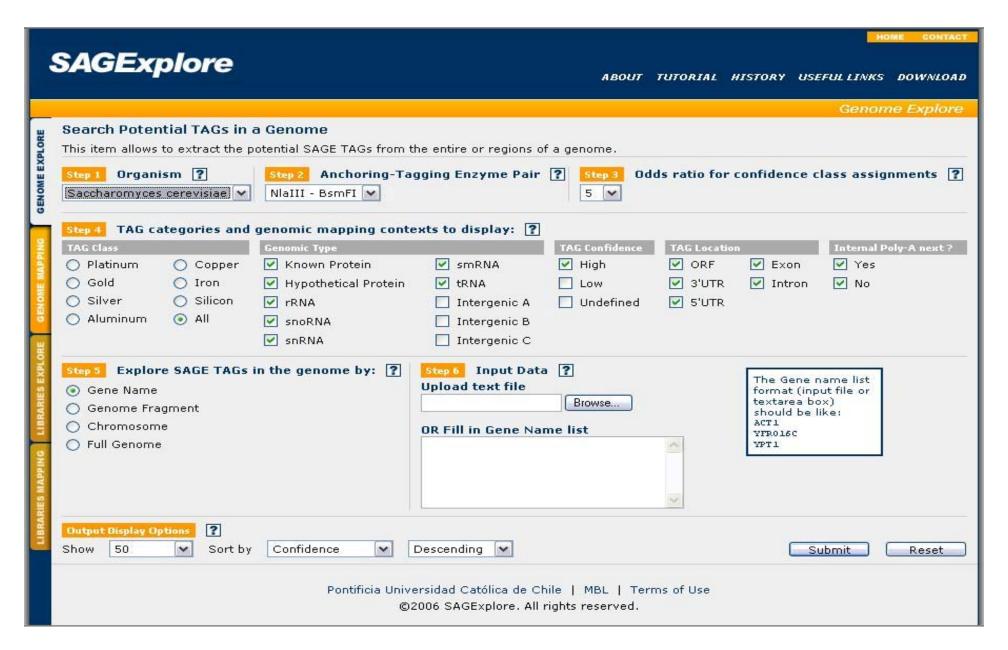


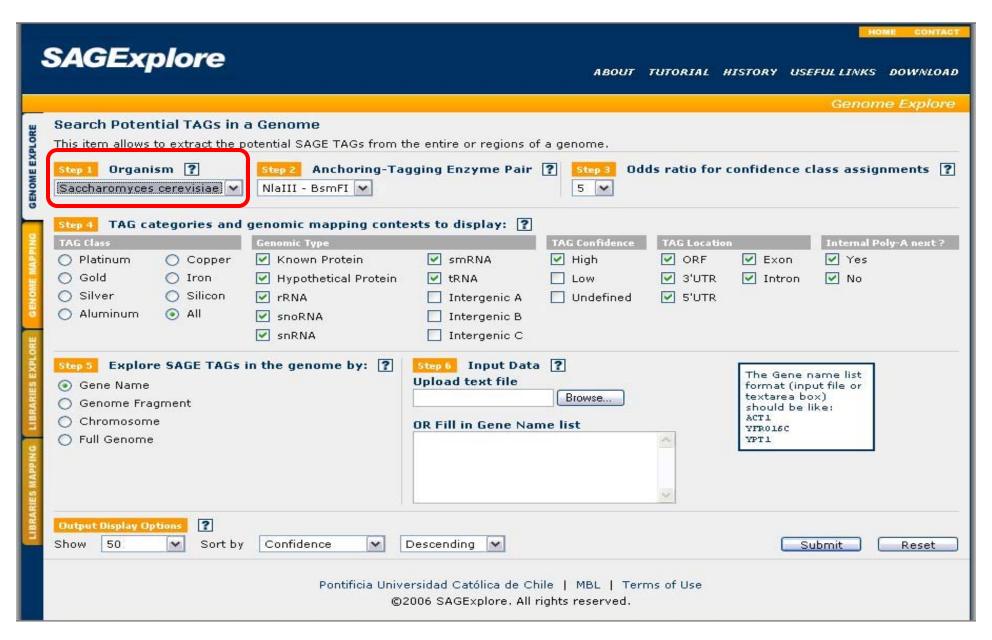
SAGExplore web server tutorial for Module I: Genome Explore



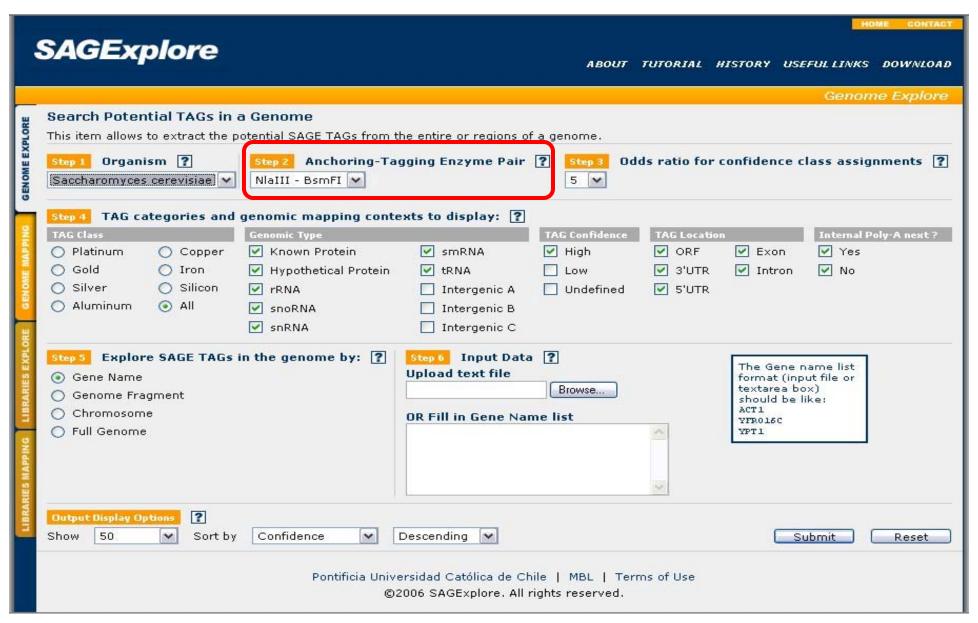
I.- Genome Explore Module: This module allows the user to browse and explore a genome, in terms of the context where potential or virtual SAGE tags are found for a given anchoring-tagging enzyme pair.



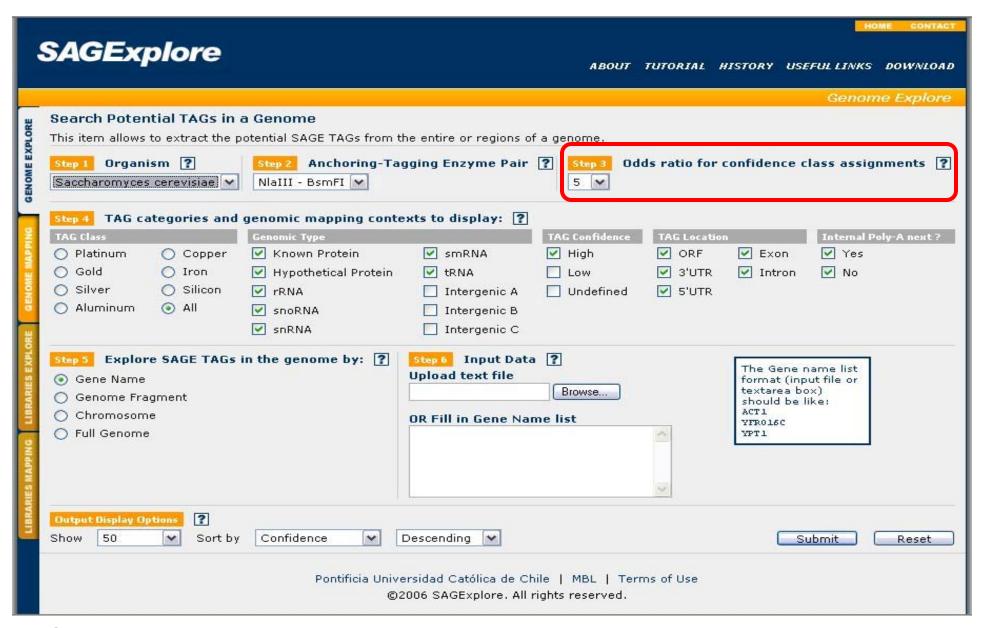
I.- Genome Explore Module Form: The user must follow six sequential steps in this form. Online help with the relevant details is provided for each step.



