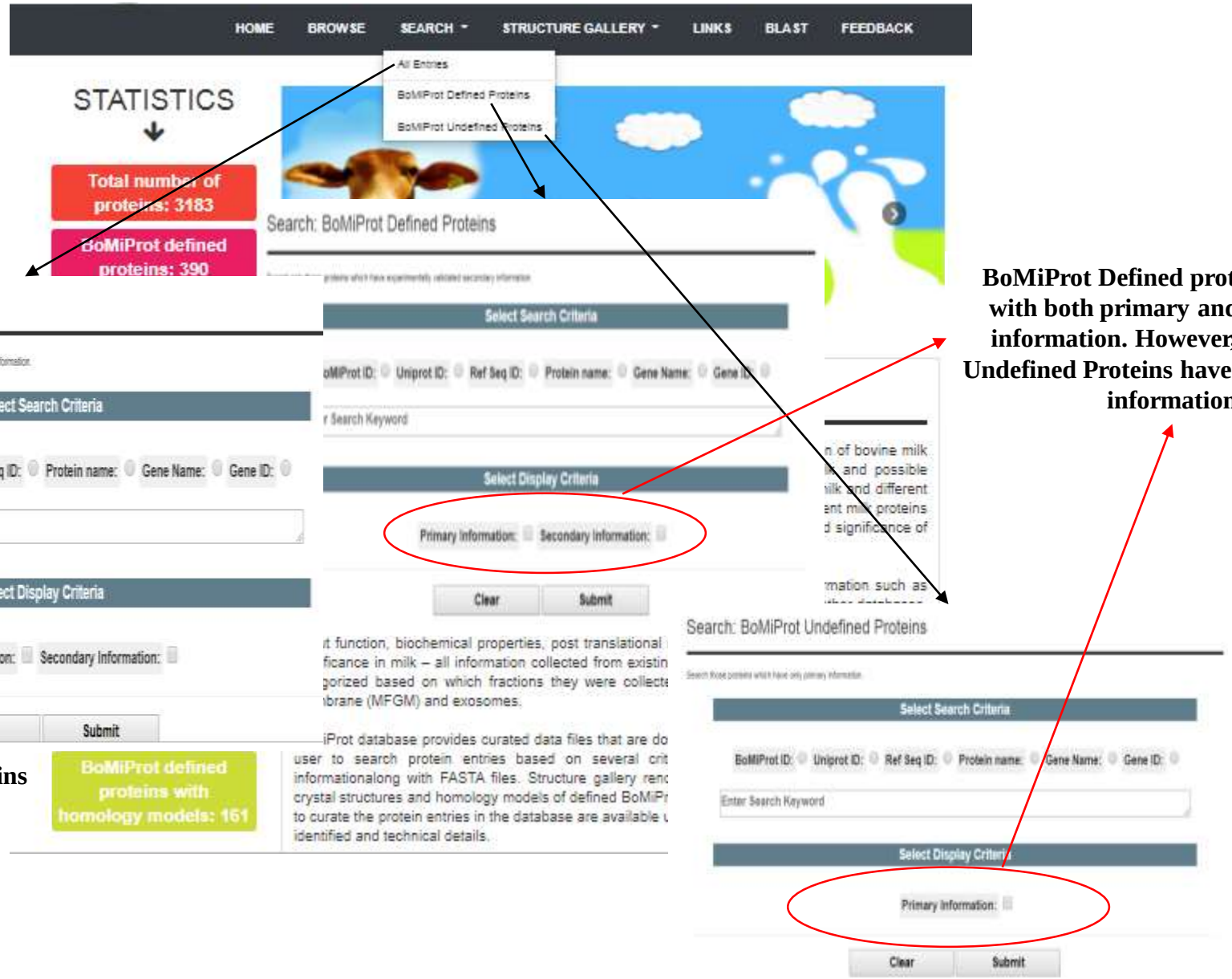
The Browse page will list down the protein entries based on the selected categories

