

ABC课程如何助力植物病毒的研究

WHAT CAN ABC HELP IN PLANT VIRUS RESEARCH

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2019-01-12

OUTLINE

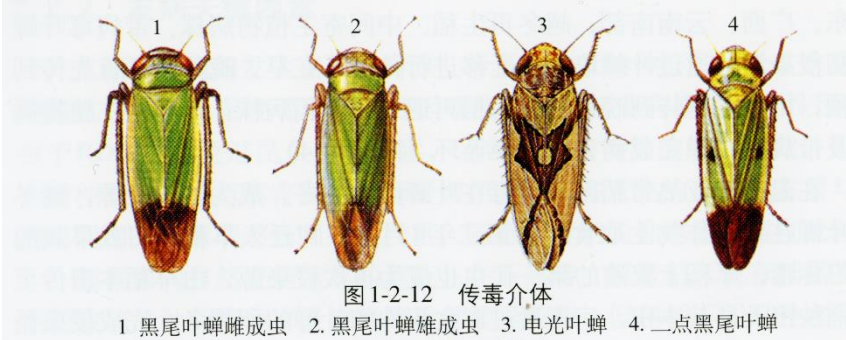
- 1 报告选题背景 (ABC课程有没有用)
- 2 课题研究背景 (水稻、叶蝉和RDV)
- 3 研究不同对象时用到的ABC课程内容:
 - 3.1 模式生物, 以水稻为例
 - 3.2 非模式生物, 以叶蝉为例
 - 3.3 植物病毒, 以RDV为例
- 4 总结及致谢

BACKGROUND

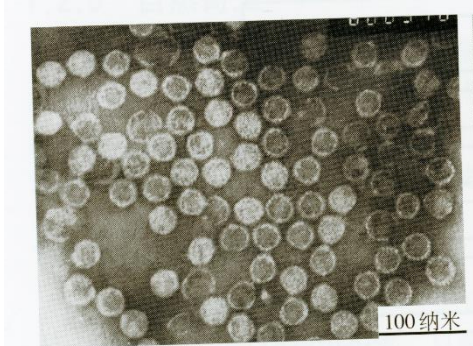
1. ABC课上没讲什么东西

2. ABC课上会讲到的

BACKGROUND



Leafhoppers



Rice Dwarf Virus(RDV)