Step 1: The user must select the organism of interest. Currently, only Saccharomyces cerevisiae is available. In the near future, other organisms will be added.



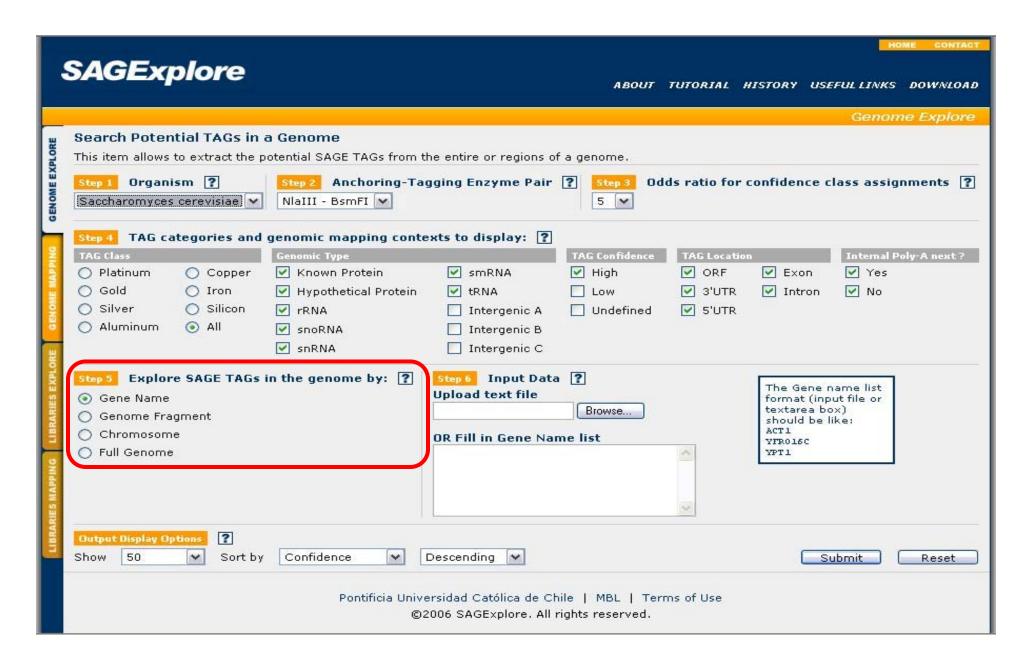
Step 2: The user must select the anchoring-tagging enzyme pair used in SAGE. Currently, only the pair NlaIII-BsmFI is available. In the near future, other enzyme pairs such as the one used in Long-SAGE will be added.



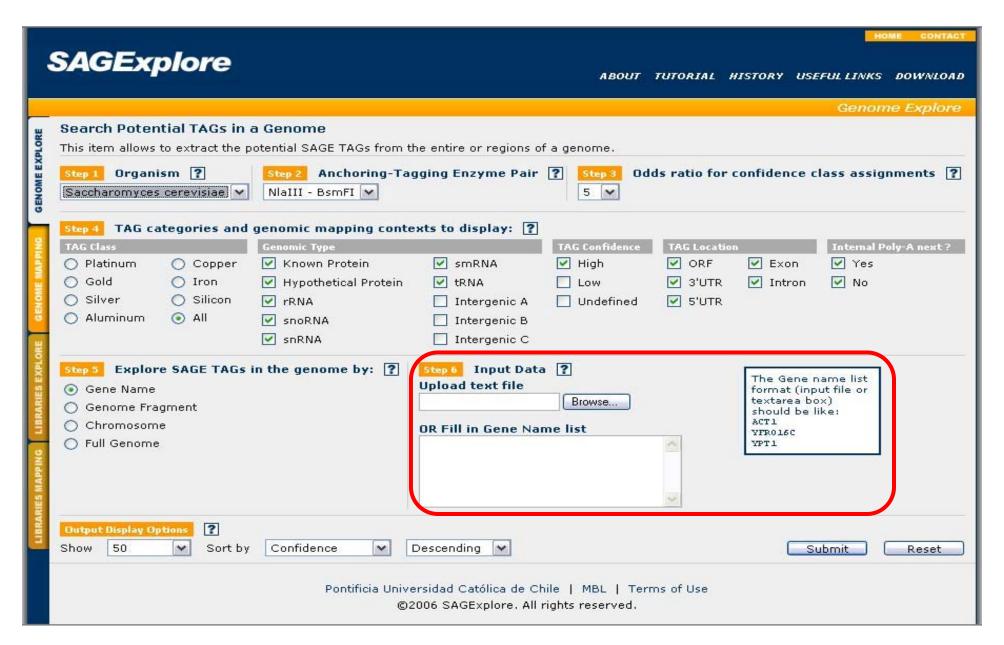
Step 3: The user must select the odds ratio used to assign the confidence classes to the different genomic tags. For details see: Malig, R., Varela, C., Agosin, E. and Melo, F. (2006) Accurate and unambiguous tag-to-gene mapping in SAGE by a hierarchical gene assignment procedure. *BMC Bioinformatics*, **7**, 487-507.

	SAGEX	olore			ABOUT	TUTORIAL H	IISTORY USE		DOWNLOAD
								Genom	e Explore
GENOME EXPLORE		to extract the p	otential SAGE TAGs from t						. 6
Step 1 Organism ? Step 2 Anchoring-Tagging Enzyme Pair ? Step 3 Odds ratio for confidence class assi Saccharomyces cerevisiae ✓ NlaIII - BsmFI ✓ 5 ✓							iass assign	ments [7]	
9	Step 4 TAG ca	ategories and	genomic mapping cont	exts to display: [?]					
RE GENOME MAPPING	TAG Class O Platinum O Gold O Silver O Aluminum	Copper Iron Silicon All	Genomic Type Known Protein Hypothetical Protein rRNA snoRNA snoRNA	smRNA tRNA Intergenic A Intergenic B Intergenic C	TAG Confidence High Low Undefined	TAG Location ORF 3'UTR 5'UTR	Exon Intron	Internal Po ✓ Yes ✓ No	ly-A next?
RIES MAPPING LIBRARIES EXPLO	Step 5 Explore SAGE TAGs in the genome by: ? Gene Name Genome Fragment Chromosome Full Genome			Step 6 Input Data ? Upload text file Browse OR Fill in Gene Name list			The Gene r format (inp textarea bo should be l ACT1 YFR016C YPT1	ut file or (x)	
LIBRARIES	Output Display Op Show 50	Sort by	Pontificia Univ	Descending ersidad Católica de C 2006 SAGExplore, All		ms of Use	S	ubmit	Reset