Download and Print Options are present in each page



Search Proteins in BoMiProt

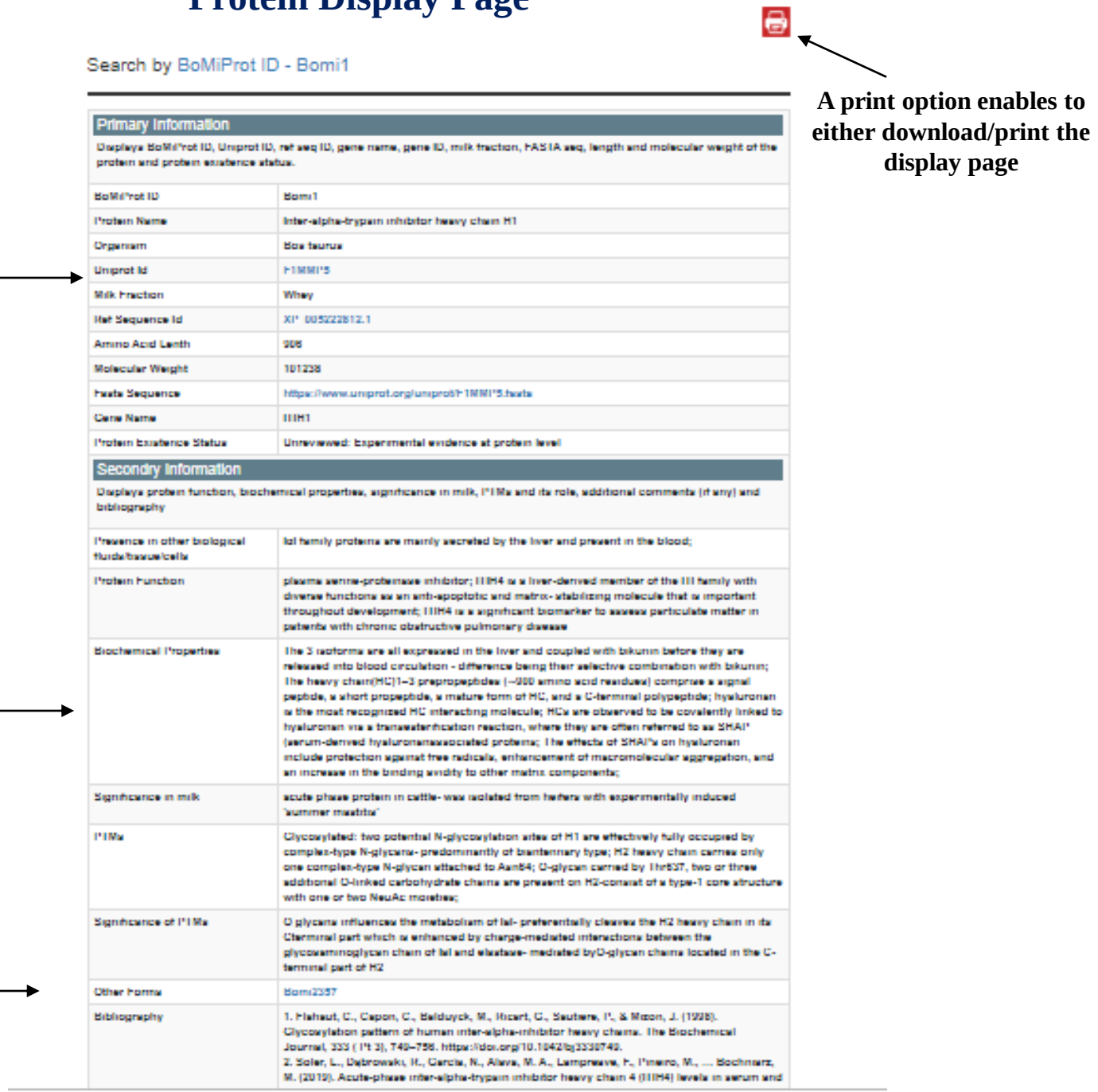
Place the cursor on Search and select from the pull-down menu appearing thereafter



All entries contains all proteins curated in BoMiProt

BoMiProt Defined proteins appear with both primary and secondary information. However, BoMiProt Undefined Proteins have only primary information

Protein Display Page



Search by BoMiProt ID - Bomi1

Primary Information

Displays BoMiProt ID, Uniprot ID, ref seq ID, gene name, gene ID, milk fraction, FASTA seq, length and molecular weight of the protein and protein existence status.