Oryza sativa

水稻——模式生物

Statistics

Countries/Regions

Institutions

Database Category

Data Type

Data Object

Publication and Category

Publication and Database

Publication and Country

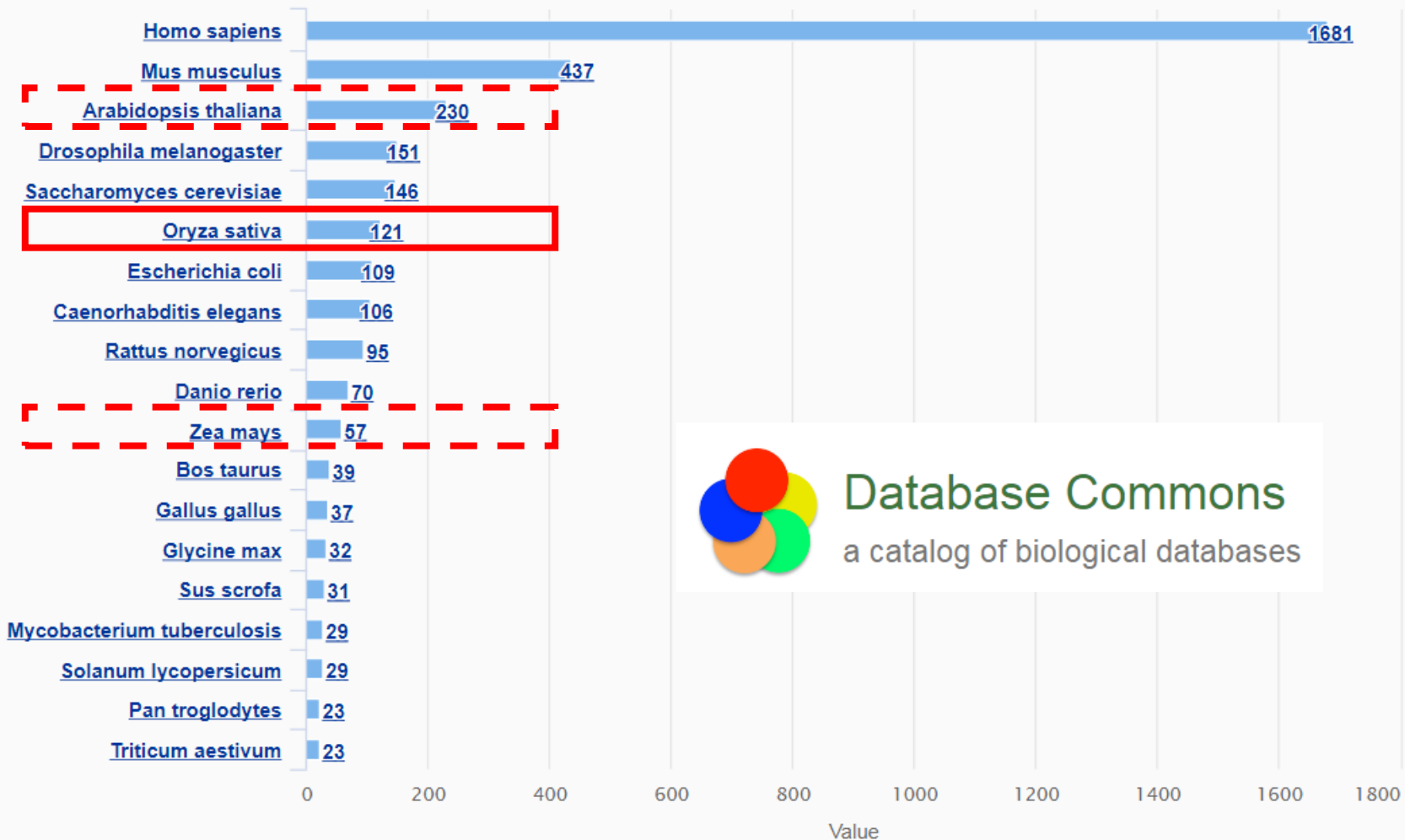
Organisms

Database Citation

Citation and Age

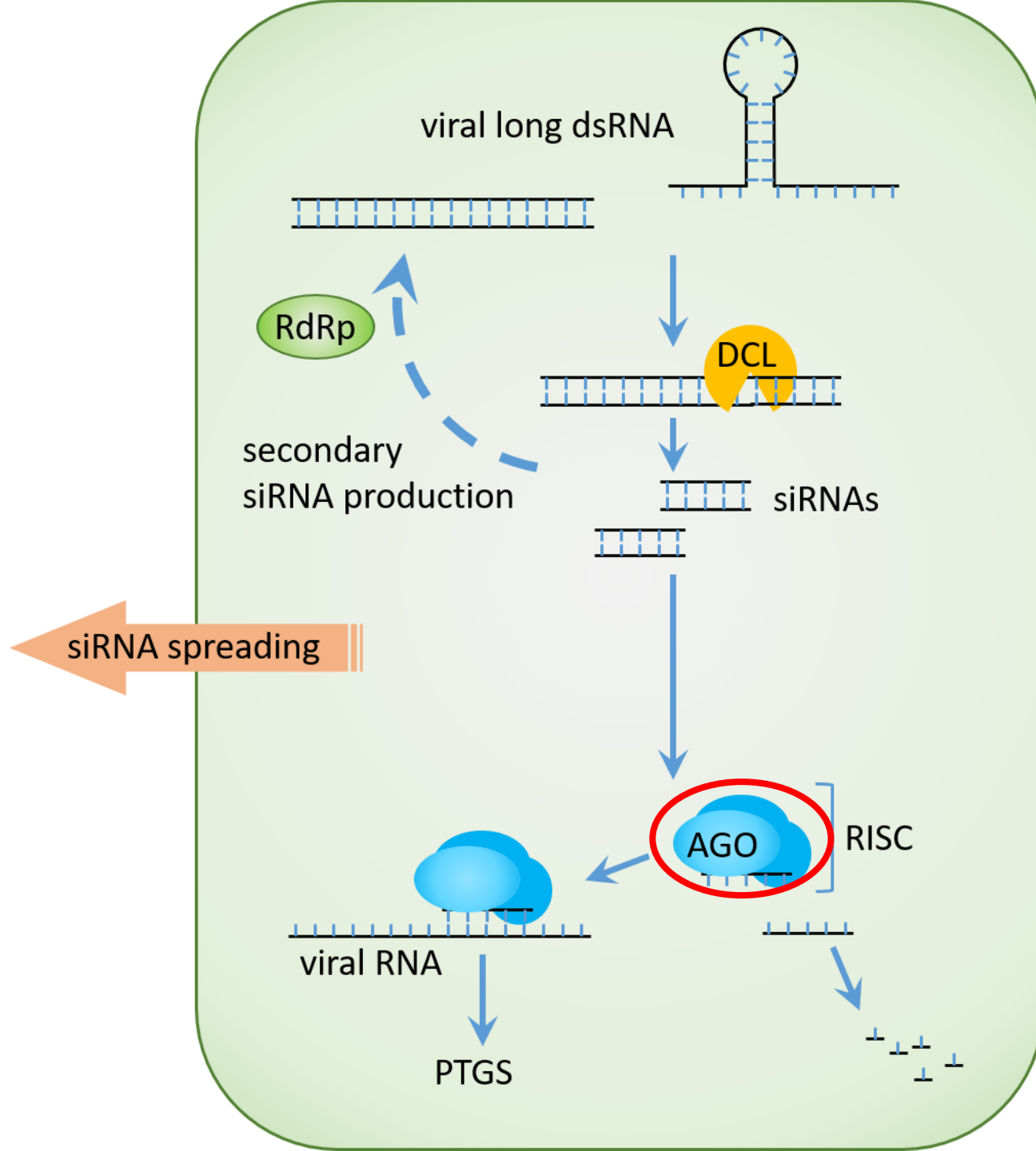
Top 20 Organisms (ranking is based on database number)