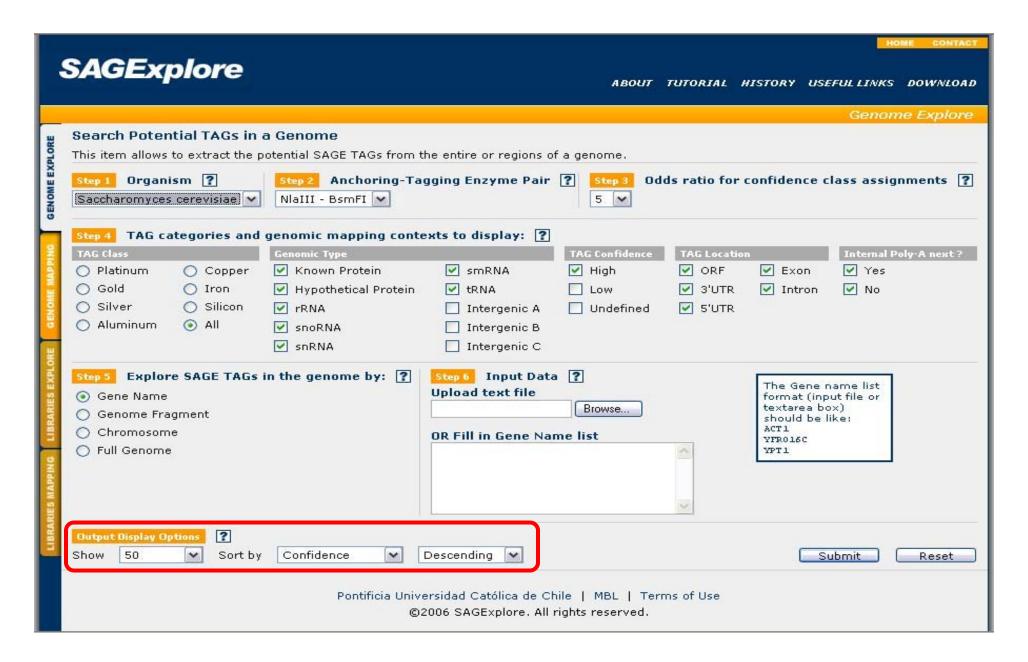
Step 4: The user can choose to display subsets of tags upon a large amount of different features. For details see the help links or: Malig, R., Varela, C., Agosin, E. and Melo, F. (2006) Accurate and unambiguous tag-to-gene mapping in SAGE by a hierarchical gene assignment procedure. *BMC Bioinformatics*, **7**, 487-507.



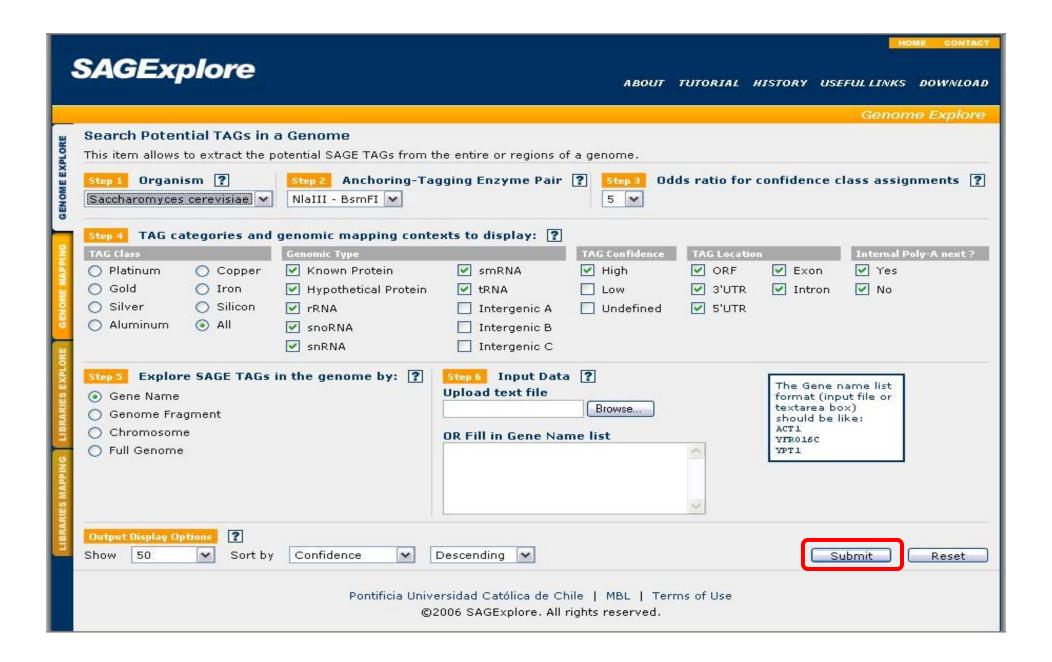
Step 5: The user must select the type of input that will be provided in the next step. Four options are available.



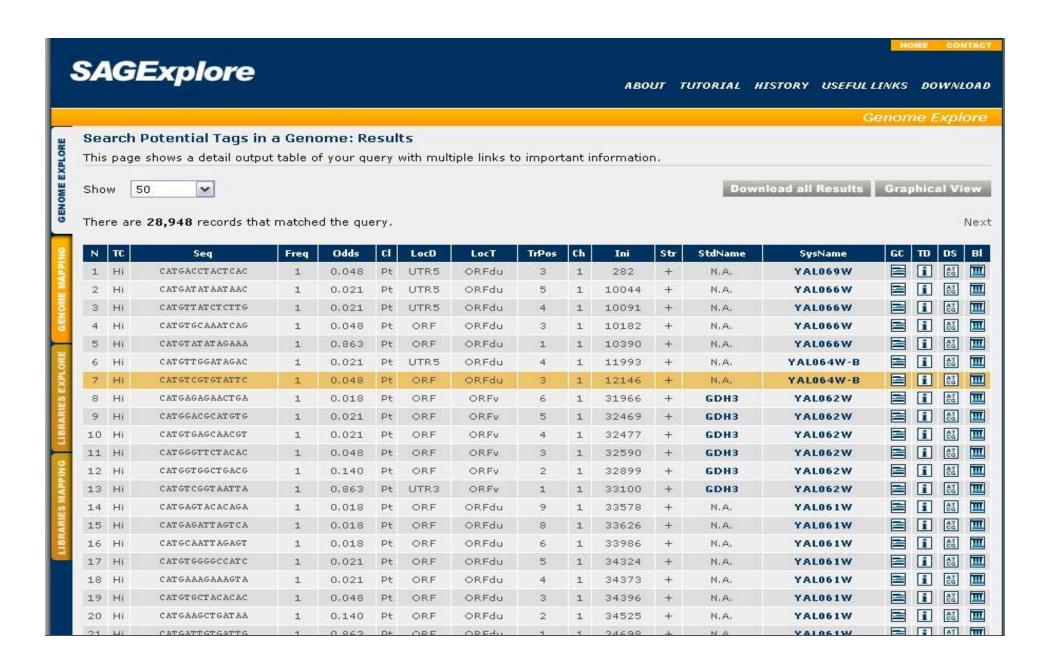
Step 6: The user must provide the list of genes, genome fragments or chromosomes to explore. In the case of the full genome option, no input is required here. The window in the right explains the input format required for each case.



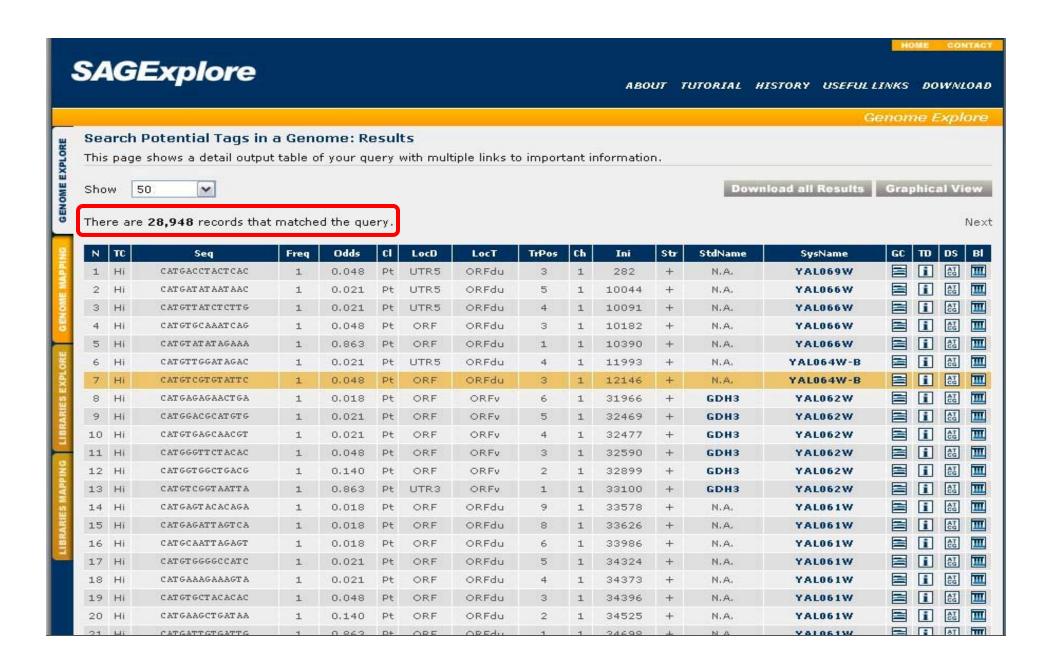
Pre-submit: Before submitting the query, the user can choose the number of rows to display per page and also how to sort the results.