BoMiProt ID	Bomi1
Protein Name	Inter-alpha-trypsin inhibitor heavy chain H1
Organism	Bos taurus
Uniprot Id	P19827
Milk Fraction	Whey
Ref Sequence Id	XP_005222612.1
Amino Acid Lenth	908
Molecular Weight	101238
Fasta Sequence	https://www.uniprot.org/uniprot/P19827.fasta
Gene Name	ITIH1
Protein Existence Status	Unreviewed: Experimental evidence at protein level

Secondry Information

Displays protein function, biochemical properties, significance in milk, PTMs and its role, additional comments (if any) and bibliography

Presence in other biological fluids/tissues/cells	Isl family proteins are mainly secreted by the liver and present in the blood;
Protein Function	plasma serine-proteinase inhibitor; ITIH4 is a liver-derived member of the ITI family with diverse functions as an anti-apoptotic and matrix-stabilizing molecule that is important throughout development; ITIH4 is a significant biomarker to assess particulate matter in patients with chronic obstructive pulmonary disease
Biochemical Properties	The 3 isoforms are all expressed in the liver and coupled with bikunin before they are released into blood circulation - difference being their selective combination with bikunin; The heavy chain(HC)1–3 prepropeptides (~900 amino acid residues) comprise a signal peptide, a short propeptide, a mature form of HC, and a C-terminal polypeptide; hyaluronan is the most recognized HC interacting molecule; HCs are observed to be covalently linked to hyaluronan via a transesterification reaction, where they are often referred to as SHAP (serum-derived hyaluronan-associated proteins); The effects of SHAP's on hyaluronan include protection against free radicals, enhancement of macromolecular aggregation, and an increase in the binding avidity to other matrix components;
Significance in milk	acute phase protein in cattle- was isolated from heifers with experimentally induced 'summer mastitis'
PTMs	Glycosylated: two potential N-glycosylation sites of H1 are effectively fully occupied by complex-type N-glycans- predominantly of biantennary type; H2 heavy chain carries only one complex-type N-glycan attached to Asn84; O-glycan carried by Thr637, two or three additional O-linked carbohydrate chains are present on H2-consist of a type-1 core structure with one or two NeuAc moieties;
Significance of PTMs	O glycans influences the metabolism of Isl- preferentially cleaves the H2 heavy chain in its C-terminal part which is enhanced by charge-mediated interactions between the glycosaminoglycan chain of Isl and elastase- mediated byO-glycan chains located in the C-terminal part of H2
Other Forms	Bomi2357
Bibliography	1. Hiemaut, C., Capon, C., Balduyck, M., Ricart, G., Sautiere, P., & Mazon, J. (1998). Glycosylation pattern of human inter-alpha-inhibitor heavy chains. The Biochemical Journal, 333 (Pt 3), 749–756. https://doi.org/10.1042/bj3330749. 2. Soler, L., Dąbrowski, R., Garcia, N., Alava, M. A., Lamprecht, P., Pineiro, M., ... Bachmann, M. (2019). Acute-phase inter-alpha-trypsin inhibitor heavy chain 4 (ITIH4) levels in serum and

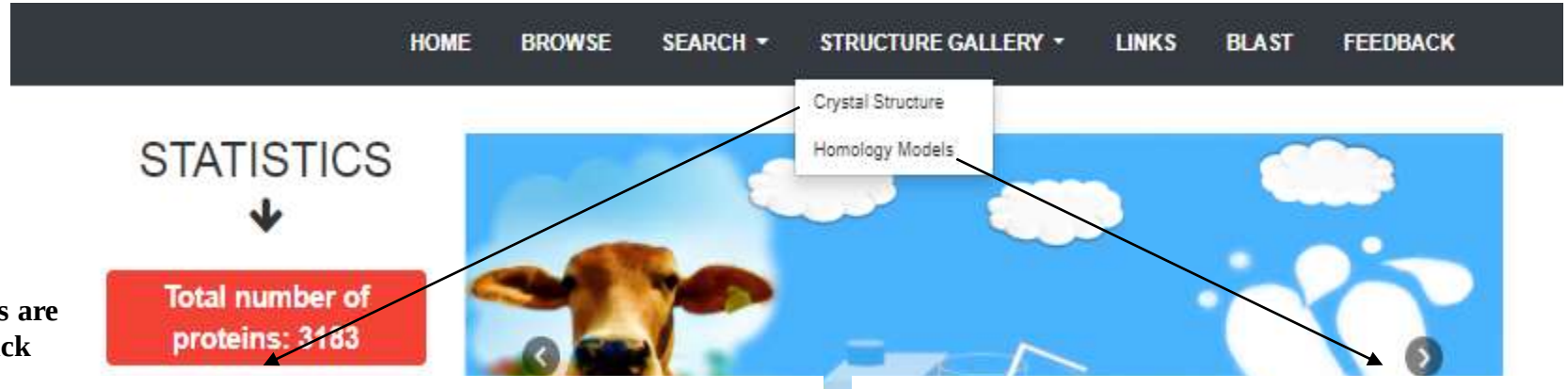
A print option enables to either download/print the display page

Displays primary information with cross links with other databases.