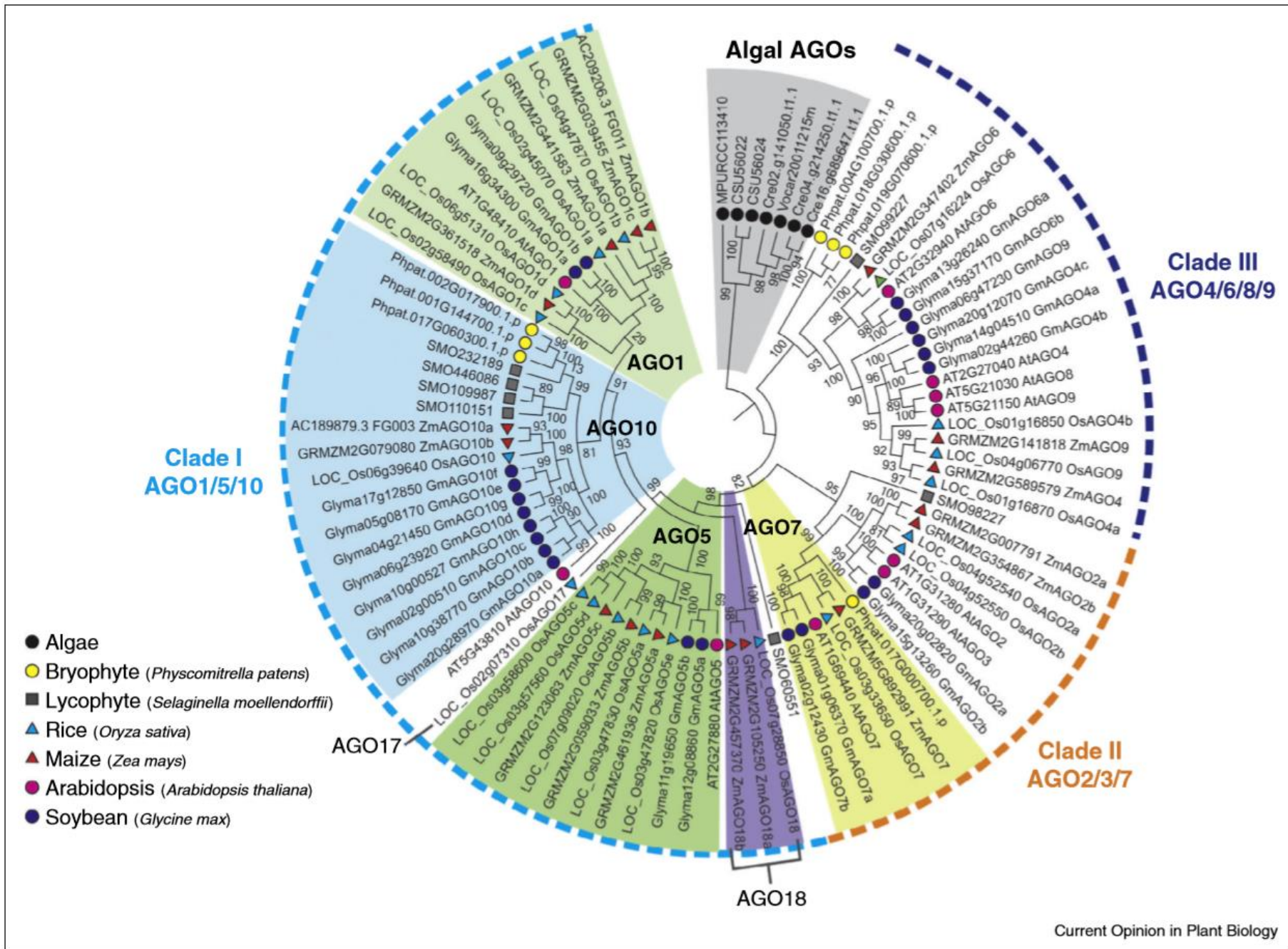
Top 20 Databases of Each Organism (ranking is based on Z-index)"