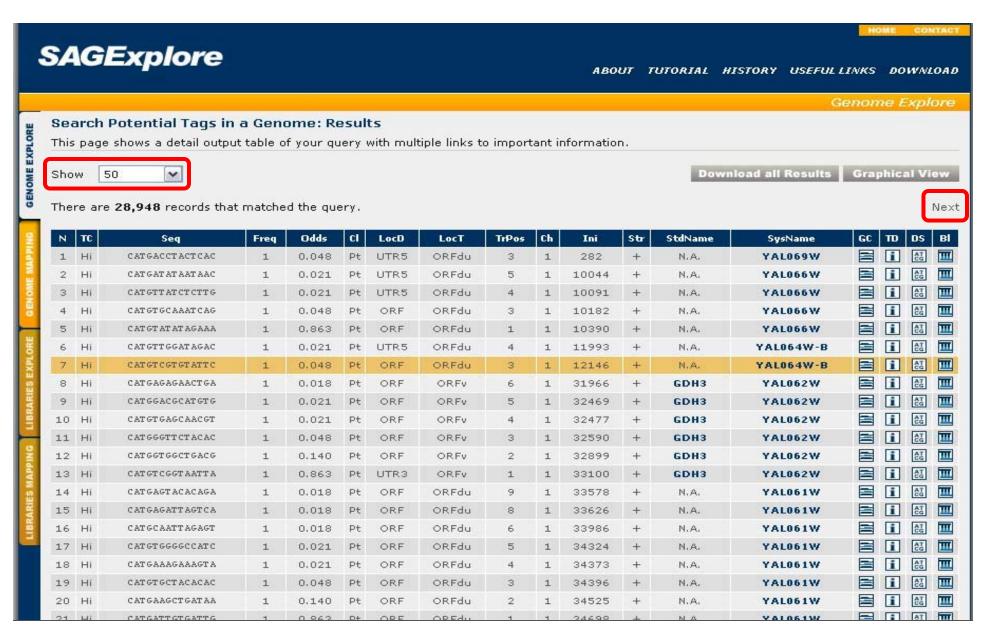
Submit: The user is ready to submit the query to the server.



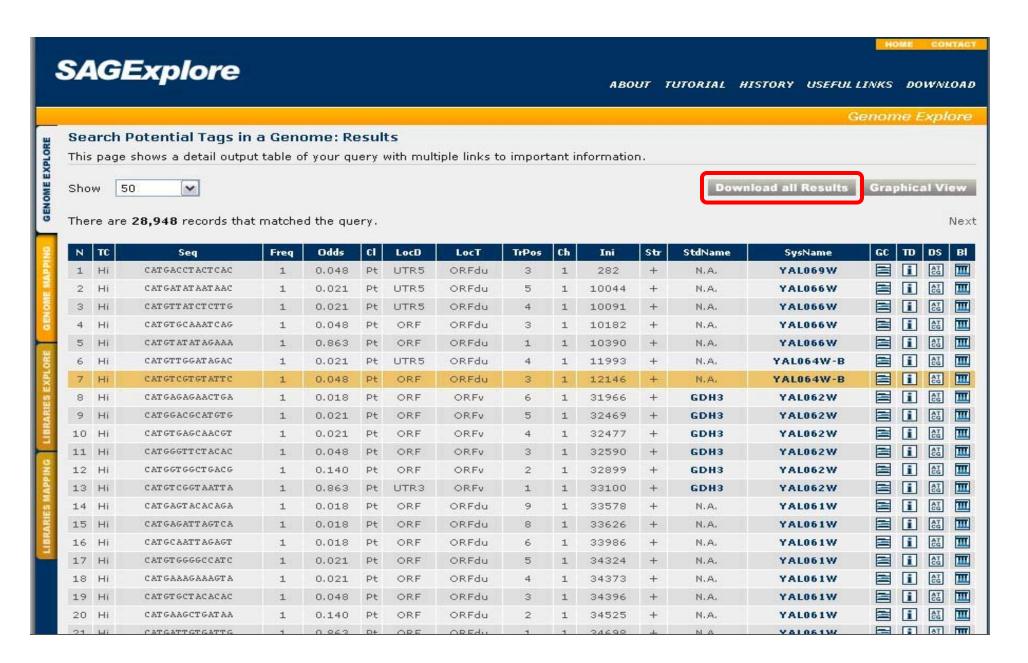
Query Results: Typical output of the Genome Explore Form.



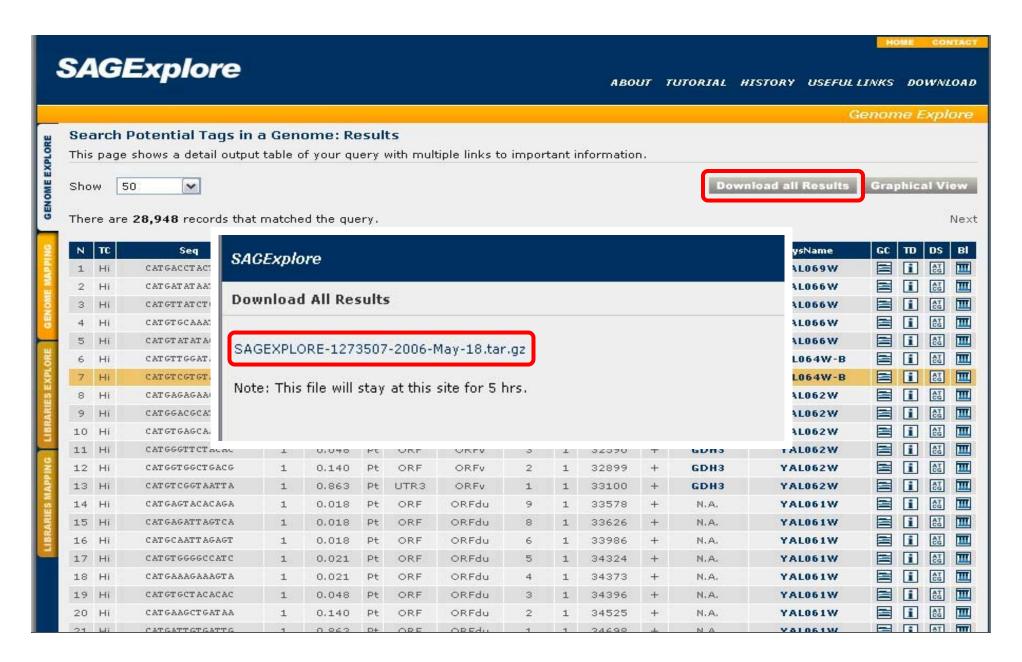
Query Results: The total number of records that matched the query are reported.



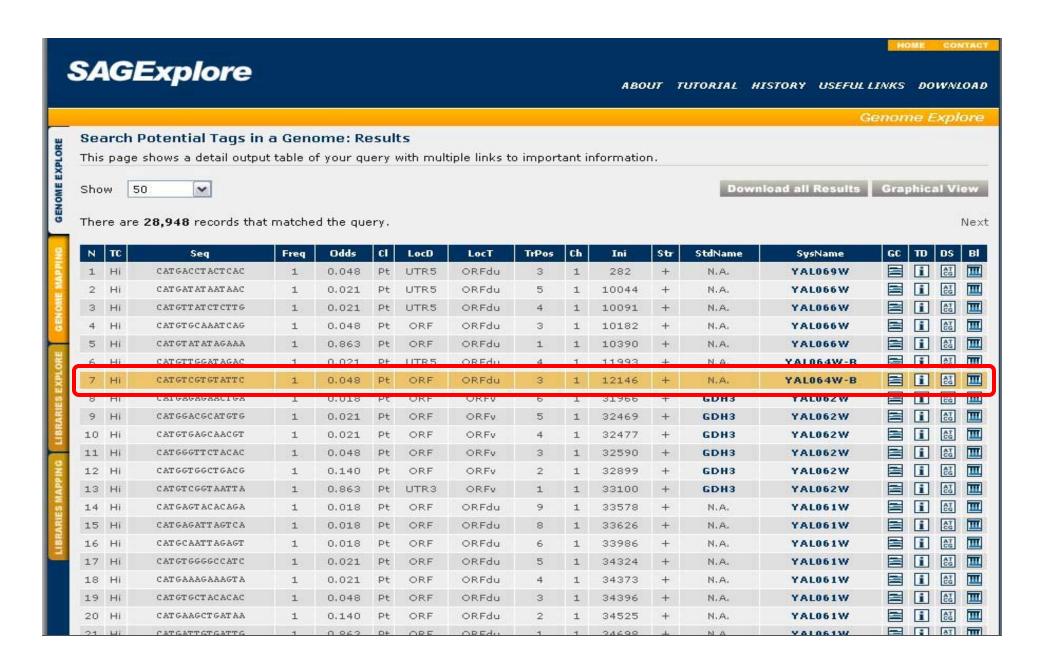
Query Results: Only a fraction of the results is displayed. This option can be easily changed by selecting a different number of rows to display or the next button used to go to the next page.