Displays secondary information curated from literature with bibliography.

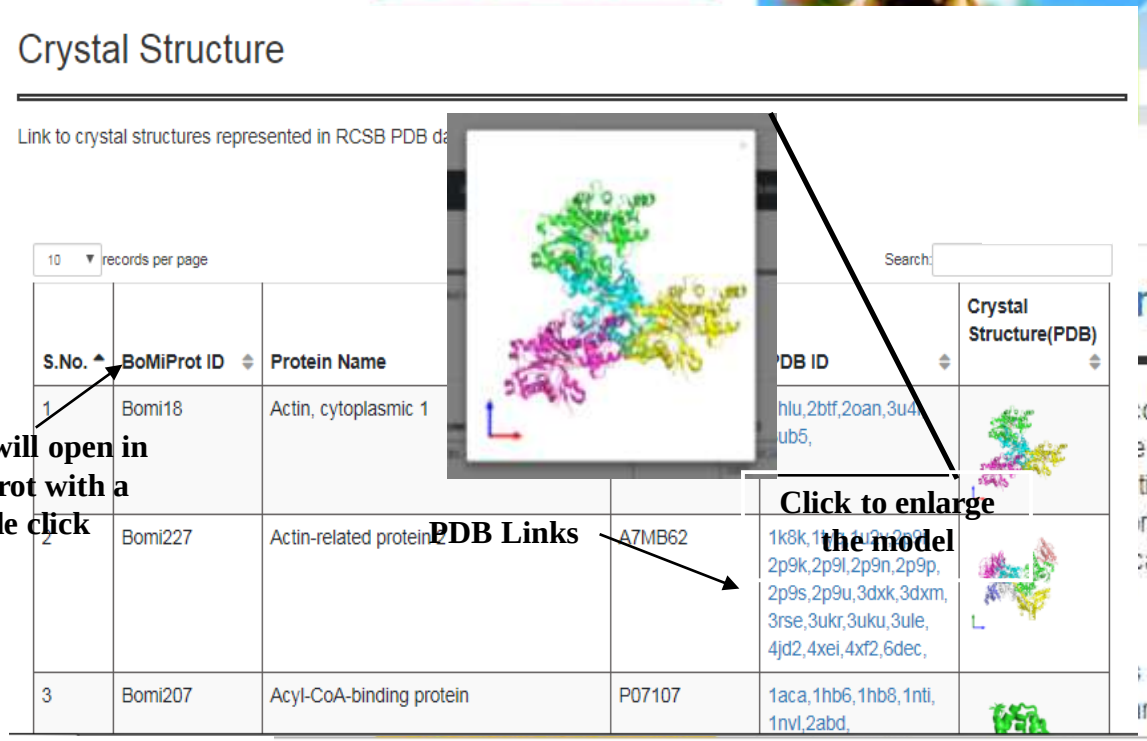
Proteins with same secondary information but different primary information are linked to each other

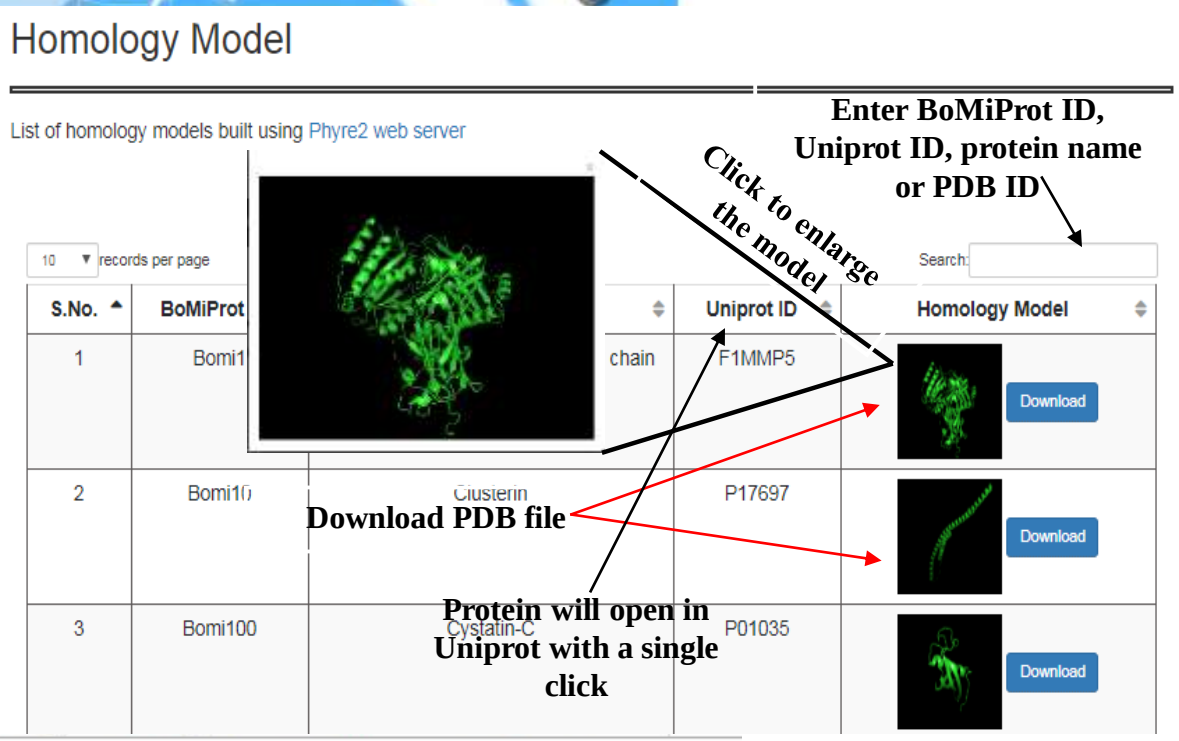
Search in Structural Gallery – Crystals or Homology Models