Database Commons
a catalog of biological databases

e.g.
OsAGO1

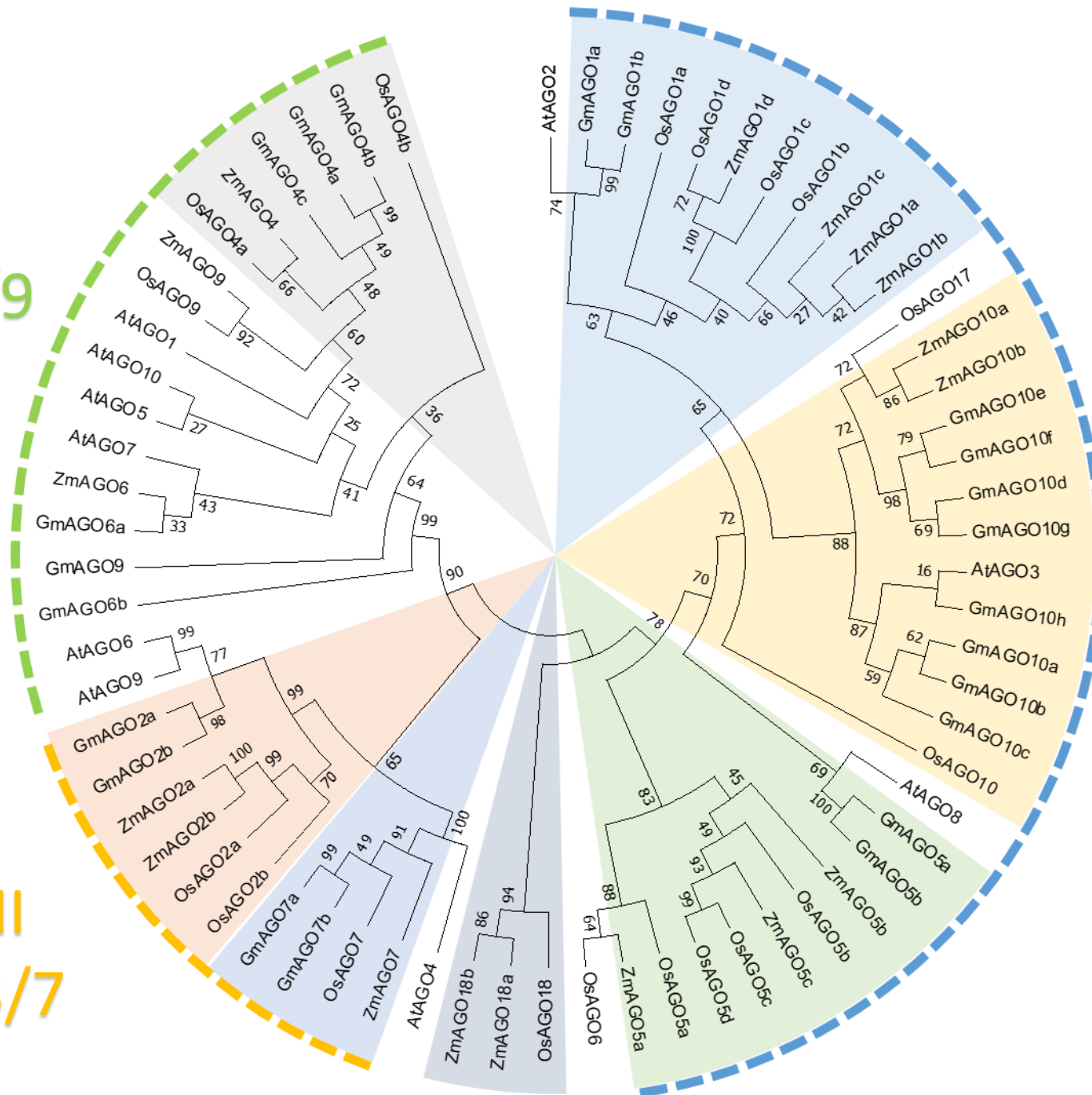




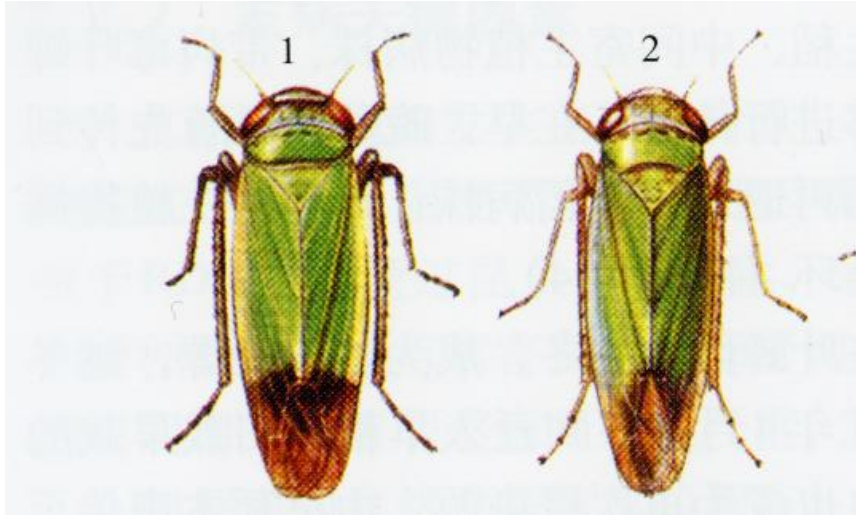
Clade III
AGO4/6/8/9

Clade I
AGO1/5/10

Clade II
AGO2/3/7



叶蝉——非模式生物



Nephotettix cincticeps

黑尾叶蝉

blastall

Apis mellifera

Diaphorina citri

Acyrtosiphon pisum

Pediculus humanus

Anopheles gambiae

Bemisia tabaci

Drosophila melanogaster

Putella xylostella

Cimex lectularius

Nasonia vitripennis

Daphnia pulex

Bombyx mori

Tribolium castaneum

Nephotettix cincticeps

Camponotus floridanus



Search

Download

Help

My Data

Protein by name >

Protein by sequence >

Multiple proteins >

Multiple sequences >

Organisms >

Protein families ("COGs") >

Examples >

Random entry >

SEARCH

Single Protein by Name / Identifier

Protein Name:

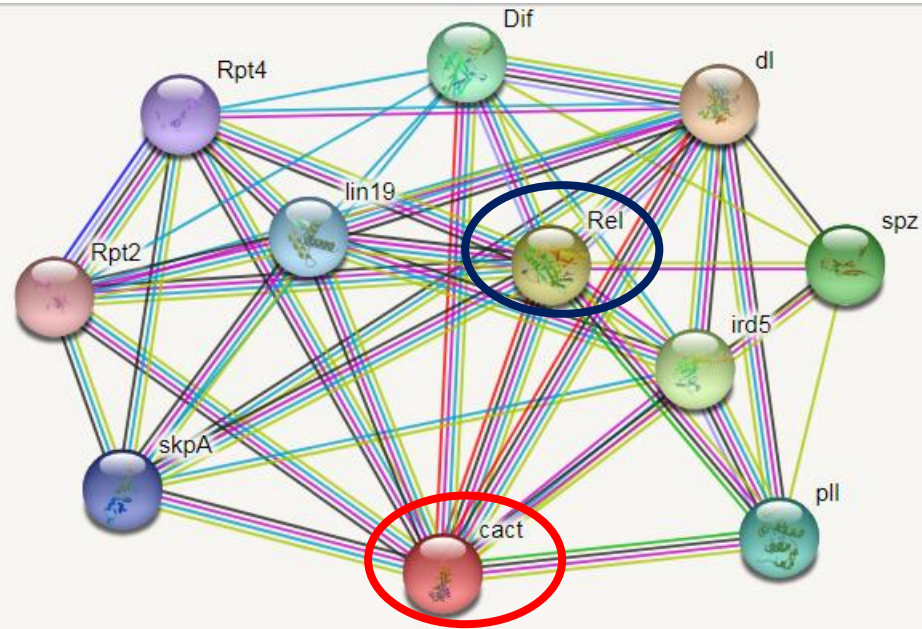
(examples: #1 #2 #3)

cactus

Organism:

Drosophila

SEARCH



Viewers >
Legend v
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



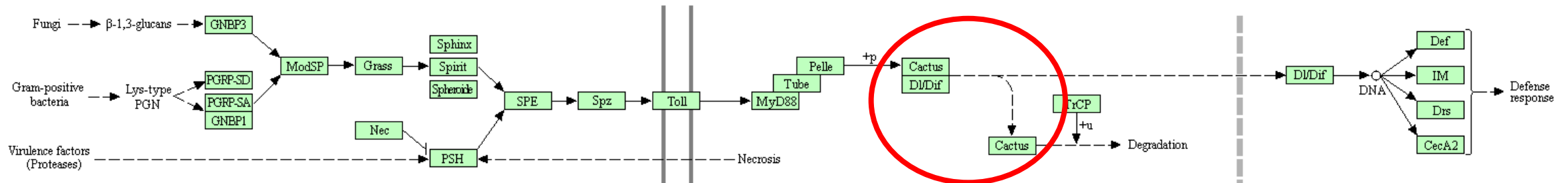
*empty nodes:
proteins of unknown 3D structure*