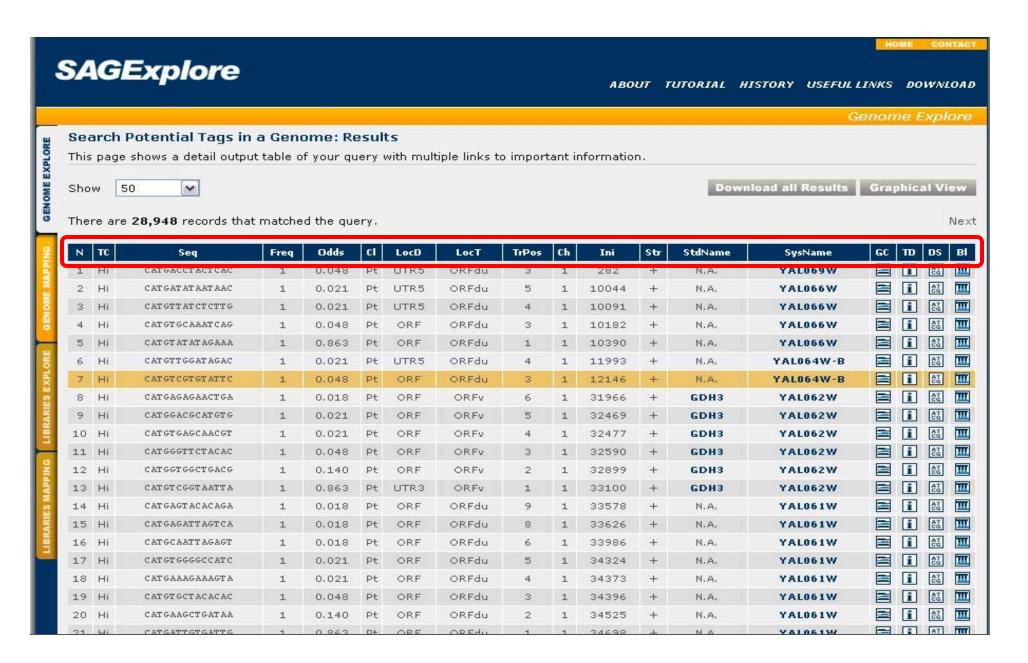
Query Results: The full table can be downloaded as tab-delimited text (compressed file or tar.gzipped).



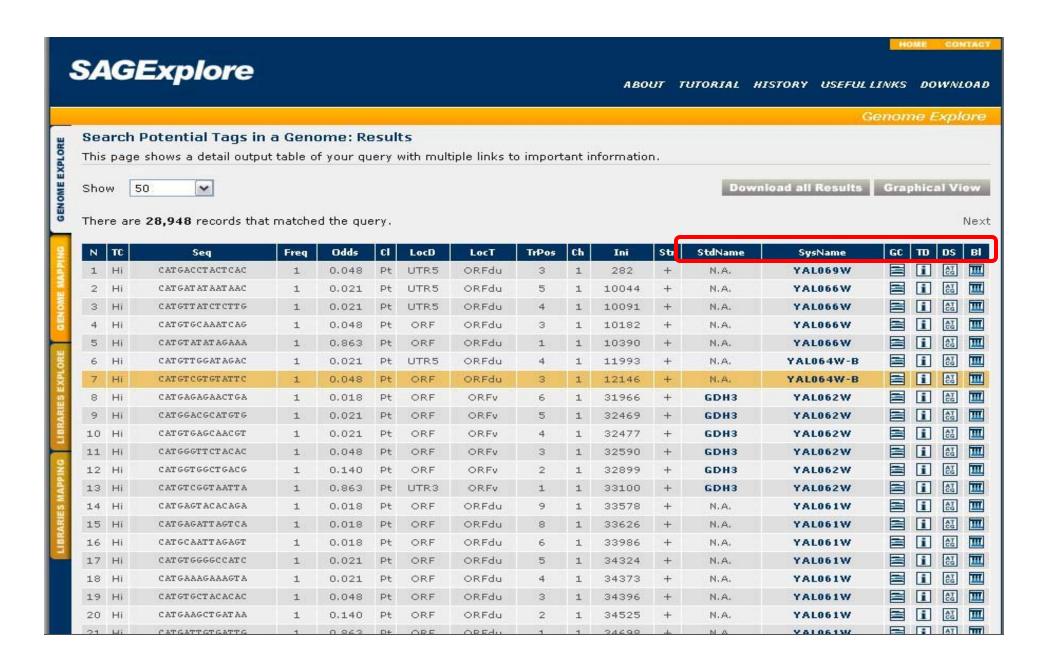
Query Results: Compressed files for download are kept for 5 hours at the server and then deleted. By clicking on the filename, the file is downloaded.



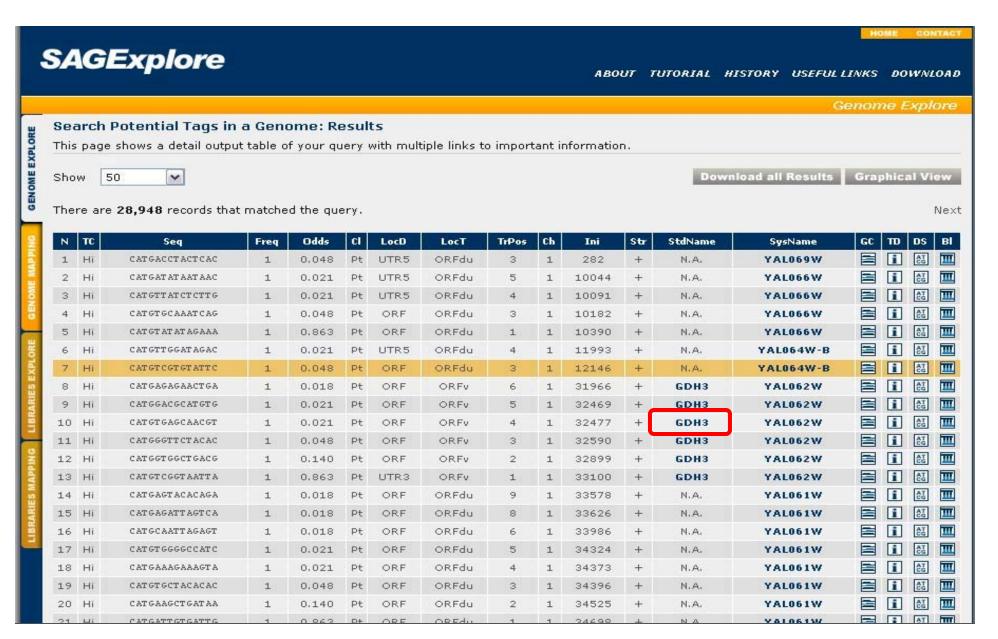
Query Results: Moving the mouse pointer over the table highlights the current row.