All crystal structures are displayed upon click

All homology models are displayed upon click





Protein Entry Source

Protein Entry Source

Display of publications used as source for protein entries

Provides list of all publications used to curate protein IDs

10 records per page

Search:

S.No.	Milk Fraction	Authors	Year	Total number of proteins identified	Techniques used	Protein Repository ID	Links
1	MFGM	Reinhardt et al	2006	120	Micro-capillary high performance LC nano MS/MS		Link
2	MFGM	Affolter et al	2010	387	Stable isotope dilution (SID)-MS combined with MRM		Link
3	Exosome	Reinhardt et al	2011	2107	Offline RP-fractionated on a nanoLC connected to tandem MS		Link
4	whey	Alonso-Fauste et al	2012	62	2D MALDI TOF		Link
5	whey, MFGM, Exosome	Reinhardt et al	2013	2971	iTRAQ-coupled LC-MS/MS		Link
6	MFGM	Yang et al	2015	445	iTRAQ-coupled LC-MS/MS		Link
7	Whole Milk	Vincent et al	2015	629	LC-MS/MS	PXD002529	Link

Use Blast Tool

Blast

Download

Allows user to run BLAST against protein sequences in BoMiProt Database

Input Protein Sequence(s) in (FASTA format)For Example file Click here

Paste a protein sequence in fasta format

Choice for BLAST blastp ▾ Expect Value 1 ▾

Weight Matrix BLOSUM62 ▾ BLAST Against BoMiProtDb ▾

Clear All RUN BLAST

Download complete Bovine Milk Proteome in FASTA format

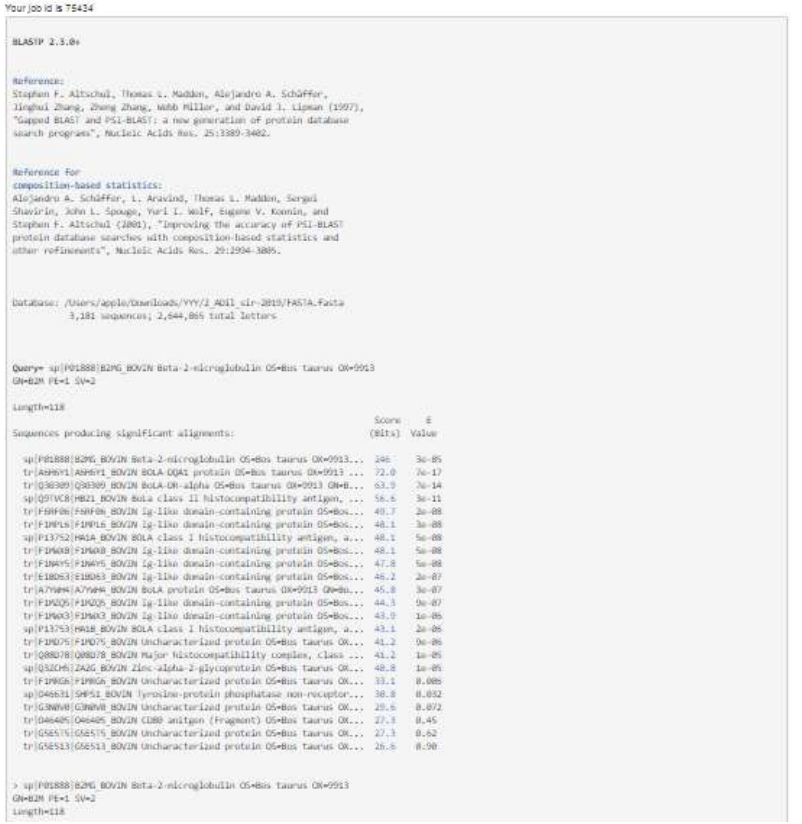
Select expect value in the pull-down menu. 1 is set by default.