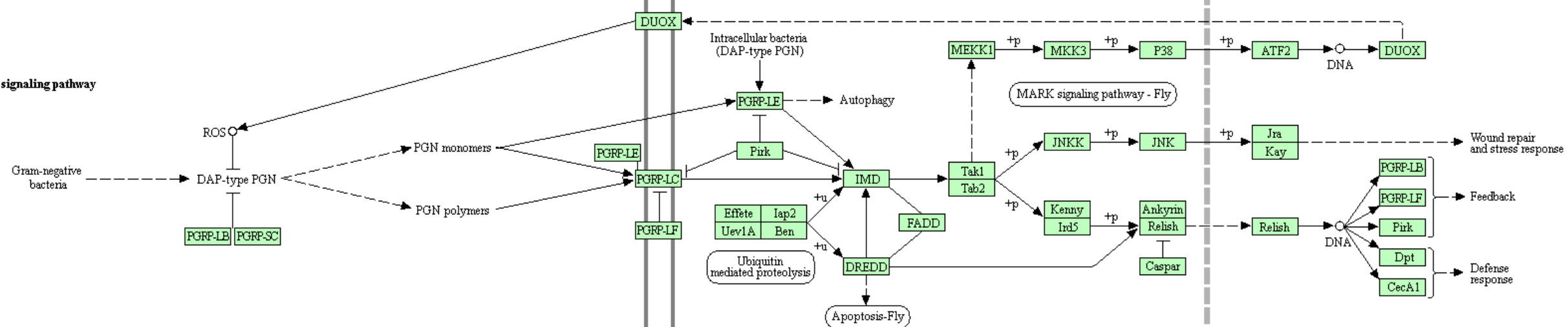
*filled nodes:
some 3D structure is known or predicted*

TOLL AND IMD SIGNALING PATHWAY

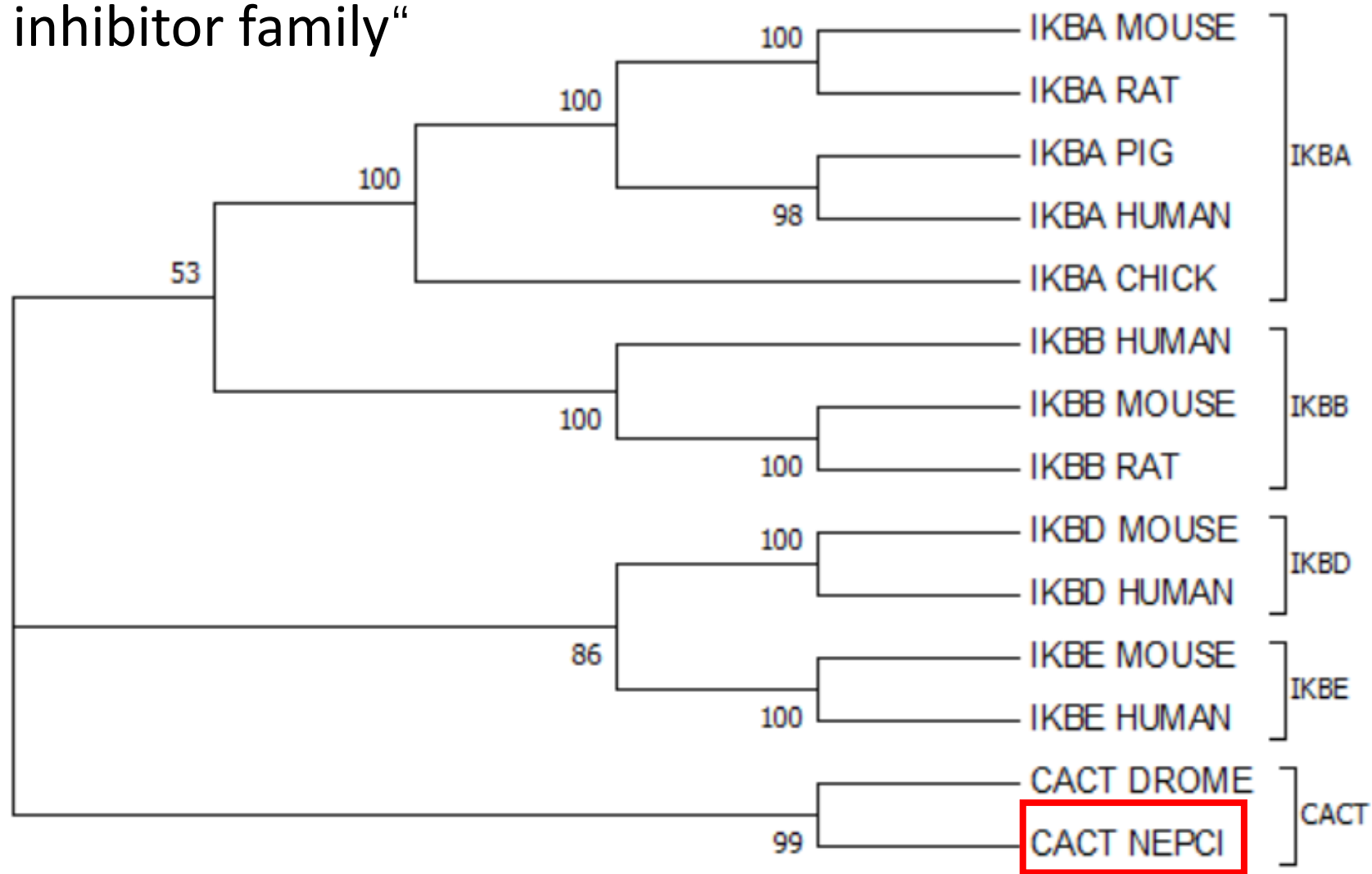
TOLL signaling pathway



IMD signaling pathway



family: "nf kappa b inhibitor family"
+ CACT NEPCI



Phyre2

Protein Homology/analogY Recognition Engine V 2.0

Subscribe to Phyre at Google Groups

Email:

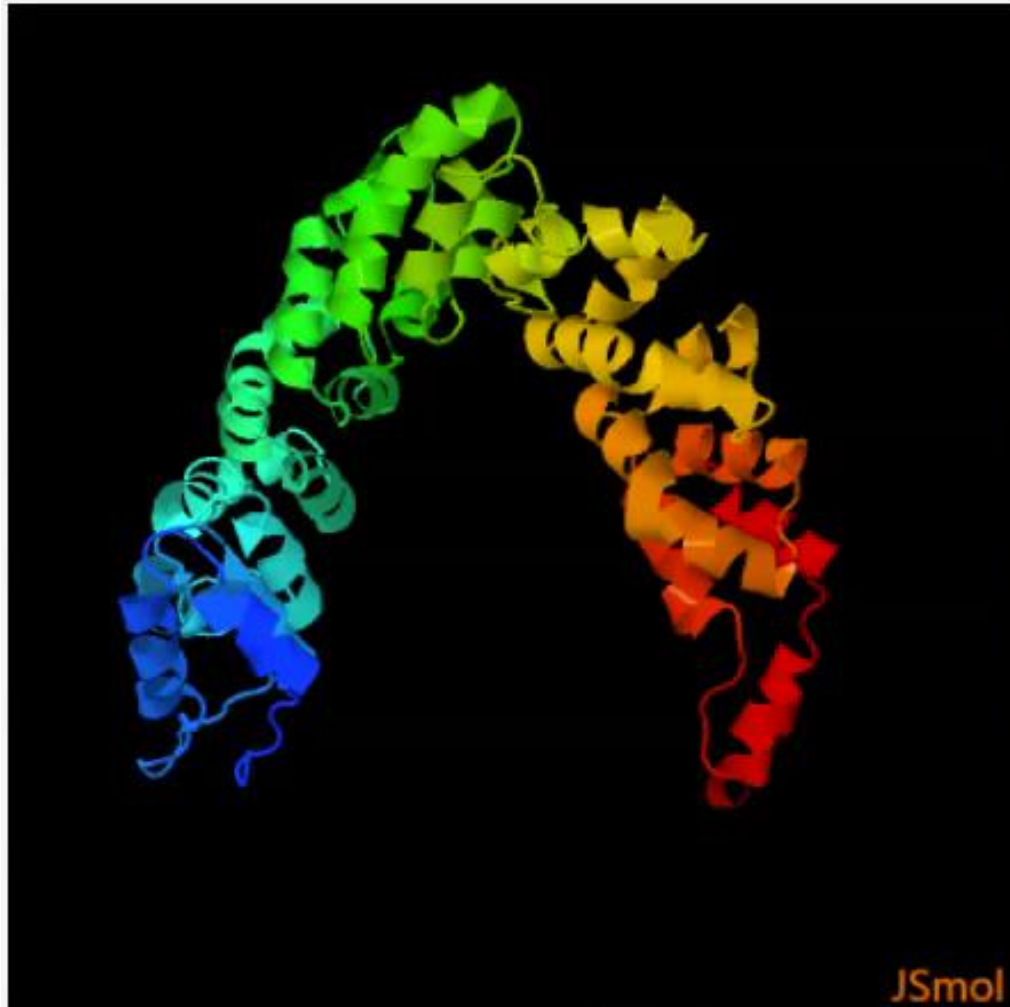
[Visit Phyre at Google Groups](#)

[Follow @Phyre2server](#)



[EBI 2018 Workshop](#) | [Older Workshops](#) | [Phyre2 paper](#)

E-mail Address	<input type="text" value="aslan1102@163.com"/>
Optional Job description	<input type="text" value="CACTUSseq"/>
Amino Acid Sequence	<pre>>seq MSKKENTFIESSCTSDSDGHQLPLEGRSLEAYDKLSNSNSSTHIKSNDKCTYN DSCVWSG SMIHSEEISSPESPTCKSGDSFVSDKVWSDNKSVMRLDSCIDVSVSQQFSELS LKEDVYN NLNDPPKAKESVSVSKTNI NEQFLNKQKTTDSSTLQRLLLLLEACFBQNEGDGT ELHLSII HKFIETVYALVRMVPQPDYLNIRNDRQTALHLAVLTRQPRLARLLVCAGADL DSLDRGG NTALHLAVAADDLLCVRAIIEPVTIPETIAAQLQYSPYFPFYTHSDIANIHNYD</pre>
	Or try the sequence finder
Modelling Mode	Normal <input checked="" type="radio"/> Intensive <input type="radio"/>
Please tick as appropriate.	NOT for Profit <input type="radio"/> FOR Profit (Commercial) <input type="radio"/> Other <input type="radio"/>
	<input type="button" value="Phyre Search"/> <input type="button" value="Reset"/>



Colour by Secondary Structure

Colour Rainbow N->C

Model (left) based on template [c4cj9A](#)

Top template information

PDB header:transcription

Chain: A: **PDB Molecule:**burrh;

PDBTitle: burrh dna-binding protein from burkholderia rhizoxinica in2 its apo form