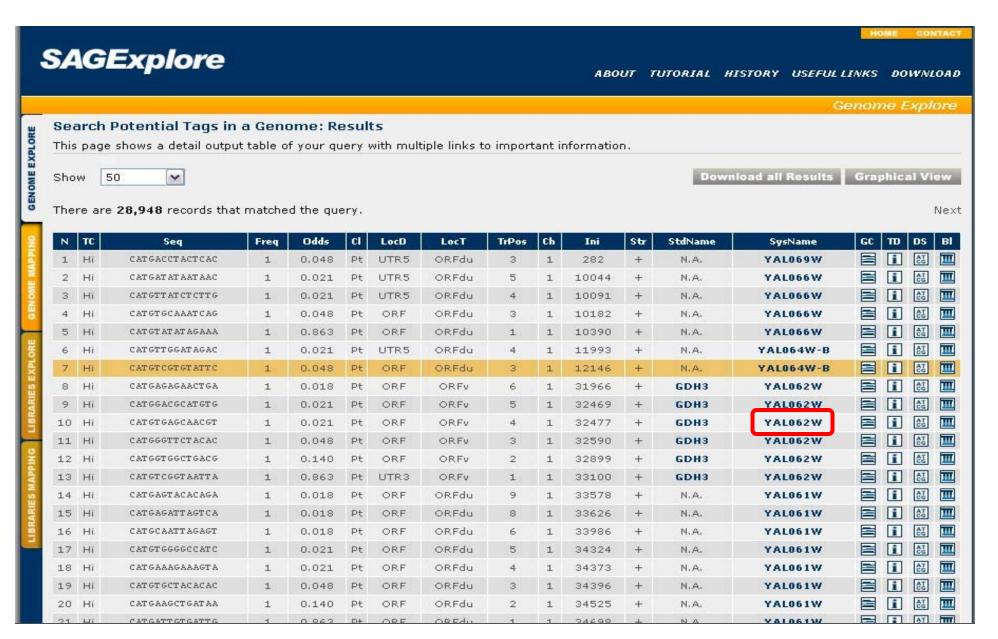
Query Results: Online help explaining the meaning of each column is obtained by left-clicking with the mouse over the column headers.



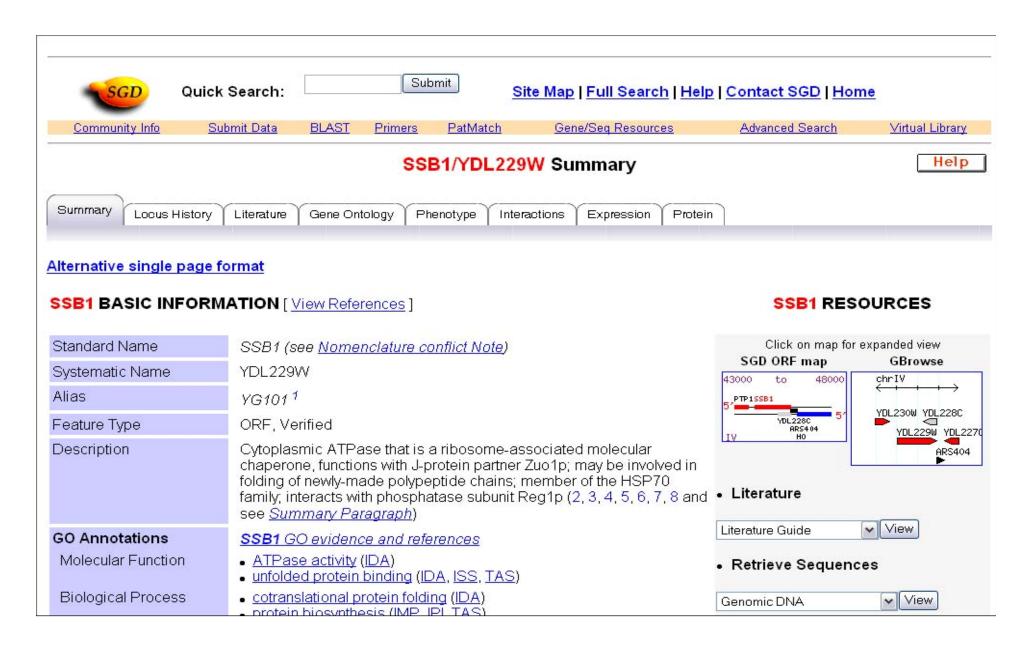
Query Results: These 6 columns contain linked fields.



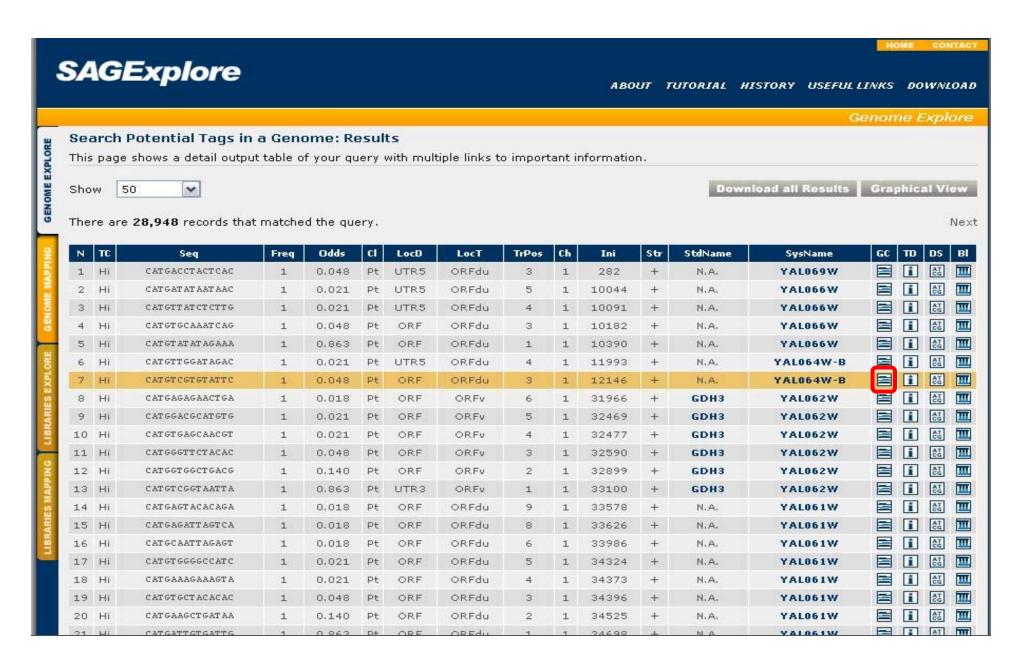
Query Results: By clicking over the standard gene name, a query to the Saccharomyces Genome Database is launched. Thus, the user can obtain a large amount of data about a given gene.



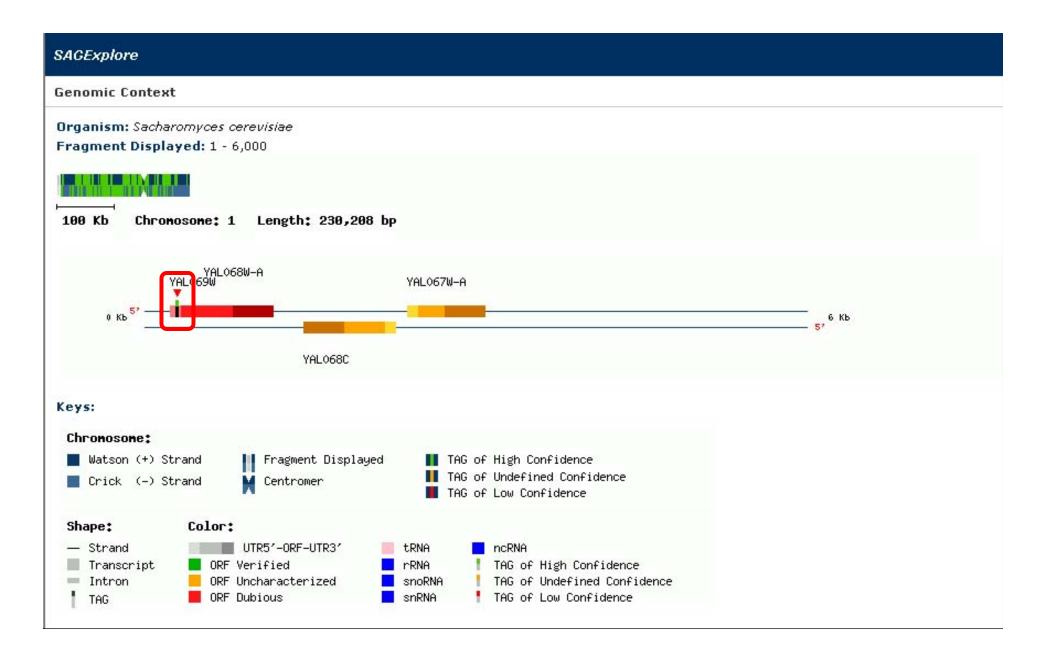
Query Results: By clicking over the systematic gene name, a query to the Saccharomyces Genome Database is launched. Thus, the user can obtain a large amount of data about a given gene.