Select weight matrix. BLOSUM62 is set by default.

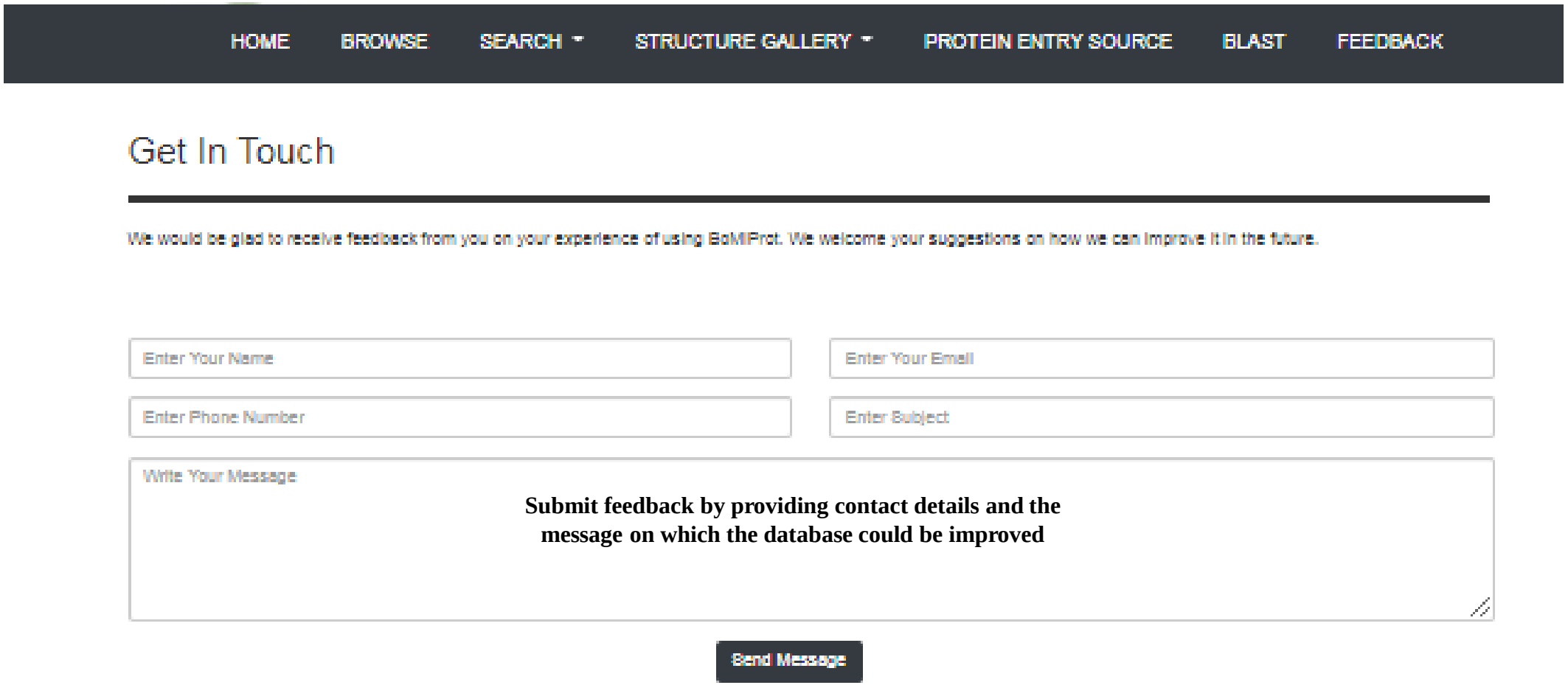
BLAST will be performed against default BoMiProt DB

Blast result page

Blast Result



Feedback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Write Your Message
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