Confidence and coverage

Confidence:

100.0%

Coverage: **89%**

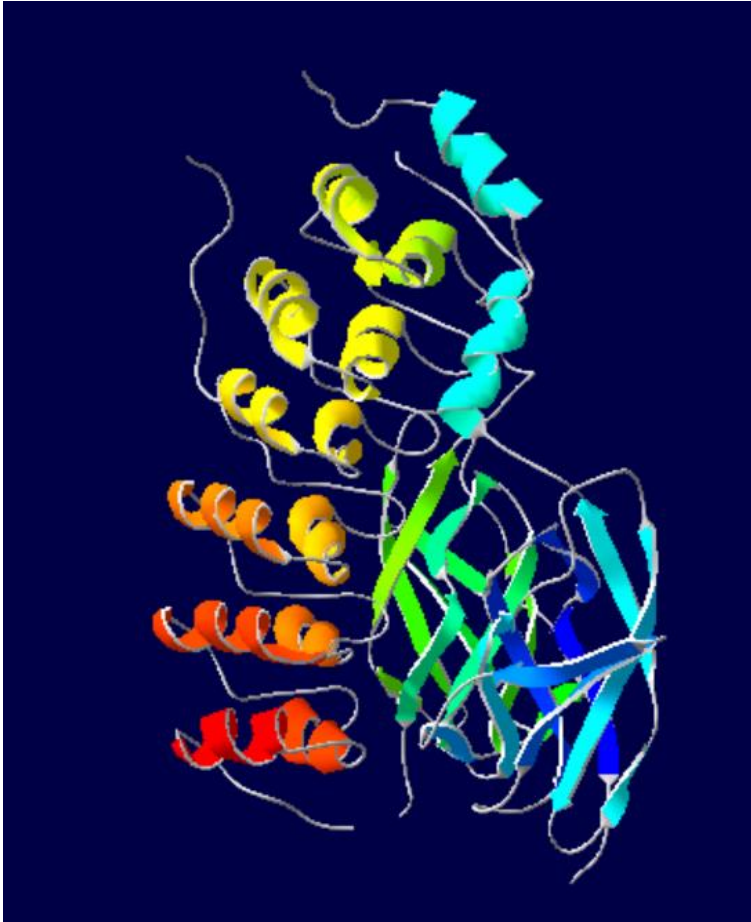
373 residues (89% of your sequence) have been modelled with 100.0% confidence by the single highest scoring template.

3D viewing

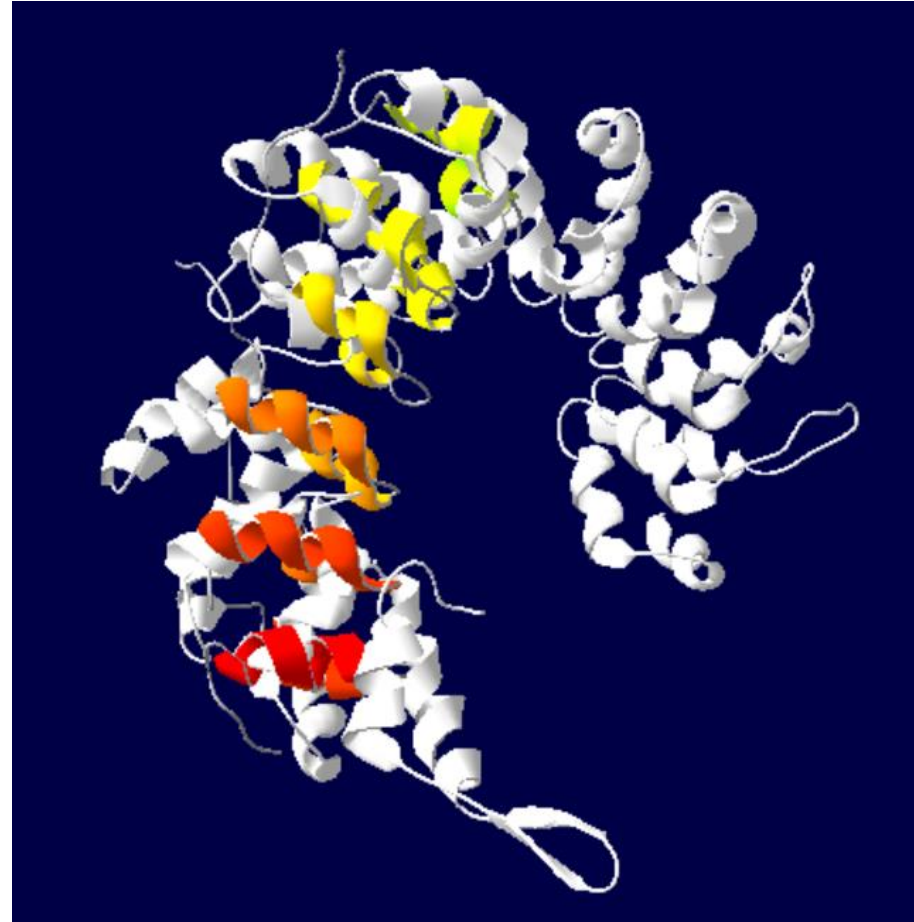
[Interactive 3D view in JSmol](#)

For other options to view your downloaded structure offline see the [FAQ](#)