SGD Query: An example of the results obtained when quering the Saccharomyces Genome Database by standard or systematic gene name.



Query Results: The genomic context where a tag matches can be obtained by clicking on this field.



Genomic Context: The selected tag is shown with a vertical arrow head.



Genomic Context: Gene names are linked to the Saccharomyces Genome Database.



Genomic Context: Keys of the graphical elements displayed above are provided.



Genomic Context: The fragment of the chromosome being displayed is specified.



Genomic Context: In this case corresponds to the 5' end of the chromosome. The user can click on this graphical chromosome to select and display a different region.



Genomic Context: The chromosome scale in base pairs is also shown.



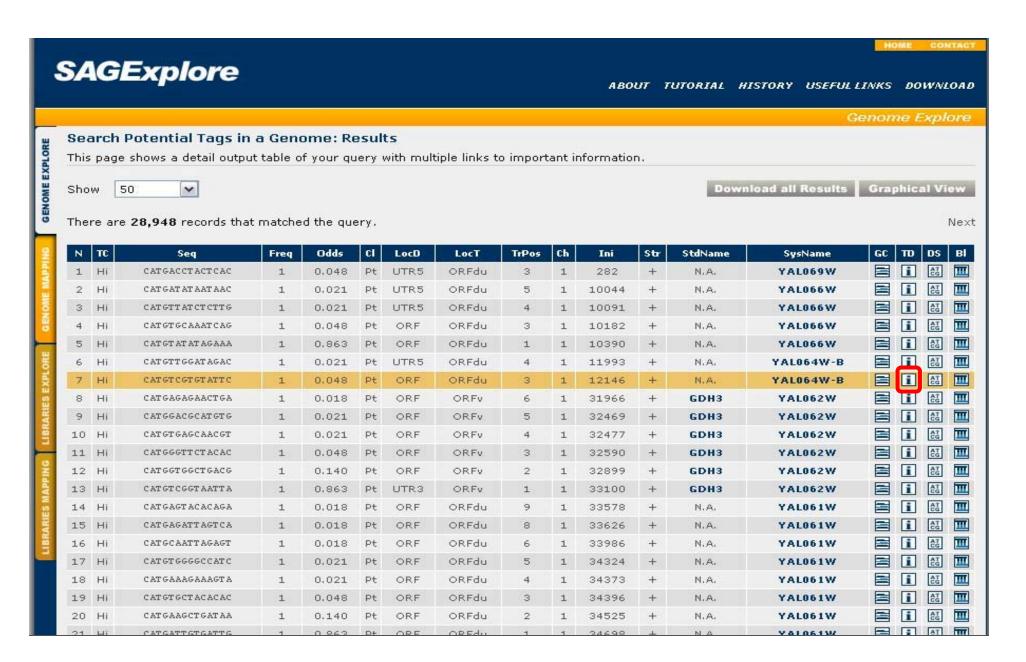
Genomic Context: The current chromosome number and size are given.



Genomic Context: The 5' and 3' positions of the chromosome fragment displayed are also shown.



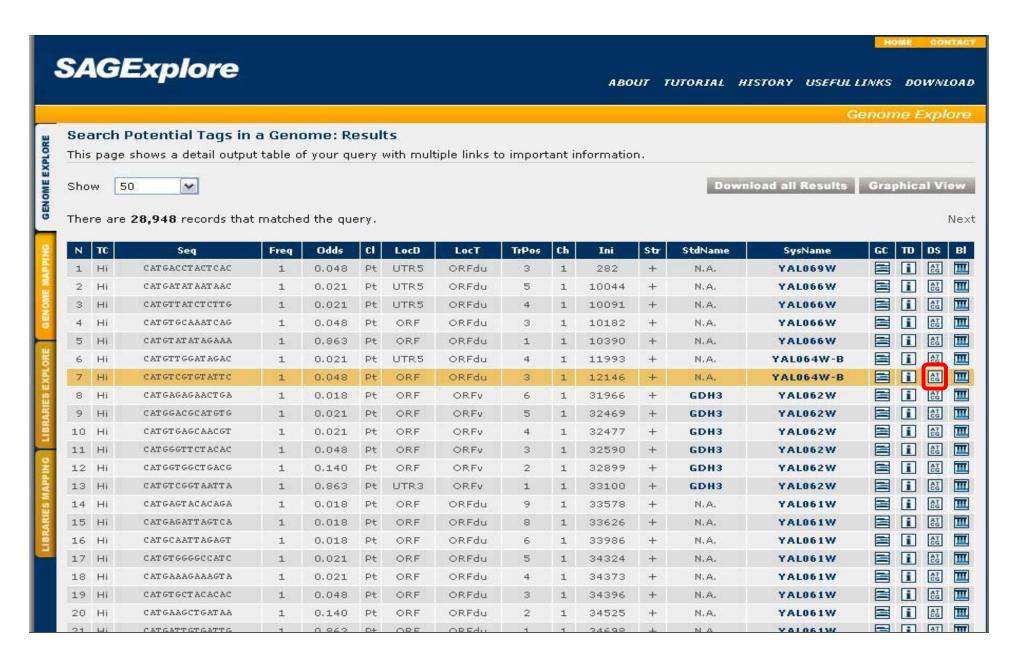
Genomic Context: Clicking on the tag will display a pop-up window with several details about this tag. This pop-up window can also be launched from the main results table and thus it will be explained next from there.



Query Results: A record with several tag details can be obtained by clicking on this field.

G Detail								
FAG: CATGACCTACTCAC								
Frequency	Class Score	TAG Class	Odds Ratio					
1	0.048	Pt	0,048					
Confidence	Chromosome	Start Coord.	End Coord.					
Hi	1	282	295					
Strand	Location	Intron?	UTR Pred.					
+	UTR5	N	Р					
Туре	Position	Distance	Poly-A Next?					
2	3	476	N					
Distance Poly-A	Length Poly-A	Feature Type	Feature Name					
0	0	ORFdu	Dubious					
Systemat	tic Name	Standard Name						
YALO	69W	N.A.						

Tag details: Many details about the tag are provided here. See the online help for an explanation of each field meaning.



Query Results: The genomic sequence context where the tag matches can be downloaded by clicking on this field.

SAGExplore

ATCG: UTR ATCG: TAG

ATG ... STOP: ORF

>scer|chr:4|+|229806-230618

Download Sequence: If the tag matches an ORF (as it is in this example), the transcript sequence is given. The 5' and 3' UTRs, the start and stop codons, and the tag sequence are all highlighted. If the tag matches an intergenic region, the 500 flanking nucleotides upstream and downstrem the tag are provided. In this case, neighbor elements such as UTRs from other genes are also highlighted if present.

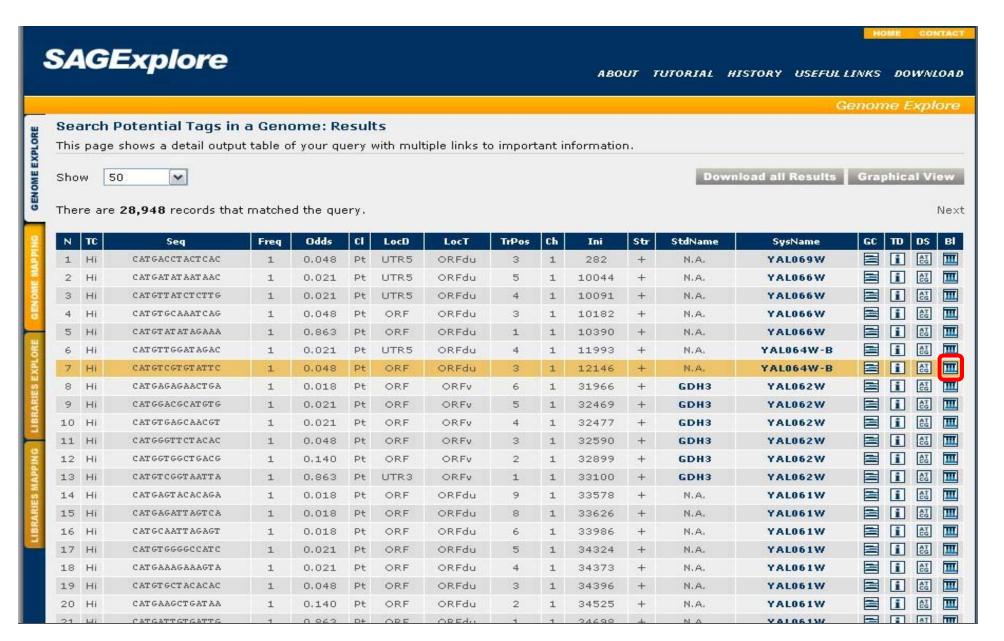
SAGExplore

ATCG: UTR ATCG: TAG

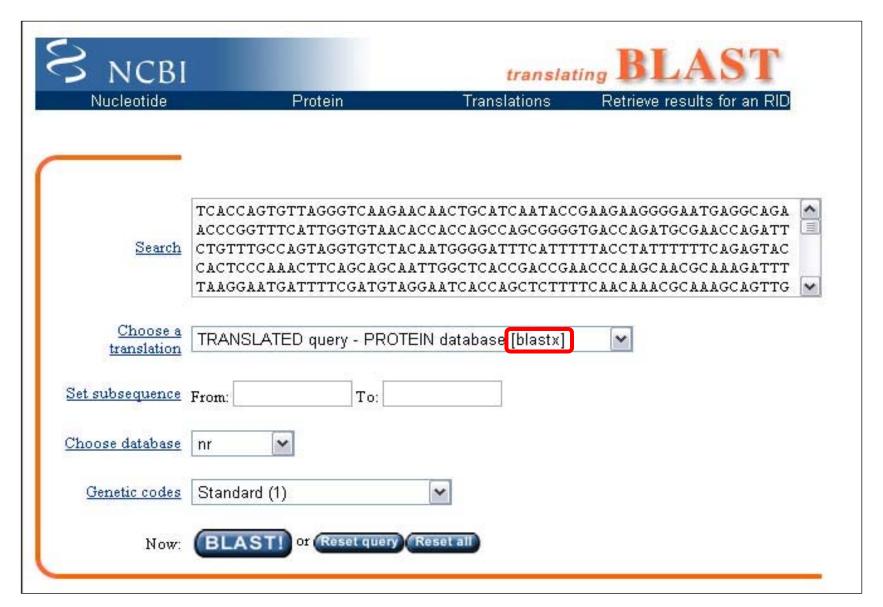
ATG ... STOP: ORF

>scer|chr:4|+|229806-230618

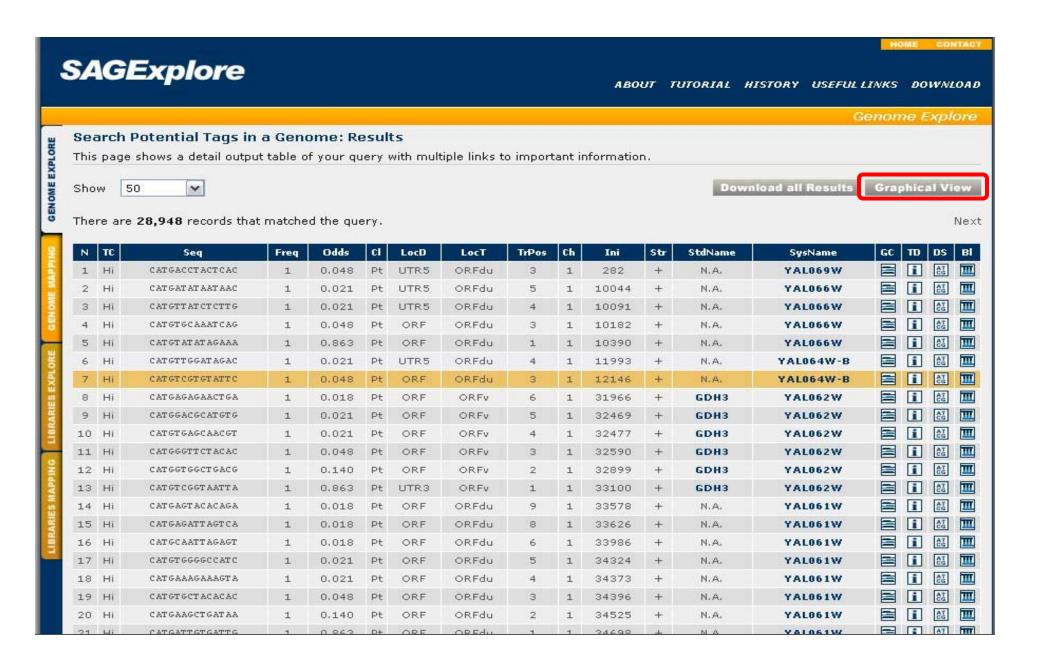
Download Sequence: The FASTA header indicates the exact region of the sequence displayed.



Query Results: A query to the BLAST server at the NCBI is launched with the previously described sequence by clicking on this field. In the case of tags matching an intergenic region, this option is very useful to aid the process of gene discovery.



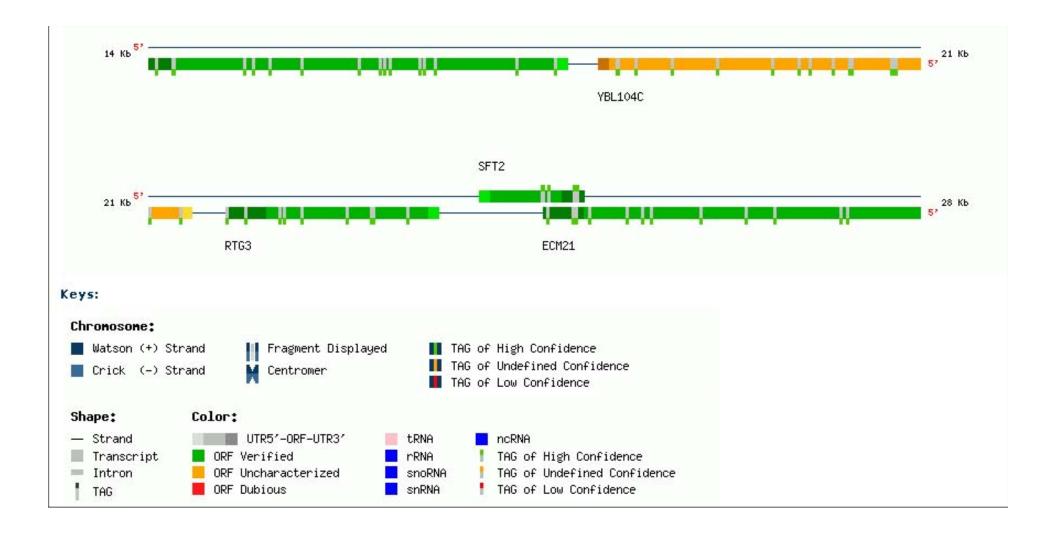
BLAST Query: A query to the BLAST server at the NCBI is automatically launched with the flanking sequence that contains the tag. In the case of intergenic tags, BLASTX is launched (this example). In the case of tags matching an ORF, BLASTP is used.



Query Results: A graphical view with all the tags from the results table is also available.



Graphical View: All chromosomes that contain a tag from the results table are shown. Tags are represented graphically on the chromosomes. By clicking on a chromosome, a new pop-up window will emerge with the details of that chromosome region in the context of the current query.



Graphical View: An example showing all high confidence tags mapping into ORFs is shown here.



This is the end of the SAGExplore web server tutorial for module I: Genome Explore

Any comments or inquiries, please contact us