IKBB_MOUSE 1OY3



Magic Fit

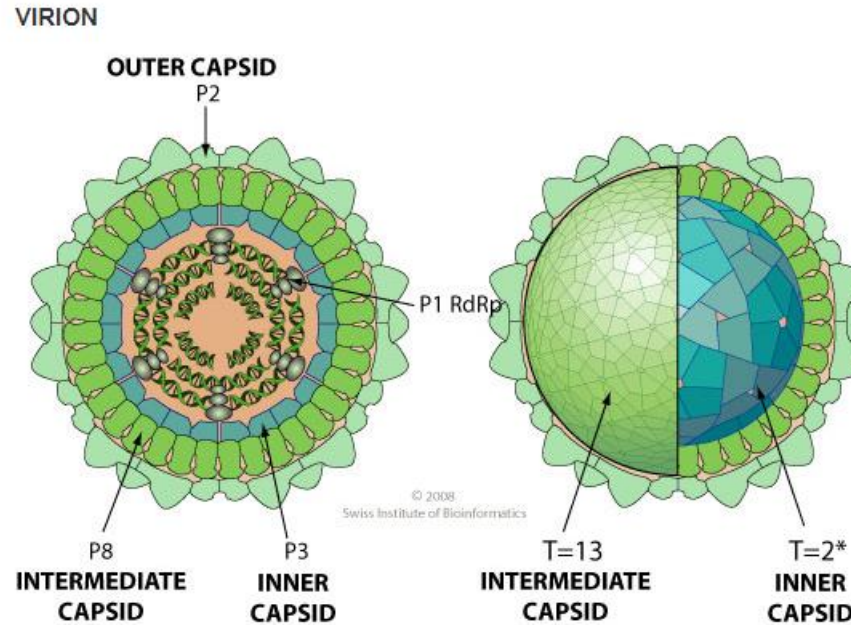


植物病毒——小众中的小众

Phytoreovirus



<https://viralzone.expasy.org>



TAXONOMY

Group III: dsRNA viruses

Family: *Reoviridae*

Genus: *Phytoreovirus*

Virus Genome Databases

- [Viral Genomes](#) - the main page of NCBI viral genome information resource.
- [GISAID](#) - Global Initiative on Sharing Avian Influenza Data.
- [OpenFlu](#) - A database for human and animal influenza virus.
- [NCBI Flu](#) - NCBI Influenza Virus Resource with influenza genomic data and analysis tools.
- [Plant Viruses](#) - This site provides a central source of information about viruses, viroids and satellites of plants, fungi and protozoa.

Organism [OS]

Rice dwarf virus [10991]

Rice dwarf virus (isolate O) [142805]

Rice dwarf virus (isolate Akita) [142803]

Rice dwarf virus (isolate Fujian) [142804]

Rice dwarf virus (isolate S) [142806]



Search

UniProtKB consists of two sections.



Reviewed (Swiss-Prot) - Manually annotated

Records with information extracted from literature and curator-evaluated computational analysis.



Unreviewed (TrEMBL) - Computationally annotated

Records that await full manual annotation.

UniProt Knowledgebase (UniProtKB) is the central hub of functional information on proteins, with consistent and rich annotation. In addition to the core data mandatory for each UniProtKB entry (the amino acid sequence, protein name or accession number, taxonomic data and citation information), as much additional information as possible is added.

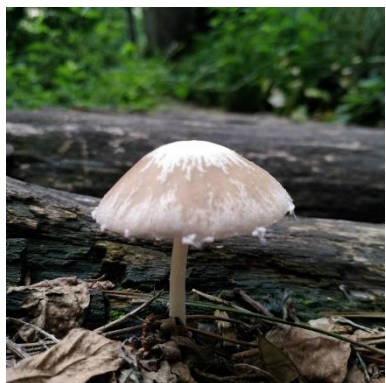
<input type="checkbox"/>	Entry ▾	Entry name ▾		Protein names ▾	Gene names ▾	Organism ▾	Length ▾	
<input type="checkbox"/>	Q85439	P8_RDVF		Outer capsid protein P8		Rice dwarf virus (isolate Fujian) (RDV)	421	
<input type="checkbox"/>	Q98631	RDRP_RDVF		RNA-directed RNA polymerase P1	S1	Rice dwarf virus (isolate Fujian) (RDV)	1,444	
<input type="checkbox"/>	Q85437	MCE_RDVF		Putative mRNA-capping enzyme P5		Rice dwarf virus (isolate Fujian) (RDV)	801	
<input type="checkbox"/>	Q98632	P2_RDVF		Minor outer capsid protein P2		Rice dwarf virus (isolate Fujian) (RDV)	1,116	
<input type="checkbox"/>	Q98630	P3_RDVF		Outer capsid protein P3		Rice dwarf virus (isolate Fujian) (RDV)	1,019	
<input type="checkbox"/>	Q85442	NSP11_RDVF		RNA-binding protein		Rice dwarf virus (isolate Fujian) (RDV)	189	
<input type="checkbox"/>	Q85438	MVP_RDVF		Movement protein		Rice dwarf virus (isolate Fujian) (RDV)	509	
<input type="checkbox"/>	Q85435	P7_RDVF		Protein P7		Rice dwarf virus (isolate Fujian) (RDV)	506	
<input type="checkbox"/>	Q85443	NSP12_RDVF		Non-structural protein 12A		Rice dwarf virus (isolate Fujian) (RDV)	312	
<input type="checkbox"/>	Q85440	P9_RDVF		Minor outer capsid protein P9		Rice dwarf virus (isolate Fujian) (RDV)	351	
<input type="checkbox"/>	Q85434	VSR_RDVF		Suppressor of RNA-mediated gene sil...		Rice dwarf virus (isolate Fujian) (RDV)	353	
<input type="checkbox"/>	P0DJY1	OPORF_RDVF		Protein OP-ORF		Rice dwarf virus (isolate Fujian) (RDV)	92	
<input type="checkbox"/>	Q85436	NSP4_RDVF		Non-structural protein 4		Rice dwarf virus (isolate Fujian) (RDV)	727	

CONCLUSION

1. ABC课上讲的工具和网站是实用的

2. 卖家秀VS买家秀

ACKNOWLEDGEMENT



闭月羞花



看组长



看组长



看组长

~THANK YOU~